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# Archetypes as Codes

## *Jungian Psychology, Biological Organization, and the Fractal Logic of Synchronicity*

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**Abstract**

This paper reframes Jungian archetypes through contemporary Code Biology, arguing that archetypes are not metaphysical entities or symbolic contents but codified organizational patterns spanning biological, neural, and symbolic systems. Drawing on Jung's work on number, order, and synchronicity, and the Jung-Pauli psychophysical hypothesis, archetypes are treated as naturalistic constraints that shape meaning without acting as causal agents. Code Biology shows that living systems depend on genuine codes that operate as rule-governed correspondences mediating between signals and functional outcomes. Integrating this with the archetype-as-code and code-mediator-artifact framework, the paper proposes that archetypes operate as higher-order organizational codes. Fractals and recursion are used as formal models of patterned emergence, illustrating scale-invariant organization arising from iterative constraints. This approach clarifies the epistemological status of archetypes, situating analytical psychology within contemporary theories of biological organization while avoiding dualism and speculative ontology.

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archetypes as codes – Code Biology – Jungian archetypes – organizational constraints – symbolic mediation – synchronicity – fractal organization

## 1 Introduction

Since the early development of analytical psychology, Carl Jung's concept of archetypes has occupied an ambiguous position between psychology, biology, and metaphysics. Jung described archetypes as formal conditions of experience rather than inherited ideas or symbolic contents, emphasizing their role as ordering principles that structure perception, imagination, and meaning (Jung, 1969). Yet subsequent interpretations have often treated archetypes either as metaphysical entities operating beyond nature or as purely symbolic constructs detached from biological organization. This tension has contributed to longstanding debates about the scientific status of Jungian theory and the ontological meaning of synchronicity.

The present paper offers a conceptual and theoretical rearticulation of Jungian archetypes grounded in contemporary developments in Code Biology. Rather than proposing a causal "interaction" between psyche and matter, the paper adopts a naturalistic, continuity-based framework in which psychological phenomena are understood as emergent forms of organized, embodied matter. From this perspective, psyche does not stand apart from nature but represents a specific mode of biological and symbolic organization. Archetypes, accordingly, are reconceptualized not as metaphysical agents or explanatory forces, but as codified organizational patterns that constrain and shape meaning-making across biological, neural, and symbolic systems.

This approach aligns closely with Jung's later writings on number, order, and synchronicity, as well as with the Jung-Pauli hypothesis of a psychophysical ordering principle underlying both psychic and physical phenomena (Jung & Pauli, 1952; von Franz, 1974). Jung consistently resisted reductive explanations of the psyche while simultaneously rejecting naïve dualism. His notion of synchronicity was explicitly framed as an acausal ordering principle rather than as evidence of mind-matter interaction in a mechanistic sense (Jung, 1960). The challenge, then, is not to locate a causal connection between psyche and matter, but to articulate a theoretical framework in which both can be understood as expressions of a single, organized reality.

Recent work in Code Biology provides conceptual tools for addressing this challenge. Code Biology argues that living systems are not defined solely by

physicochemical processes, but by genuine codes—rule-governed correspondences that establish stable relations between signals and functional outcomes (Barbieri, 2024; Prinz, 2023). Genetic, epigenetic, neural, and symbolic systems all depend on coding relations that cannot be reduced to physical interactions alone. Within this framework, order does not emerge metaphorically from chaos, but through historically stabilized coding constraints that generate novel forms of organization.

Building on this insight, Major (2021, 2025) has proposed that archetypes can be understood as higher-order codes: evolutionarily conserved organizational patterns that mediate between biological processes, neural dynamics, and symbolic artifacts. This archetype-as-code perspective preserves Jung's emphasis on form, pattern, and recurrence while situating archetypes firmly within a naturalistic ontology. Archetypes are thus neither metaphysical entities nor mere metaphors, but functional constraints that structure how meaning is generated, perceived, and symbolized.

Within this conceptual framework, mathematical and physical models such as fractals, recursion, and non-linear dynamics are treated strictly as structural analogies rather than as literal explanations of psychic causation. Fractal geometry, for example, provides a useful model for understanding scale-invariant organization and recursive patterning, features that Jung associated with archetypal structure and symbolic repetition (von Franz, 1974; Marks-Tarlow, 2013). However, the present paper does not claim that fractals or quantum processes cause archetypal phenomena. Instead, they serve as formal analogues that illuminate how ordered patterns can arise from iterative constraints without invoking metaphysical agency.

