

A New Conceptualization of Self as an Energetic Node in Cultural Dynamics: Transitioning from Classical Theories to Complex Systems

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Abstract: This paper presents a novel conceptualization of the self as an "Energetic Node" within a cultural ecosystem, integrating recent developments in information theory, entropy laws, and self-organization principles. Drawing on the works of key thinkers such as Odum, Prigogine, and Swenson, the study explores how cultural systems evolve through the production, transmission, and selection of information. The Energetic Node Model redefines the self as an active participant in this dynamic process, capable of influencing and being influenced by the surrounding cultural context. This reconceptualization challenges classical theories of self, such as those proposed by Freud and Mead, by emphasizing identity's fluid, emergent nature in a complex and interconnected world. Through this lens, the paper offers a new perspective on the role of entropy and information processing in the continuous evolution of culture and individual identity.

Keywords: Energetic Node Model, Self-organization, Cultural Systems, Entropy and Information Processing, Self-conceptualization, social systems, economic systems.

1 Introduction

The self-concept has long been a central philosophical and social scientific inquiry theme. Descartes' introspective musings and George Herbert Mead's theorization of social interactions, among others, have contributed to the rich tapestry of self-theory. Traditional models have often approached the self as a relatively stable and coherent entity shaped by psychological processes and social interactions within a largely

deterministic framework [1,2]. However, as our understanding of complexity and non-linearity in systems has advanced, there is a growing recognition that these models may not fully capture the dynamic and emergent nature of the self in modern cultural contexts.

This paper seeks to reconceptualize the self as an energetic node within a cultural system in response to these limitations. This approach emphasizes the self's role in creating, processing, and disseminating cultural information. This reconceptualization draws on recent

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developments in systems theory, entropy, and information processing to propose a model more attuned to contemporary life's complexities.

The rationale for this paper emerges from the need to integrate insights from various fields—from sociology and psychology to systems theory and thermodynamics—to develop a more holistic understanding of the self. Traditional models have largely treated the self as either a psychological construct or a social product, with limited attention to self-organization processes and information dynamics underpinning its development and evolution. This paper argues that by viewing the self as an energetic node, we can better account for how individuals actively engage with and shape their cultural environments.

Starting with a critique of classical theories of self and their limitations in addressing the complexities of contemporary cultural systems, the paper progressively builds this argument. It then introduces the concept of self as an energetic node, drawing on key theoretical frameworks such as Social Entropy Theory [3] and the work of Nicholas [4] on entropy in economic systems. The integration of these ideas provides a foundation for understanding how the self operates within a cultural system characterized by non-linearity, complexity, and continuous information processing.

The first section critically revisits classical self-theories, highlighting their contributions while pointing out their limitations in dealing with the dynamic nature of the self in modern societies. Building on this critique, the paper then explores positivist movements in social sciences and their relevance in reviving spontaneous ordering. Then, the paper delves into the relevance of entropy and information processing in understanding the self. The paper, drawing from [3] Social Entropy Theory and [4] entropy law as applied to economics, argues that the self, much like any other complex system, is subject to the laws of thermodynamics and information theory. This section highlights how disorder, often perceived as a negative force, is integral to the self-organization and evolution of cultural systems. We show that the process of entropy, far from being merely destructive, is a driving force behind the creation of new order and complexity.

The next section delves into the role of cultural information in self-organizing the self. The paper explores the creation, storage, and dissemination of cultural information within a cultural system, drawing on [5] research on information cycles and [6] autocatalytic systems. This discussion is crucial for understanding how the self, as an energetic node, interacts with and influences the cultural environment. We borrow the concept of bifurcation points from [7] work on dissipative structures to explain how new information or external influences can cause cultural systems to evolve unpredictably. Having laid the theoretical groundwork, the paper presents the energetic node model of the self. This model conceptualizes the self as an active participant

in the cultural system, continuously generating and processing information in competition or cooperation with other energetic nodes. This approach captures the fluid and dynamic nature of the self and provides a framework for understanding how cultural systems evolve and adapt over time. The paper argues that the energetic node model offers a more comprehensive and dynamic understanding of the self, better suited to modern life's complexities. The model also opens up new avenues for interdisciplinary research, bridging the gap between social sciences, systems theory, and thermodynamics.

