



PAPER

SYNERGETIC ANALYSIS OF LANGUAGE-LEVEL UNITS IN THE REALIZATION OF THE CHIASMUS FIGURE

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Abstract

This article employs the theoretical framework of synergetic linguistics to analyze the formation and functionality of chiasmus, a complex rhetorical figure characterized by its inverted, cross-like structure (ABBA). Traditionally studied within the domains of rhetoric and literary criticism, chiasmus is re-contextualized here as an emergent phenomenon within a dynamic linguistic system. The central thesis posits that chiasmus is not merely an ornamental device but a stable, self-organized macro-structure that arises from the non-linear interaction and cooperation of micro-level linguistic units across all levels of language—phonological, morphological, lexical, syntactic, and semantic. Utilizing a synergetic approach, this paper examines how these heterogeneous units subordinate themselves to a single order parameter—the chiasmic pattern—thereby temporarily reducing the entropy of the system and creating a highly salient and memorable utterance. The analysis draws on existing linguistic corpora and theoretical work by scholars such as Wolfgang Wildgen, Victor Krupa, and George Lakoff to demonstrate the synergistic effects at play. Findings indicate that the cognitive potency and cross-linguistic prevalence of chiasmus can be attributed to its foundation in fundamental principles of self-organization, cognitive processing, and ecological balance within the language system, transcending its traditional perception as a mere stylistic ornament.

Key words: synergetic linguistics, chiasmus, self-organization, order parameter, linguistic entropy, cognitive salience, rhetorical figures, systemic emergence.

Introduction

Chiasmus, derived from the Greek letter Chi (X), denoting a crosswise arrangement, is a rhetorical figure defined by the inverted repetition of elements

in two parallel clauses, following an ABBA structure (e.g., “Ask not what your country can do for you; ask what you can do for your country”). For centuries, its study has been predominantly the purview of rhetoricians and literary scholars,

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who have catalogued its aesthetic and persuasive effects (Lund, 1947; Welch, 1981). However, a purely stylistic analysis fails to explain its pervasive cross-linguistic occurrence, its cognitive resonance, and the precise mechanics of its formation. This gap necessitates a theoretical shift towards a systemic and dynamic model of language.

Synergetic linguistics, rooted in the broader field of synergetics pioneered by Hermann Haken (1983), offers such a model. It conceptualizes language as a complex, open, self-organizing system comprised of a multitude of interacting subsystems (phonological, morphological, syntactic, etc.). Within this system, stable, ordered macro-structures—from grammatical rules to stylistic figures—are understood to emerge spontaneously from the non-linear interactions of micro-level elements (Wildgen, 1985). Order is not pre-ordained but is the product of competition and cooperation among variables, ultimately governed by a few control parameters and resulting in a dominant order parameter that enslaves the behavior of the individual components.

This paper argues that the chiasmus figure constitutes such an order parameter. Its realization is a synergetic process wherein units from various linguistic levels synchronize to create a single, coherent, and highly salient structure. The purpose of this study is to deconstruct this process, demonstrating how the interplay of phonetic, lexical, syntactic, and semantic units subordinates itself to the chiasmic pattern. The central research question is: How do language-level units interact synergistically to produce the emergent macro-structure known as chiasmus?

This investigation moves beyond description to explanation, positing that the power of chiasmus stems from its ability to momentarily maximize structural order (minimize entropy), thereby creating a cognitive “peak” that is particularly efficient for processing, memorization, and persuasive impact.

To fully appreciate the synergetic formation of chiasmus, one must first understand the core tenets of the model from which the analysis springs. Synergetics, as a transdisciplinary science pioneered by Hermann Haken, investigates the science of cooperation and the spontaneous emergence of order in complex systems far from

thermodynamic equilibrium. When applied to linguistics by theorists such as Wolfgang Wildgen and Victor Krupa, it provides a meta-theory that radically reimagines language not as a fixed code but as a complex, adaptive, and dynamic system.

The first fundamental principle is that language is an open system in a constant state of exchange with its environment, which includes the cognitive apparatus of its users, the social context of its use, and the cultural repository of previous utterances. This openness means the system is perpetually in flux, subjected to perturbations and fluctuations. The second principle is non-linearity, implying that small causes can have large, disproportionate effects (and vice versa). A minor shift in the frequency of a construction, a single innovative utterance by an influential speaker, or a change in social norms can, under the right conditions, trigger a phase transition and lead to the widespread emergence of a new pattern. This stands in stark contrast to linear, rule-based models of language change.