The central thesis of this paper is therefore as follows: Jungian archetypes can be coherently reconceptualized as codified organizational patterns within a biologically grounded, naturalistic framework, thereby clarifying the epistemological status of archetypes and synchronicity while strengthening the theoretical foundations of analytical psychology. By integrating Jung's insights on order and meaning with contemporary Code Biology, the paper aims to move beyond metaphorical synthesis toward a rigorous conceptual model that preserves the symbolic richness of Jungian theory without abandoning scientific plausibility.

## 2 Jungian Foundations: Archetypes, Number, and Synchronicity

Carl Jung's conception of archetypes was never intended as a theory of inherited images or metaphysical entities, despite frequent misinterpretations in

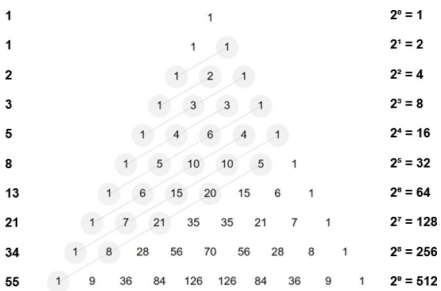


FIGURE 1 Pascal's triangle as a recursively generated numerical structure illustrating combinatorial order and probabilistic constraint. Fibonacci numbers emerge along the diagonals of the triangle, while each horizontal row sums to a power of two—both well-known mathematical properties of its recursive construction. The figure is included as a formal model of pattern generation and numerical order, consistent with Jung's emphasis on number as a principle of organization rather than as a symbolic or causal explanation. ■ please provide high-res image (if possible), we hope to increase the image size

both popular and academic literature. Jung consistently emphasized that archetypes are *formal* rather than *substantive*: they are structural conditions that shape the organization of psychic life without prescribing specific contents (Jung, 1969). Archetypes manifest indirectly through symbols, myths, and fantasies, but their defining feature is their role as ordering principles that regulate perception, affect, and meaning across individuals and cultures.

This formal understanding of archetypes becomes especially clear in Jung's engagement with mathematics and number. For Jung, number represented the most abstract and universal form of psychic order, one that bridges subjective experience and objective regularity without reducing one to the other. He described number as an archetype *par excellence*, precisely because it expresses pattern and relational structure rather than material substance (Jung, 1976). Number, in this sense, exemplifies how order can be instantiated across psychological, natural, and symbolic domains without invoking causal interaction between distinct ontological realms. A simple mathematical illustration of this form of non-causal ordering is provided by Pascal's triangle, which displays how recursive numerical constraints generate stable patterns without presupposing symbolic meaning or causal agency (Figure 1).

Marie-Louise von Franz further developed this line of thought, arguing that numerical patterns express a preconscious ordering activity shared by psyche and nature (von Franz, 1974). Importantly, neither Jung nor von Franz treated number as a metaphysical bridge between mind and matter. Instead, number functioned as evidence that both psychic and physical phenomena participate in a common logic of organization. This emphasis on form over substance anticipates contemporary models that locate meaning and structure in relational constraints rather than in isolated entities.

Jung's concept of synchronicity must be understood within this framework of ordering principles. Synchronicity was explicitly defined as an *acausal* connecting principle, referring to the meaningful coincidence of events that cannot be explained through linear causation (Jung, 1960). Crucially, Jung did not propose that psychic states *cause* physical events or vice versa. Rather, synchronicity points to a mode of ordering in which meaning emerges from the alignment of independent processes under shared formal conditions.

This understanding of synchronicity is consistent with contemporary phenomenological and clinical accounts, which emphasize that synchronicities are typically experienced as meaningful coincidences rather than as causal anomalies. Such events are reported to reorganize personal narratives and interpretive frameworks without requiring assumptions about hidden mechanisms or psychophysical interaction (Beitman, 2022). Systematic reviews of synchronicity research further stress the importance of maintaining conceptual restraint by distinguishing experiential meaning from reductive causal explanation, while leaving open the role of formal and organizational models in clarifying patterned emergence (Sacco, 2020).

This interpretation is reinforced by Jung's collaboration with Wolfgang Pauli, whose work in quantum physics sensitized Jung to the limits of classical causality. In their correspondence, both thinkers converged on the idea of a neutral or psychophysical level of reality in which the distinction between mental and physical becomes secondary to underlying patterns of order (Jung & Pauli, 1952). Pauli, in particular, emphasized that modern physics had already abandoned naïve objectivism, replacing it with probabilistic and relational models that resonate with Jung's psychological insights.