1.1 Classical Theories and the Concept of Self as Spontaneous Ordering

Freud's psychoanalytic theory conceptualizes the self as consisting of the id, ego, and superego, which interact dynamically within the individual [2]. While Freud's model focuses on internal psychic structures and conflicts, the present work's proposed idea diverges by emphasizing the dynamic interaction between self-images and the cultural system. In Freud's model, the self is largely an internal construct struggling with its components. However, our proposed concept sees the self as dynamically constructed through cultural interactions, with spontaneous ordering playing a crucial role in forming these self-images. Carl Rogers' humanistic theory describes the self as an organized, consistent set of perceptions and beliefs about oneself, influenced by experiences and interpersonal relationships [8]. Rogers' emphasis on self-perceptions closely resembles the concept of self-images presented in this work. However, our concept extends this by incorporating the cultural system as a significant contributor to these self-images. This highlights a more relational and environmental influence, where the cultural context and spontaneous order drive the formation and evolution of the self. Erik Erikson's theory of psychosocial development views the self as evolving through eight stages, each characterized by a psychosocial crisis that needs resolution [9]. While Erikson emphasizes the developmental stages of the self concerning social challenges, the point of divergence in our concept of the self is that it introduces a more fluid process. Spontaneous order within the cultural system continuously shapes and reshapes the self, not bound by linear stages. This relational aspect of the self can describe the progressive ordering seen in the development of self-images. George Herbert Mead's social self-theory suggests that the self arises from social interactions and reflects the generalized other within a given culture [1, 10]. Mead's theory strongly supports my argument, as it also views the self as emerging from social interactions. We expand our proposed self-concept by incorporating the concept of spontaneous order into the cultural system, which offers a method for organizing and integrating these self-images within the self.

1.1.1 Spontaneous Ordering Theories

Ilya Prigogine's theory of dissipative structures explains how systems far from equilibrium can spontaneously form ordered structures [11,12]. This idea of spontaneous order underpins our concept of self, where discontinuities in the cultural system led to the creation of self-images. These self-images are not static but dynamically ordered through continuous cultural interactions and contributions. Expanding on [7,13] describe how complex systems can self-organize and create order spontaneously. Their contribution asserts that the cultural system, with its inherent complexities and interactions, facilitates the continuous reordering and refinement of the self. Hermann Haken's synergetics studies the formation and self-organization of patterns and structures in open systems [14]. This work unambiguously suggests that the cultural system and the self are open systems where spontaneous order leads to the emergence of self-images. Cultural contributions continuously shape these images, reflecting the dynamic and relational nature of the self. The cultural context parses our notion of self into many images, each contributed by others using the cultural meaning system. This is a process consisting of two major systems: culture and self. Others contribute self-images to the cultural system, establishing a relational sense that only identifies the self concerning its cultural environment. This relational aspect can describe the progressive ordering seen in the development of the self, highlighting how spontaneous order within the cultural system drives the formation and evolution of the self.

2 LITERATURE REVIEW

2.1 *Positivism and the Revival of Spontaneous Ordering in Social Science*

For many well-versed social thinkers, culture is a living entity. Herbert Spencer, who posited that culture is how human beings participate in the inherently moral process of evolution, finely articulates the organic nature of cultural systems. Natural laws regulate the development of human society, just like they do for all other natural entities. Despite criticisms from social scientists favoring social constructionism and interpretivism, the positivist approach to social science, particularly in studying cultural systems, is experiencing a resurgence. This revival echoes Auguste Comte's vision of scientific endeavour, which aimed to uncover observable laws and order governing phenomena rather than metaphysical explanations. In this context, Émile Durkheim's reception of Comtian positivism is particularly noteworthy. While Comte's positivism [15] suggested a deterministic approach, Durkheim emphasized that the search for laws in social phenomena cannot be strictly deterministic, especially given the dynamic nature of social entities.