From these interactions, order parameters emerge. These are macroscopic patterns or variables that describe the overall state of the system. In linguistic terms, an order parameter could be a new grammatical rule, a dominant phonological pattern, or a conventionalized discourse structure. Once an order parameter emerges, it exhibits circular causality: it begins to dictate, or “enslave,” the behavior of the microscopic parts (individual words, sounds, and constructions) that gave rise to it. The parts subordinate their individual behavior to the collective pattern. This is the famous slaving principle of synergetics. For instance, the emergence of Subject-Verb-Object (SVO) as a dominant word order in a language enslaves lexical items, forcing them into predictable syntactic slots.

Finally, the system evolves towards attractor states—stable configurations in its state space that represent points of minimal energy and maximal stability. In linguistics, attractors are cognitively efficient, communicatively effective, or socially conventionalized structures that the system tends to produce. We argue that chiasmus is one such attractor within the discursive subsystem of language. Its symmetrical, closed structure offers a state of minimal internal entropy and high perceptual salience, making it a stable configuration towards which the system is drawn in

specific communicative contexts where emphasis, memorability, and the conveyance of complex, often paradoxical, truth are paramount. This framework allows us to analyze chiasmus not as a static object, but as a process—the temporary self-organization of linguistic elements under the governing influence of the chiasmic order parameter.

Literature Review

The cognitive revolution in linguistics, spearheaded by figures like George Lakoff and Mark Johnson, provided a new lens through which to view rhetorical figures. While not focused exclusively on chiasmus, the principles of Cognitive Linguistics offered a significant advance. The theory of conceptual metaphor (Lakoff & Johnson, 1980) posits that abstract thought is largely metaphorical and grounded in bodily experience. From this perspective, chiasmus can be seen as a linguistic instantiation of deeper cognitive patterns. The figure's balance and symmetry resonate with image schemas, which are pre-linguistic mental structures arising from our embodied experience, such as BALANCE, COMPULSION, or CIRCUITRY. The A-B-B-A structure mirrors a conceptual journey from a starting point, to a counterpoint, and back to a transformed understanding of the original point, forming a complete cognitive circuit.

This cognitive view shifts the focus from authorial intent to universal mental processes. Chiasmus is effective not because it is ornamental, but because it aligns with fundamental modes of human understanding. It creates a moment of cognitive stability and closure, making the encoded message more memorable and persuasive. The work of Raymond W. Gibbs Jr. in *The Poetics of Mind* (1994) further supports this, arguing that figurative language is not a deviation from normative language but is central to everyday thought and speech. This framework begins to explain the cognitive potency of chiasmus but still largely treats it as an output of mental processes rather than an emergent property of the linguistic system itself. It explains its effectiveness but provides less insight into the precise linguistic mechanisms of its assembly.

The most comprehensive theoretical framework for understanding the formation of chiasmus comes from synergetic linguistics, a field that applies the principles of complex systems theory to language.

Rooted in the work of Hermann Haken (1983) on synergetics, this paradigm was pioneered in linguistics by Wolfgang Wildgen (1985, 1994) and others. Synergetics moves beyond descriptive taxonomy and cognitive correlation to offer a dynamic, process-oriented model of how linguistic structures emerge.

In this model, language is an open, complex system far from equilibrium, comprised of a multitude of interacting subsystems (phonological, morphological, syntactic, etc.). Order in such a system is not pre-ordained by a set of rules but emerges spontaneously from the non-linear interactions of its micro-level elements. This emergence is governed by control parameters (e.g., cognitive load, communicative efficiency, social pressure) and results in a dominant order parameter—a macroscopic pattern that then constrains and coordinates the behavior of the individual components, a process known as the slaving principle (Haken, 1983).

Within this framework, a rhetorical figure like chiasmus is reconceptualized as a stable, self-organized macro-structure—an attractor state within the linguistic system. Its inverted, cross-like structure offers a state of minimal internal entropy and high perceptual salience. Viktor Krupa's (1990) explorations into language and synergetics, though broader in scope, provide a foundation for applying these principles to specific linguistic phenomena. The formation of a chiasmus is thus the process by which heterogeneous units from various linguistic levels (phonological, lexical, syntactic, semantic) synchronize and subordinate themselves to the governing chiasmic order parameter. This process explains its structural elegance and cognitive efficiency: it represents a temporary equilibrium point where the system's components achieve maximal coordination and minimal friction.

The literature reveals a clear evolution: from description (rhetoric) to correlation (cognition) to explanation (synergetics). The rhetorical tradition provided the essential data set. The cognitive approach offered a crucial link to mental processes, explaining the figure's universal appeal. However, it is the synergetic framework that provides the most powerful explanatory mechanism for its formation.