Jung's collaboration with Wolfgang Pauli is especially relevant in this context, not only because it foregrounded the limits of classical causality, but because it articulated a problem that remains unresolved in Jungian theory: how to describe correspondences between psyche and matter without reducing one to the other or invoking metaphysical agency. In their correspondence, Jung and Pauli repeatedly returned to the idea of an underlying ordering principle or "neutral language" capable of articulating psychophysical correlations without collapsing symbolic meaning into physical mechanism (Jung & Pauli, 1952).

Importantly, their search for such a neutral language was ultimately inconclusive. While both thinkers recognized that symbolic and physical domains exhibit homologous patterns of order, they lacked a conceptual framework for distinguishing between organizational principles, their modes of implementation, and their observable expressions. As a result, the notion of a psychophysical unity remained suggestive but under-specified, oscillating between formal analogy and ontological claims.

From a contemporary perspective, this difficulty can be understood not as a failure of insight, but as a limitation of available theoretical tools. The absence of a mediating framework made it difficult to articulate how ordering principles could operate across domains without implying direct causal interaction or shared substance. The code-mediator-artifact model addresses this gap by explicitly differentiating between the level of organizational constraint (code), the processes that enact those constraints (mediators), and the domain-specific expressions that result (artifacts). In doing so, it offers a way of formalizing the kind of correspondence Jung and Pauli intuited, while avoiding the need for a single neutral language or metaphysical ground. Meanwhile, the recent discovery/invention of fractal geometry illuminates aspects of archetypes previously difficult to understand more formally, such as how the same archetype can appear so differently in different contexts, cultures, and levels of social organization.

It is essential to clarify that neither Jung nor Pauli endorsed a reduction of psychological phenomena to quantum processes. The psychophysical unity they envisioned was not a claim about shared mechanisms but about shared *formal principles*. Synchronicity, from this perspective, does not require hidden forces or metaphysical agencies. It reflects the fact that meaning can arise when independent systems instantiate homologous patterns of organization under specific conditions (Atmanspacher, 2018).

Jung's frequent recourse to symbolic motifs, such as mandalas, quaternities, and cyclic images, further illustrates this emphasis on formal structure. These symbols do not function as explanations, but as representations of self-organizing tendencies within the psyche (Jung, 1968). They recur across cultures not because they are transmitted as contents, but because they express stable constraints on how experience is structured and integrated. Archetypes, in this sense, operate as pattern-generating principles rather than as informational units.

This interpretation also clarifies Jung's ambivalent stance toward biology. While Jung rejected reductive biological explanations of the psyche, he nevertheless insisted that archetypes are rooted in the living organism and shaped by evolutionary history (Jung, 1969). What he lacked, however, was a theoretical vocabulary capable of articulating how biological organization could give rise to symbolic form without collapsing meaning into mechanism. As a result, archetypes often appeared suspended between nature and culture, inviting metaphysical interpretations that Jung himself resisted.

Recent scholarly reviews have highlighted this tension as a central challenge for synchronicity research and Jungian theory more broadly, noting the need for frameworks that preserve meaning without invoking metaphysical

causation or reductive explanation (Sacco, 2020). This challenge motivates the search for contemporary conceptual models capable of articulating organizational continuity across biological and symbolic domains.

By foregrounding Jung's work on number, order, and synchronicity, it becomes possible to extract a coherent theoretical core that is compatible with contemporary naturalistic frameworks. Archetypes emerge not as metaphysical realities or causal agents, but as invariant organizational patterns instantiated across multiple levels of living systems. This understanding prepares the ground for integrating Jungian theory with Code Biology, where codes are defined precisely as rule-governed correspondences that generate stable forms of organization without requiring direct causal interaction between distinct domains.

## 3 Archetypes as Codes: Insights from Code Biology

Recent developments in Code Biology offer a conceptual framework for addressing a longstanding difficulty in Jungian theory: how to understand archetypes as both biologically grounded and symbolically generative without invoking metaphysical entities or reductive mechanisms. As articulated by Marcello Barbieri, Code Biology distinguishes living from non-living systems by the presence of genuine codes, understood as rule-governed correspondences that establish functional relations between signals and effects (Barbieri, 2024). These codes are neither purely physical interactions nor abstract symbols; they are mediating structures that enable biological organization, novelty, and meaning. The genetic code is a good example—the same code is present in every cell of the human body. Yet the instantiation of the code differs widely depending on cell type needed and what function the cell serves relative to other cells.