Durkheim's assertion that laws governing social phenomena are limitless and complex indicates an early recognition of non-linearity in the social sphere. This perspective positions Durkheim as a pioneer in acknowledging a form of positivism that accommodates non-linearity. Neo-Durkheimian thinkers have expanded on Durkheim's ideas, further enriching the understanding of cultural systems as dynamic and non-linear. Mary Douglas, for instance, in her work on cultural theory, highlighted how social order emerges from the interactions of individuals within a cultural framework [16]. Her ideas align with spontaneous ordering, supporting that complex, non-linear interactions continuously shape culture and the self.

2.1.1 The Role of Spontaneous Ordering

The concept of spontaneous ordering, as discussed by Ilya Prigogine, suggests that systems far from equilibrium can spontaneously form ordered structures [11]. Applying this to cultural systems, we can argue that culture, as a living entity, self-organizes through spontaneous order. This self-organization is non-linear and driven by continuous interactions among its components, including individuals' self-images. Thus, the self is a product of the cultural system and the natural phenomenon of spontaneous ordering. Meyerson's work has bolstered critiques against positivist philosophy, emphasizing the complexity and non-linearity of social phenomena. However, these critiques do not undermine the true purpose of scientific inquiry, which is to find order and laws in observable relations. Durkheim's approach aligns with this goal by recognizing that laws in the social sciences are not deterministic but rather complex and dynamic, thereby incorporating non-linearity into positivist thought. The natural sciences are now challenging deterministic models, transforming time into a variable that plays a constructive role [11,17]. According to [7], this shift is the most essential event enabling the convergence of the epistemologies of the social and natural worlds. It is not paradoxical that the instability of social phenomena, which favored the rise of interpretivism and constructivism in the social sciences at the expense of positivism, has become a significant theme for the revival of positivism. Instability is no longer a tenable excuse to avoid the true scientific pursuit of phenomena in the social world.

Prigogine's work on dissipative structures underscores the idea that instability can be a catalyst for new forms of order [11,18]. This notion aligns with Émile Durkheim's view that social facts while exhibiting stability, are also subject to change and evolution. Durkheim recognized that the structure of society is not static but dynamic, constantly adapting to new conditions. Instability in a social phenomenon can become the initial platform for new and progressive changes, providing opportunities for the emergence of new social orders. At this juncture, it

would be quite relevant to note that Jeffrey Alexander, a prominent Neo-Durkheimian, examines how cultural systems while appearing stable, are constantly in flux due to underlying tensions and contradictions [19,20,21,22]. This perspective enriches the argument that instability is not a hindrance but a vital component of cultural and social dynamics, facilitating the spontaneous ordering of self and society. Durkheim's works, particularly "The Division of Labor in Society" and "The Elementary Forms of Religious Life," emphasize the role of collective consciousness and social norms in maintaining order while also allowing for change. Durkheim argued that in highly networked modern complex societies, the collective often overpowers individual choices, maintaining social order through a balance between collective and individual elements [23,24]. Processes that resemble instances of spontaneous order constantly re-negotiate this balance, fostering the emergence of new social structures through instability and disorder. With the emergence of complex modern society, the need to use natural laws to understand social phenomena became all the more relevant. Talcott Parsons' equilibrium systems model was quite influential in the sociological understanding of complex modern society, with its basic model depending on abstract social elements and even psychology. Parsons' model emphasized that social systems strive for equilibrium, maintaining stability through a balance of institutional functions [25]. However, this approach faced criticism for its perceived rigidity and lack of consideration for disorder and change. Parsons' equilibrium model provided a framework for understanding the stability and order of complex modern societies. Parsons posits that interrelated parts of social systems collaborate to sustain balance. However, critics point out that this model fails to address social systems' inherent instability and dynamic changes adequately.