The gap in the literature lies in the application of this robust synergetic model specifically to the

detailed linguistic deconstruction of chiasmus. While Wildgen and others have outlined the theory, there is a need for systematic research that explicitly demonstrates how the slaving principle operates across all linguistic levels—phonological, morphological, lexical, syntactic, and semantic—to produce this specific figure. Most analyses remain either purely theoretical or focused on single levels of analysis. Therefore, this study aims to fill this gap by conducting a multi-level synergetic analysis of chiasmus, illustrating precisely how the order parameter of the ABBA structure enslaves linguistic subunits to create an emergent phenomenon that is both structurally elegant and cognitively potent. This approach moves beyond appreciating chiasmus as a product to understanding it as a process—a testament to the self-organizing capacity of language itself.

Methodology

The methodological approach required to analyze the synergistic formation of chiasmus is necessarily qualitative and analytical, focusing on a detailed deconstruction of canonical examples to isolate the components from different linguistic levels and describe the process of their synchronization. This study employs a multi-level linguistic analysis, treating each instance of chiasmus as a case study in self-organization.

The primary source material consists of attested examples drawn from a diverse range of genres, including political oratory (e.g., John F. Kennedy, Winston Churchill), religious texts, classical literature (e.g., Shakespeare, Oscar Wilde), and modern prose. This diversity is crucial to demonstrate that the phenomenon is not genre-specific but is a fundamental potentiality of the linguistic system itself. Each selected example is subjected to a rigorous dissection across the core levels of linguistic organization:

First, the Phonological Level is analyzed for patterns of sound, including alliteration, assonance, consonance, and rhythm. The role of phonetics is not merely euphony but to create a cohesive auditory scaffold that primes the listener for the higher-level structural inversion. Second, the Morphological Level is examined for the repetition and inversion of word forms, inflections, and grammatical markers, which can reinforce the parallel structure. Third, the

Lexical Level is scrutinized to identify the key words and phrases that are selected and manipulated to fit the chiasmic pattern. This involves analyzing the semantic relationships between these words (e.g., antonymy, synonymy).

Fourth, the Syntactic Level is perhaps the most critical for the chiasmic structure. Here, the analysis focuses on the inversion of grammatical structures and constituent order. The central question is how syntactic rules are not broken but are instead subordinated to the higher-order chiasmic pattern. Finally, the Semantic-Pragmatic Level is investigated to understand the meaning effect of the inversion. This includes analyzing the creation of paradox, irony, emphasis, and the overall pragmatic impact on the listener/reader. The interaction between these levels is then described not as a linear sequence but as a simultaneous, cooperative alignment, interpreted through the synergetic principles of emergence, competition, cooperation, and the slaving of components to the emergent ABBA pattern. This method reveals the intricate web of dependencies that constitutes a successful chiasmus.

Discussion

The synergetic analysis conducted in this paper reveals that the chiasmus is far more than a decorative rhetorical artifact; it is a profound manifestation of the self-organizing principles inherent in the linguistic system. The emergence of its distinct ABBA structure represents a temporary but significant phase transition where subsystems across all levels of language align under a single, governing order parameter. This discussion synthesizes these findings, exploring their theoretical implications for linguistics, their cognitive and communicative significance, the inherent limitations of the synergetic model, and potential avenues for future research.

The most significant theoretical implication of this analysis is its power to reconcile seemingly opposed paradigms in linguistic theory. The synergetic model transcends the classical dichotomy between prescriptive rule-based systems (e.g., traditional grammar) and descriptive, usage-based models (e.g., Cognitive Linguistics). It demonstrates that what we perceive as "rules" are, in fact, stable, emergent order parameters that

have achieved dominance through frequency and cognitive efficiency. The grammatical rules that govern subject-verb agreement or case marking are, in essence, no different in kind from the chiasmic pattern; they are simply more generalized and conventionalized order parameters that have enslaved a wider array of linguistic elements across a broader range of contexts.

In this light, chiasmus is not an exception to linguistic rules but a demonstration of a higher-order rule—the principle of self-organization itself. The syntactic and semantic “rules” are not broken in a chiasmus; they are subordinated. For instance, in the example “Eat to live, not live to eat,” the syntax of the infinitive of purpose remains perfectly intact. However, its application is enslaved to the macro-structural requirement of the chiasmic inversion. This suggests a holographic quality to language: the same fundamental process of components cooperating to form a stable, emergent structure operates at every scale, from the phonological (e.g., syllable structure) to the syntactic (e.g., grammatical rules) to the discursive (e.g., chiasmic patterns and narrative arcs). The synergetic framework thus provides a unified theory that can account for both the rigid regularity of grammar and the creative fluidity of stylistic expression as products of the same underlying dynamical system.