Before elaborating further on this framework, it is necessary to clarify the ontological position guiding the present analysis. The framework rejects epiphenomenal accounts of mind, in which meaning is treated as a byproduct of material processes, as well as substance dualism, which requires hidden causal bridges between ontologically distinct realms. It also departs from strong readings of *Unus Mundus* that posit a single underlying substrate in which mind and matter are "really the same," as such formulations risk collapsing organizational distinctions and reintroducing a metaphysical ground.

Instead, mind and matter are treated as distinct organizational regimes instantiated within the same biologically grounded reality. They are differentiated not by substance but by the constraints, codes, and degrees of free-

dom through which coherence is achieved. These regimes are co-embedded and mutually constraining, capable of exhibiting self-similar patterns without being reducible to one another or causally linked across domains. Mind, on this view, emerges when biological systems reach levels of organizational coherence at which symbolic, affective, and narrative constraints become operative. This emergence is organizational rather than linear-causal: new regimes of coherence arise when constraints and recursive processes stabilize meaning-bearing relations.

This position is compatible with work in theoretical biology emphasizing the indefinite nature of biological organization, in which novel functional possibilities cannot be exhaustively specified or deduced in advance (Kauffman, 2020), as well as with results in theoretical computer science showing that even rule-governed systems can be computationally irreducible, such that their future states cannot be known except by running the system itself (Wolfram, 2002). Archetypal organization, on this view, occupies an open-ended space of biological and symbolic possibility—lawful and constrained, yet not fully predictable or predetermined.

At a fundamental level, biological codes introduce a triadic structure consisting of a signal, a meaning, and a mediator. The genetic code, for example, maps nucleotide sequences onto amino acids through molecular adapters. This mapping is not dictated by physical necessity but by historically stabilized conventions embedded in biological organization (Barbieri, 2024). Such codes are empirically identifiable and evolutionarily conserved, yet irreducible to chemistry alone. More broadly, life depends on coding processes that operate across multiple levels of organization (Prinz, 2023).

From this perspective, archetypes can be reconceptualized as higher-order codes operating within and across biological, neural, and symbolic systems. Major (2021) proposes that Jungian archetypes function analogously to biological codes insofar as they constrain the form of possible representations without specifying particular contents. Like genetic or neural codes, archetypes establish stable correspondences between experiential inputs and symbolic outputs, shaping how meaning is generated and organized rather than determining what meanings must appear. Crucially, these constraints do not produce outcomes; they delimit which outcomes can coherently stabilize.

This archetype-as-code model preserves Jung's insistence that archetypes are formal conditions rather than inherited ideas (Jung, 1969). Archetypes do not transmit images or narratives directly; instead, they regulate the transformation of experience into symbolic form. Their recurrence across cultures thus reflects not a shared mythology but a shared architecture of coding relations within the human organism.

Major (2025) further refines this approach through the code-mediator-artifact framework, which distinguishes between codes as organizational constraints, mediating processes that implement those constraints, and the artifacts that result. Applied to psychological phenomena, this framework situates archetypes as codes mediated by neural and affective processes and expressed through symbols, narratives, and cultural forms. The psyche, on this account, is not separate from biology but a system of mediations among multiple layers of coding activity.

This framework also resolves a persistent ambiguity in Jungian discussions of synchronicity. If archetypes are treated as metaphysical agents, synchronicity appears to require mysterious causal connections between mind and matter. Under the archetype-as-code model, synchronicity can instead be understood as the coincident realization of self-similar organizational patterns across independent systems. Meaning arises not through causal interaction but through structural correspondence governed by shared constraints (Atmanspacher, 2018), aligning closely with Jung's characterization of synchronicity as an acausal ordering principle (Jung, 1960).

Code Biology further clarifies the relationship between archetypes and evolution. Archetypal patterns need not be understood as timeless metaphysical forms; they can be seen as evolutionarily stabilized codes that have proven effective in organizing perception, affect, and social behavior and that evolve over time along with their environmental, cultural, and historical contexts. For example, narrative and symbolic structures have been described as innate "story codes" that scaffold human cognition and communication (Goodwyn, 2024), providing a naturalistic context for Jung's intuition that archetypes are both ancient and dynamically expressed.