The Bailey's Social Entropy Theory addresses this shortcoming by illustrating disorder as a characteristic of social systems that follow its course. SET posits that social systems are subject to entropy, a measure of disorder or randomness. Bailey's theory highlights the importance of considering the time dimension in social systems, emphasizing that a model must ascertain the laws and order existing in the relationship between societal variables across different points of time [3,26,27]. However, critics argue that SET oversimplifies the complexity of social interactions by reducing the social system to a sum of concrete social categories like population and spatiality.

2.2 Entropy Laws and Economic Thought

Recent literature in economics has furthered the understanding of the constructive role of spontaneous ordering by applying entropy concepts to economic systems. The field of econophysics, which uses concepts from physics to analyze economic phenomena, has

provided insights into how economic systems self-organize and evolve. Econophysics researchers have applied entropy laws to model the distribution of wealth and income, showing how economic systems naturally evolve towards states of maximum entropy or disorder [28,29,30]. These models illustrate how economic systems, much like social systems, are subject to dynamic processes that drive them toward equilibrium while also allowing for spontaneous ordering and innovation.

Economists have further highlighted the constructive role of disorder in economic systems by examining how market fluctuations and instabilities can spur innovation and economic growth. According to Joseph Schumpeter's theory of creative destruction, economic progress happens through cycles of innovation and destruction, where new industries and technologies replace old ones [31]. This process of creative destruction exemplifies how instability and disorder can be drivers of positive change and development in economic systems.

The works of Nicholas Georgescu-Roegen and Herman Daly have given rise to several critical insights into applying entropy law in the economic sphere. Both argue that the depletion of resources suitable for economic activity is rising as per the entropy law [4,20,32,33]. In a Malthusian style, Herman Daly uses the entropy law to suggest birth quotas as a policy measure to minimize resource depletion. According to them, low-entropy materials go into production, and the wastes produced are high-entropy ones, which are unsuitable for further economic activities. Clearly, they equate the natural law of entropy with disorder, dismissing its potential to create a new order. Interestingly, Elias Khalil, an efficient critic of the applicability of entropy theory in the economic sphere, points out the missing piece in Georgescu-Roegen and Daly's formulation of entropy theory. Their formulation completely ignores the agency structure of economic activity, particularly technological intervention [34,35,36]. Non-linearity enters the otherwise deterministic model when the agency structure is incorporated into the economic system. Eventually, the system's economic activities will continue to create products using low-entropy materials, leaving waste with higher entropy. This inclusion of agency introduces spontaneity and potential for a new order, even within systems governed by entropy laws.

In order to move our discussion to the self-organization of cultures, we must first acquaint ourselves with the idea of culture as a system of information. From a general systems perspective, information production, transmission, and consumption began right when the first pulse of life appeared on this planet. Although cultural information differs from genetic information, they share a similarity: both cannot function without expending energy for a selection process. Transmitting better genetic information requires selection, which is more a matter of chance than necessity. Nevertheless, this selection process expends the existing energy resources. Choosing better genetic information

points to a direction in the evolution of a particular species, and the presence of better genetic information can autocatalyze its own propagation using the existing system. This is self-organization in the biosphere [7].

3 METHODS

3.1 Culture as an Information Processing System

Recent works have significantly explored the concept of culture as an information processing system. Cultural evolutionists contend that learning and social interactions transmit cultural information, necessitating energy and resources for effective transmission and selection [37,38]. Similar to genetic selection, future generations are more likely to inherit cultural traits that enhance survival and reproduction. Cultural systems, like biological systems, exhibit self-organization. Cultural practices, norms, and institutions evolve over time through complex interactions and feedback loops. The transmission and selection of cultural information drive this evolution. The theory of self-organization in cultural systems posits that cultural order emerges spontaneously from the interactions of individuals within a society, guided by underlying informational processes [39,40]. H.T. Odum's research on information cycles has provided valuable insights into how information systems operate and evolve, including those within cultural contexts. Odum's work underscores the crucial role of information in ecosystems, particularly human cultural systems, where it undergoes extraction, storage, and modification over time [5,41]. This perspective emphasizes that cultural systems function as operational ecosystems, where information processing and storage are critical for maintaining and evolving cultural practices. In cultural systems, various facilities, such as the brain or memory storage devices, extract and store information from the user system. Copying and maintaining information is crucial for its preservation and transmission across generations. However, copies of information can wear and tear, leading to modifications and innovations. With their high capacity for self-organization, human beings continuously generate new possibilities—such as new thoughts, rituals, and practices—that modify the system and drive further evolution [42]. Recent research supports and extends Odum's ideas by examining how information cycles influence cultural evolution. For instance, researchers have explored the concept of information entropy in cultural systems, specifically about the loss and transformation of cultural information. Studies have shown that information in cultural systems can be degraded and lost, but this also creates opportunities for new forms of organization and innovation [43,44,45].