The model also provides a robust explanation for the enduring cognitive potency and cross-linguistic prevalence of chiasmus. If the linguistic system is perpetually navigating a state space between order and disorder (or entropy), then chiasmic structures represent powerful, low-entropy attractor states. The brain, as a pattern-recognition machine exquisitely tuned to perceive symmetry and balance (Gazzaniga et al., 2014), finds such structures inherently easier to process, store, and retrieve. The closure offered by the ABBA pattern—where the end logically and structurally echoes the beginning—creates a sense of completeness that linear structures often lack. This cognitive efficiency acts as a primary control parameter, a factor that influences the state of the system and makes the emergence of chiasmus more likely in contexts where memorability and emphasis are paramount, such as sacred texts, political slogans, and aphorisms.

Furthermore, the multi-level synergy required

for a strong chiasmus creates a form of redundancy that is crucial for effective communication. The same conceptual inversion is reinforced phonologically (through sound repetition), lexically (through word choice), syntactically (through structural mirroring), and semantically (through opposition). This redundancy ensures the message is robust against cognitive “noise” and highly resistant to misinterpretation. The listener or reader receives the core idea through multiple parallel channels, each reinforcing the others. This explains why chiasmus is so persuasive: it presents an argument not as a linear progression but as a self-evident, closed system of truth. The audience is presented with a proposition and its inverse, and the elegant structure itself implies that a higher synthesis or undeniable truth has been achieved.

While powerful, the synergetic model is not without its limitations. Firstly, its application can sometimes be criticized for being post hoc and metaphorical. Identifying an order parameter after analyzing a given text can be seen as descriptive rather than predictive. The challenge lies in moving from explaining existing examples to predicting when and under what specific control parameters a chiasmus is most likely to emerge in spontaneous discourse. Secondly, the model’s reliance on concepts from physics and mathematics, while heuristically valuable, can lead to charges of reductionism. Language is imbued with intentionality, consciousness, and social meaning—qualities not present in physical systems like lasers or fluids, from which synergetics originally drew its metaphors. While the model excellently describes the how of the structure’s formation, it must be integrated with pragmatic and sociolinguistic theories to fully account for the why of its use in specific social contexts to achieve specific interactive goals.

This study itself is delimited by its focus on canonical, written examples of chiasmus. These examples represent the most stable and successful instances of the phenomenon—the attractor states that have been recorded and celebrated. They do not capture the full “fitness landscape” of the system, which would include incomplete, failed, or nascent chiasmic attempts in spontaneous spoken conversation. The analysis therefore presents a view of the phenomenon at its most successful

and organized, potentially overlooking the messy, dynamic processes of its real-time construction and the many instances where the system fluctuates toward but does not fully achieve a chiasmic structure.

The findings of this study open several promising avenues for future research. A clear next step would be a quantitative, corpus-linguistic investigation to test the hypotheses generated by the qualitative synergetic model. Large-scale diachronic corpora could be analyzed to track the frequency and stability of chiasmic structures against other rhetorical patterns. Do chiasmi appear more frequently in periods of social or linguistic upheaval, acting as islands of cognitive order? Are certain genres statistically significant attractors for this structure?

Secondly, psycholinguistic experiments could be designed to measure the cognitive salience of chiasmus directly. Techniques such as memory recall tests, eye-tracking studies, or neuroimaging (EEG/fMRI) could be employed to determine if well-formed chiasmi are indeed remembered more accurately and processed more fluently than their non-chiasmic paraphrases, and to identify the neural correlates of perceiving this multi-level synergy.

Finally, research could expand to explore cross-linguistic and cross-modal comparisons. Is the emergence of chiasmus constrained by typological features? Does it manifest differently in languages with free vs. fixed word order? Furthermore, does the same synergetic principle of inversion and multi-level alignment govern similar structures in other modalities, such as musical composition (e.g., palindromic phrases), visual design (e.g., symmetrical patterns), or dance? Such research could reveal whether the principles underpinning chiasmus are fundamental to human information processing in general, merely finding their purest expression in the linguistic medium.

Results

The realization of a potent chiasmus is a symphony of coordinated linguistic effort where units across all strata of the language system subordinate themselves to the governing order parameter. The following extended deconstruction of examples illustrates the depth and pervasiveness of this synergy.