Overall, this approach avoids both reductionism and mystification. Archetypes are neither reducible to neural mechanisms nor elevated to transcendent realities. They occupy an intermediate explanatory level analogous to biological codes, at which organization, meaning, and constraint become analytically visible. By situating archetypes within the framework of Code Biology, analytical psychology gains a contemporary theoretical foundation compatible with empirical science while preserving the symbolic richness of Jung's insights. This reconceptualization prepares the ground for the following section, in which fractals and recursion are introduced as formal models for understanding how such coding constraints operate across scales.

## 4 Fractals and Recursion as Structural Constraints

Fractals and recursive processes have frequently been invoked in discussions of archetypes, synchronicity, and self-organization, but such references risk ontological overreach when mathematical structures are treated as causal mechanisms, simple metaphors, or metaphysical substrates of psychological phenomena. In the present framework, fractals and recursion are employed as *formal explanatory models of patterned emergence*: they clarify how complex, scale-invariant organization can arise from simple constraints without implying direct causal correspondence between mathematics, physics, and psyche.

In the present framework, *recursion*, *constraint*, and *fractals* are related but not identical concepts. Recursion refers broadly to the repeated application of constraints within a system across time or levels of organization. Constraints define what forms of coherence are possible, while recursive processes enact those constraints iteratively. Fractals are one formal expression of this logic: they are recursively generated structures that display self-similarity across scales. Archetypes function as constraints on meaning and organization, while code mediators are the processes through which those constraints are recursively enacted. Fractal patterns, when they appear, are emergent products of this recursive constraint application, not independent causal forces.

Fractal and recursive models are not used here to suggest that mind and brain are literally interwoven or structurally identical. Rather, they provide a formal language for describing how similar organizational patterns can appear across multiple levels without being reducible to one another. A useful analogy is money or a national flag: at the physical or neural level, these consist only of material substrates, yet their symbolic meanings are stabilized by social and cultural constraints rather than contained in the materials themselves. Likewise, higher-order psychological and symbolic processes depend on brain activity without being reducible to it. Fractal models illuminate how patterns of constraint and coherence can recur across levels without implying causal reduction, simple metaphors, or metaphysical continuity.

Fractal geometry describes structures characterized by self-similarity across scales, non-integer dimensionality, and iterative generation from simple rules (Mandelbrot, 1982). These properties have proven valuable in modeling natural systems such as coastlines, vascular networks, and neural branching patterns, where organization is distributed rather than centralized (Gleick, 1987). Fractals do not explain these systems mechanistically; rather, they provide a formal language for describing how order can be maintained without rigid symmetry or linear hierarchy.

Applied to psychological theory, fractal models illuminate how archetypal organization can be scale-invariant and recursively instantiated. Jung repeatedly emphasized that archetypes manifest across multiple levels of experience, including individual, cultural, and historical levels, without being localized in any single representation (Jung, 1969). Fractals make this intelligible by showing how a single organizing constraint can generate diverse expressions across scales, accounting for the recurrence of similar symbolic forms without requiring the transmission of specific contents or the postulation of metaphysical universals.

Recursion further sharpens this account of patterned emergence. Recursive processes involve the repeated application of a rule to its own output, producing increasingly complex structures over time. In biological systems, recursion is evident in development, neural feedback loops, and gene regulatory networks, where iterative constraints stabilize form while allowing variation (Kauffman, 1993). Within the psyche, recursive dynamics appear in symbolic amplification, narrative elaboration, and reflective self-modeling—processes Jung regarded as central to psychological development (Jung, 1968). Recursive dynamics also show up in Freud's notion of *repetition compulsion*, such as a woman who continually chooses emotionally unavailable partners that resemble her emotionally distant father.

From the perspective of Code Biology, recursion is not an independent causal force but a property of coded systems operating under constraint. Codes must be iteratively applied to maintain coherence across time and context (Barbieri, 2024). Fractal and recursive models thus align naturally with the archetype-as-code framework by illustrating how organizational patterns can remain stable while generating novelty through repeated mediation. What is clarified is the logic of pattern formation, not its material instantiation.

Analogous uses of recursive and scale-dependent models appear in contemporary systems biology, where mathematical structures describe long-term biological processes without invoking symbolic or psychological interpretation. For example, recursive time-series models have been applied to human aging to show how simple numerical constraints can organize complex biological trajectories across the lifespan (Sacco & Torday, 2023). Such models operate entirely within biology, yet they illustrate why recursion and fractal organization are valuable for understanding patterned emergence without serving as causal explanations of archetypal or symbolic phenomena.