The production and circulation of information within cultural systems exhibit hierarchical structures and

variable scales. Recent studies have scrutinized the production and circulation of various forms of information, highlighting that the content and context often determine the information's scale and impact. Odum's assertion that complex interactions and the dynamic nature of information processing influence cultural systems' evolution aligns with this [46,47]. Recent studies on complex systems and emergent phenomena have further explored the unpredictable nature of cultural evolution, as noted by Odum. Researchers have highlighted that cultural systems, like ecological systems, exhibit complex behaviors that are not always predictable but can lead to new organizational forms and practices [48,49,50]. This underscores the importance of understanding the role of information and its processing in shaping the trajectory of cultural systems.

3.2 Swenson's Autocatakinetic Systems and Cultural Evolution

Swenson's concept of autocatakinetic systems provides a framework for understanding how informational cycles, as Odum discussed, can influence cultural systems' development and sustainability. According to Swenson, autocatakinetic systems are characterized by processes in which a system's output enhances its own production and organization, resulting in the emergence of more complex and ordered states [51]. This idea is particularly relevant when applied to cultural systems, which, like natural systems, can evolve through efficient modes of selection and self-organization. Like natural living systems, we can view cultural systems as time-asymmetric systems. They operate with mechanisms that allow for the production of increasingly ordered states over time. This perspective aligns with recent research on the dynamics of cultural evolution, which highlights how cultural systems are not static but evolve through complex selection and adaptation processes [52]. The concept of dissipative structures, as Ilya Prigogine describes, refers to systems that maintain their organization by exchanging energy and matter with their environment, leading to new forms and structures [11]. We can also apply this idea to cultural systems. For example, introducing a new religious ideology into an indigenous cultural system can create a bifurcation point, leading to significant changes and the potential for new forms of cultural organization. This process reflects the emergence of dissipative structures within cultural systems, where new information can catalyze transformations and lead to higher-order organization [53].

The uncertainty and non-deterministic nature of cultural evolution are crucial aspects to consider. Chaos and transformation are not deterministic when a new religious ideology enters a cultural system. Multiple factors, including the hierarchical organization of cultural information and the interactions between different system

elements, influence the cultural system's evolution in response to new information [54,55]. The specific trajectory of how cultural information from the new ideology will integrate into the existing hierarchy remains uncertain until a new order emerges.

Recent studies on cultural evolution have examined how information permeates different hierarchies within cultural systems. Cultural information's hierarchical organization can influence adopting and integrating new ideas and practices. Introducing new cultural information into various hierarchies can lead to unexpected outcomes and shifts in cultural dynamics [56,57]. This underscores the complexity and unpredictability of cultural evolution, where integrating new information into existing structures is subject to dynamic interactions and feedback loops. Prigogine's ideas about spontaneous ordering are mostly about how systems can change from less organized to more organized states by using dissipative structures [11]. However, as [58] points out, Prigogine's framework does not fully address why a system follows one particular path of self-organization over others. This gap underscores the need for additional investigation into selecting specific paths during self-organization.