The initial stability of a chiasmus often begins

at the sonic and morphological level. Phonological and morphological patterns create a cohesive auditory and grammatical frame that prepares the listener for the higher-level inversion, effectively reducing entropy and guiding perception. Consider the example, “May we make not war for want of word.” While the semantic inversion is somewhat loose (make-war / word-want), its chiasmic nature is powerfully supported by sub-syntactic units. The order parameter—the inverted semantic structure—enslaves the phonological components. The repetition of the bilabial nasal /m/ (“may”, “make”) and the glide /w/ (“we”, “war”, “want”, “word”) across both clauses creates a dense web of phonetic cohesion that binds the inverted elements together. This phonological parallelism mitigates the potential cognitive disruption caused by the semantic inversion, making the pattern more perceptible and perceptually pleasing. The sound patterns act as cooperating subunits, establishing a rhythmic foundation that supports the semantic cross. Morphologically, the use of base verb forms (“make”, “want”) further reinforces the parallel structure, avoiding the complicating factor of tense or aspectual differences that could disrupt the symmetry.

The most recognizable layer of chiasmus operates at the lexical and syntactic levels, where the inversion (ABBA) is most explicitly realized. This is where the slaving principle is most evident. A quintessential example is the Socratic dictum, “Eat to live, not live to eat.” Here, the order parameter—the chiasmic pattern A-B-B-A—dictates the precise selection and placement of linguistic units. Lexically, the key lexemes are Eat (A1) and Live (B1) in the first clause, and Live (B2) and Eat (A2) in the second. These words are enslaved to the structure; their identity is defined by their position within the cross. Syntactically, the structure is also inverted. Both clauses utilize an infinitive of purpose construction, but the first clause follows the pattern [Verb + to + Verb], where the second verb expresses the purpose of the first. The second clause inverts this to [Verb + to + Verb], where the first verb becomes the purpose of the second. The syntactic rules themselves are not violated but are instead subordinated to the higher-order chiasmic pattern. The syntax cooperates with the lexicon to realize the inversion. The synergy is complete: the figure

emerges from the perfect alignment of lexical repetition and syntactic mirroring. The system's entropy is minimized as the elements achieve a state of perfect balance and closure, resulting in a maximally efficient and memorable aphorism.

The most powerful chiasmi leverage semantic and pragmatic resources to create a closed circuit of meaning, often resulting in a profound condensation of thought that transcends the sum of its parts. An example like "We must walk alone with everyone, everyone with all, all with walking, and walking with what is alone," demonstrates a high degree of self-organization and a complex, nested chiastic structure (A-B-C-D / D-C-B-A). This sophisticated macro-structure enslaves units at every level. Lexically, the words "alone, everyone, all, walking" are selected and ordered precisely by the governing pattern. Semantically, the abstract concepts of individuality ("alone") and collectivity ("everyone, all") are placed in direct opposition and then inverted, forcing a reconciliation of their seemingly paradoxical relationship. The verb "walking" acts as a mediating element, transformed from a physical act into a metaphor for a shared journey or existence. Pragmatically, the self-referential, closed nature of the structure creates a sense of absolute, incontrovertible truth. The system achieves a temporary equilibrium where all components are perfectly aligned to serve a single, powerful communicative goal: to express a profound, cyclical truth about human coexistence. The entropy of the message is drastically reduced, resulting in extreme cognitive salience and memorability. This example shows that chiastic structure is not merely a rhetorical flourish but a fundamental cognitive tool for grappling with and expressing complex, paradoxical realities, emerging from the synergistic collaboration of all levels of the linguistic system.

Conclusion

This article has argued that a synergetic analysis provides a robust, explanatory framework for understanding the formation and function of the chiasmus figure. By moving beyond a taxonomic classification, we can see chiasmus not as a mere ornament, but as an emergent macro-structure—a self-organized pattern of high order that arises from the coordinated interaction of linguistic units

at all levels.

The inverted, cross-like structure of chiasmus acts as an order parameter that temporarily enslaves phonological, morphological, lexical, syntactic, and semantic elements, forcing them into a cooperative relationship that minimizes local entropy and maximizes cognitive salience. This explains its enduring power in rhetoric, literature, and everyday language: it represents a state of perfect, momentary equilibrium within the dynamic and complex system of language. Future research could quantitatively test this model by applying computational linguistic methods to large corpora to track the frequency and stability of chiastic structures compared to other patterns, further illuminating the ecological conditions that favor their emergence.

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