Observations also reveal a transition from lower to higher entropy products in cultural systems. When a cultural system encounters another culture, the influx of new cultural information can initially create disorder. However, this disorder can lead to a new order's emergence as certain cultural categories prove more adaptive or valuable [53]. This aligns with Swenson's Law of Maximum Entropy Production, which posits that systems tend to follow paths that maximize entropy production at the fastest rate given the constraints [58]. Swenson's contribution provides insight into the selection mechanisms that determine how cultural systems self-organize. According to the Law of Maximum Entropy Production, the chosen path of self-organization is the one that maximizes entropy production under given constraints [58]. We can apply this principle to cultural systems, where certain categories of cultural information, like ideologies, act as pathways for self-organization because of their high affirmative qualities and adaptability.

Recent research supports the idea that ideologies, with their high affirmative qualities, play a significant role in cultural self-organization. Ideologies often introduce transformative values and principles that can catalyze significant changes within a cultural system. This process reflects how cultural systems navigate disorder and self-organize based on the perceived value and impact of new information [52]. Therefore, ideological information can be a critical factor in triggering self-organization within cultural systems. Swenson's concept of autocatakinetic closure, which defines the boundaries of a system from its environment, is relevant in understanding how cultural systems maintain their distinctiveness while integrating new information. Recent literature on cultural boundaries emphasizes that self-organization in cultural

systems involves negotiating between maintaining coherence and adapting to external influences [56]. The ability of cultural information categories to integrate effectively within the existing system while enhancing entropy production drives this self-organization.

3.3 Reconceptualizing the Self as an Energetic Node

The reconceptualization of the self as an energetic node emphasizes its dynamic and influential role within a shared cultural context. This view posits that individuals, or self-concepts, function as active agents capable of shaping themselves and their surroundings by generating impactful new information. These energetic nodes interact within a network of other nodes, competing or cooperating to influence cultural evolution and adaptation. This framework views each individual as a source of energy and information, capable of significantly influencing its environment. These nodes can catalyze changes in the cultural system by generating new, impactful information. This perspective aligns with the idea that cultural evolution involves the continuous creation and exchange of information, where individuals or self-concepts contribute to the overall dynamic of the system [40]. Within cultural systems, a selection mechanism favors certain types of information or behaviors over others based on their effectiveness or adaptability. Reconceptualizing the self as an energetic node, the selection mechanism plays a crucial role in propagating new information or behaviors within the culture. Nodes that generate information with more affirmative qualities or greater impact are more likely to influence the system and contribute to its evolution [58].

Swenson's concept of autocatakinetic closure provides a framework for understanding how energetic nodes maintain their distinctiveness while contributing to the larger system. In this context, autocatakinetic closure refers to the self-organizing processes that allow nodes to define and sustain their boundaries while integrating new information from their environment. This mechanism ensures that cultural systems remain coherent even as they adapt and evolve through interactions among energetic nodes [51]. The new conceptualization of the self as an energetic node introduces a dynamic and impactful view of individuals within a cultural system. This perspective emphasizes that self-concepts are active agents capable of generating and influencing new information, which can lead to significant changes within the cultural system. Energetic nodes interact with other nodes, competing or cooperating to shape the evolution of cultural norms and practices. This view integrates concepts from complex systems theory, such as self-organization and entropy production, to explain how cultural systems adapt and evolve.

3.3.1 Comparison with Classical Theories of Self

The Energetic Node Model (hereafter ENM) conceptualization shifts the focus from internal psychological conflicts to external interactions and information processing, unlike Freudian psychoanalytic theory, which posits the self as a complex interplay of unconscious drives, internal conflicts, and defense mechanisms. The energetic node perspective emphasizes active engagement with the cultural environment as well as the generation of new information. One might perceive this perspective as a shift from introspective analysis to a more dynamic and external interaction-based self-understanding. The ENM very well aligns with Mead’s emphasis on social interactions, but extends it by incorporating the concept of information as a driving force. While symbolic interactionism focuses on role-taking and the formation of the self through social processes, the ENM view emphasizes the importance of active information creation and its impact on cultural evolution. This extension provides a more dynamic comprehension of how the cultural context shapes individual contributions. On Erikson’s stage-based approach, the new conceptualization of the self differs in that the former focuses on ongoing information creation and interaction rather than fixed developmental stages. The energetic node view complements Goffman’s focus on performance by adding a layer of information processing and energetic impact [59]. While Goffman emphasizes the performance and role-playing aspects of self, the energetic node model incorporates how individuals actively generate and contribute information, influencing cultural evolution. This integration provides a broader understanding of how individuals not only perform roles, but also shape cultural contexts through their contributions in the form of information. The model is well-suited for analyzing contemporary cultural phenomena, where rapid information exchange and cultural shifts are prevalent. However, we acknowledge that there is a risk of reductionism when we focus primarily on information and energetic interactions, potentially overlooking other psychological and emotional dimensions of ourselves.

3.3.2 Energetic Node Model Explained:

Let (S) The self can be represented as an energetic node. The node interacts within a cultural system (C), representing a network of interconnected nodes, each contributing to and receiving from the system.

Variables:

- (I_i) : Information generated by node i in the system.
- (E_i) : Energy associated with node i.
- (C_{ij}) : Connectivity between nodes i and j in the cultural system.

Functions:

$Info_i(t)$: The information generated by node i at time t.

$Energy_i(t)$: The energy of node i at time t.

$Order_i(t)$: The order or impact of the information generated by node i at time t.

Information Generation and Processing:

The information generated by each node (i) can be modeled as a function of its energy and interaction with other nodes:

$$Info_i(t) = \alpha \cdot Energy_i(t) \cdot \sum_j C_{ij} \cdot Info_j(t) \quad (1)$$

where: α is a scaling factor representing the efficiency of information generation.

$C_{ij} \cdot Info_j(t)$ represents the weighted sum of information received from connected nodes.

3.3.3 Entropy and Information Processing:

Entropy ($H(t)$) measures the level of disorder in the system and can be calculated for the entire network as follows:

$$H(t) = - \sum_i Info_i(t) \cdot \log(Info_i(t)) \quad (2)$$

where: ($Info_i(t)$) is the normalized information contribution of node i at time (t). Change in Entropy over Time: The change in entropy over time ($\Delta H(t)$) reflects the evolution of the system: $\Delta H(t) = H(t) - H(t - 1)$

3.3.4 Autocatakinetic Closure:

Autocatakinetic closure describes how nodes maintain their boundaries and adapt based on the information they generate. We define $Closure_i(t)$ as follows:

$$Closure_i(t) = Order_i(t) \cdot Energy_i(t) \quad (3)$$

where:

$Order_i(t)$ represents the impact or effectiveness of the information generated by node i

$Energy_i(t)$ represents the node’s energy, influencing its capacity to generate impactful information.

3.3.5 System Evolution:

The system evolves toward a state that maximizes entropy production, reflecting self-organization and adaptation: "Maximize" ($\Delta H(t)/\Delta t$)

3.3.6 Integrative Model:

We combine the elements to describe the overall behavior of the energetic node within the cultural system:

$Dynamic_i(t) = \beta \cdot Info_i(t) + \gamma \cdot Closure_i(t)$ where: β and γ are weighting factors reflecting the importance of information and closure in the dynamic behavior of the node.

4 RESULT

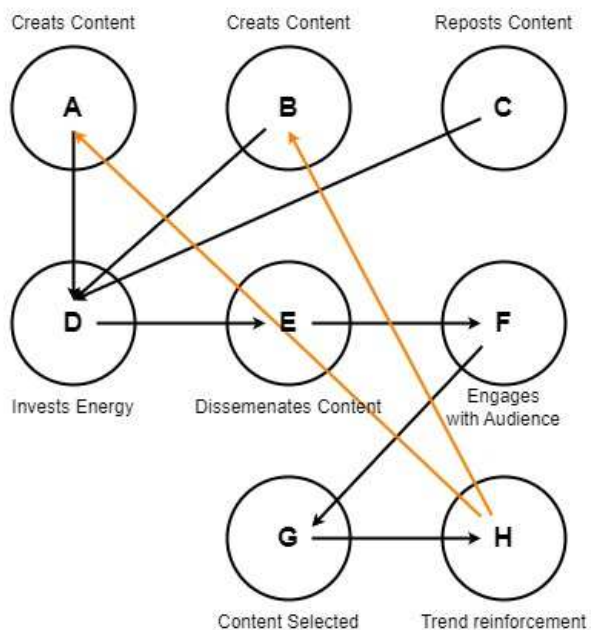


Figure 1: Energetic Node Model flowchart.

4.0.1 Flow of the Model-Content Creation:

1.Content Creation:

- Influencer A creates a viral video about a new fashion trend.
- Influencer B posts a tutorial video on a popular DIY project.

2.Energy Investment:

- Influencers A and B invest significant time and creativity in their content.

3.Dissemination and Interaction:

- Followers of Influencers A and B engage with the content by liking, sharing, and commenting.
- Influencer C, a collaborator, reposts Influencer A's video, increasing its reach.

4.Selection and Impact:

- The viral video from Influencer A is selected by the digital culture as highly impactful.
- Influencer B's video gains moderate traction, influencing a niche audience.

5.Autocatakinetic Closure:

- The fashion trend from Influencer A's video starts to be adopted widely.

- Other influencers create similar content, reinforcing and evolving the trend.

6.Cultural Evolution:

- The digital culture evolves as new trends emerge and old ones fade based on the continuous creation and selection of content.

5 CONCLUSION

The reconceptualization of the self as an energetic node operating within a cultural system offers a dynamic and integrative framework for understanding the self in contemporary sociocultural contexts. This model posits that the self is not a static entity but an active participant in the continuous creation, processing, and dissemination of cultural information. This conceptualization aligns with spontaneous ordering and self-organization principles observed in natural and social systems. Classical theories of the self, from the symbolic interactionism of [1] to the psychoanalytic perspectives of [2], have laid the groundwork for understanding the self concerning social and psychological dimensions. However, these theories often emphasize a more linear and deterministic approach to self-development. The Energetic Node Model builds on these foundations by adding nonlinearity and complexity, which can be seen in [7] on dissipative structures and Swenson's [6] autocatakinetic systems. Bailey's [3] Social Entropy Theory and [4] economics work demonstrate the critical role of entropy in understanding social systems. These perspectives emphasize that disorder and energy dissipation are not merely destructive forces but integral to the evolution and self-organization of complex systems. By viewing the self as an energetic node, this paper underscores the importance of entropy in cultural information processing. The selection process, which drives the propagation of certain cultural information over others, parallels the entropy dynamics observed in physical and biological systems. Odum's [5] insights into information cycles and Swenson's [58] Law of Maximum Entropy Production provide further theoretical support for this model. Odum's framework highlights the importance of energy expenditure in creating, storing, and disseminating information, while Swenson's work explains how systems evolve towards states that maximize entropy production. In a cultural context, this means that the self, as an energetic node, constantly engages in processes that produce and propagate cultural information to optimize energy use and information flow. The energetic node model emphasizes the fluid and dynamic nature of cultural systems. Introducing new cultural information, like religious ideologies or technological innovations, can trigger significant changes within the cultural system. This aligns with the concept of bifurcation points and the emergence of new order from chaos, as discussed by [7]. Within this model, the self plays a crucial role in these transformative processes,

constantly influencing and absorbing the cultural environment. This reconceptualization opens new avenues for research and practical applications. Future studies could explore the mechanisms by which energetic nodes (selves) interact and influence each other within various cultural contexts. Additionally, this model could inform interventions to foster cultural resilience and adaptability in the face of rapid social and technological changes. The energetic node model offers a robust and comprehensive framework for understanding the self in contemporary culture. By integrating insights from classical theories, entropy and information processing, and the dynamics of self-organization, this model provides a nuanced perspective on the complex interplay between individuals and their cultural environments. This theoretical advancement enriches our understanding of the self and provides valuable tools for navigating the ever-evolving landscape of modern society.

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