This distinction is especially important in discussions of synchronicity, where formal patterning has often been overextended into causal or quasi-mechanistic explanation in parts of the interdisciplinary literature on complexity, consciousness, and mind-matter relations. In some descriptions, frac-

tal or self-similar structures are treated as if they function as hidden bridges or explanatory mechanisms linking psychological and physical domains. Jung explicitly rejected such interpretations, insisting that synchronicity refers to an acausal ordering principle grounded in meaning rather than mechanism (Jung, 1960).

At the same time, the notion of a *bridge* need not be abandoned, provided it is carefully specified. Marks-Tarlow (2013, 2020), for example, has argued that fractal geometry offers an epistemological model for bridging personal and transpersonal domains, emphasizing nonlinear coherence, self-organization, and resonance rather than causal transmission. Read in this way, fractals do not connect domains by transferring forces or information, nor by positing a shared underlying substance. Rather, they illuminate how independent systems can exhibit patterned alignment under comparable organizational constraints.

In this sense, the bridge is "invisible" not because something hidden passes between mind and matter, but because the connection is formal and organizational rather than mechanistic. Much as synchronous brain oscillations coordinate distributed neural regions, or resonant dynamics align psychological states across individuals, fractal and synchrony-based models describe patterned coordination across distinct systems without reducing one level to another or invoking causal transmission. Independent systems remain independent, yet they can enter states of coherent patterning without interaction, mediation, or causal coupling. Fractals thus bridge realms epistemologically and organizationally, not ontologically or causally—a clarification that preserves Jung's acausal conception of synchronicity while strengthening its theoretical articulation.

By maintaining this disciplined formal framing, fractals and recursion perform a genuine explanatory role at the level of patterned emergence. They clarify how stable organizational forms can arise, recur, and transform without invoking linear causation or metaphysical agency. In doing so, they provide analytical psychology with a precise language for pattern and organization that complements, rather than replaces, its symbolic foundations.

## 5 Toward a Code-Mediator-Artifact Model of Psyche

The reconceptualization of archetypes as codes requires a clear distinction between organizational constraints, their modes of implementation, and their observable expressions. The code-mediator-artifact model, developed within Code Biology, provides such a distinction by formalizing how codes operate

across biological, neural, and symbolic systems without collapsing meaning into mechanism or invoking metaphysical entities (Major, 2025).

Within this framework, a *code* is defined as a rule-governed correspondence that constrains the relationship between inputs and outputs. Codes do not function as causal forces; rather, they establish the conditions under which certain transformations can occur and remain stable over time (Barbieri, 2024). In psychological terms, archetypes can be understood as such codes: formal organizational constraints that shape how experience is patterned into meaning without dictating specific symbolic contents. As Polish-American scientist and philosopher Alfred Korzybski famously observed in 1931: the map is not the territory. Similarly, the archetype structures experience without being identical to its expressions.

*Mediators* are the processes or structures through which codes are enacted. In biological systems, mediators include molecular adapters, regulatory networks, and developmental pathways. In psychological systems, mediators encompass neural dynamics, affect regulation, attentional processes, and culturally embedded practices. These mediators implement archetypal codes by translating embodied experience into symbolic form, enabling meaning to arise through situated processes rather than abstract principles (Major, 2025). For example, two different people encountering the same angry statement may have two very different responses depending upon their emotional histories and current states of mind. One person may take the comment very personally and either become furious or collapse internally, while the other may experience the comment with compassionate understanding of woundedness within the other.

*Artifacts* are the observable products of coding activity. In the psyche, artifacts include dreams, myths, rituals, narratives, artistic expressions, and recurrent symbolic motifs. These artifacts are not archetypes themselves; they are culturally and historically contingent expressions shaped by both archetypal constraints and contextual variables. This distinction resolves a persistent confusion in Jungian theory between archetypes as organizing principles and symbols as their manifestations (Jung, 1969). For example, a dream that echoes important themes in a person's life may emerge from clear triggers as well as affect mood and the direction of reflection following the dream, but no predetermined causal connection exists.

The archetype-as-code framework can be clarified through schematic examples that illustrate how archetypal organization operates across biological, psychological, and symbolic domains without invoking causal transmission or metaphysical agency.

The Mother pattern can be understood as arising from early biological requirements for care, regulation, and attachment, which establish stable orga-

nizational constraints on affective and relational experience. These constraints are subsequently mediated through interpersonal relationships, cultural narratives, and symbolic representations of nurturance, protection, and dependency. What recurs across contexts is not a fixed image or inherited representation of "the mother," but a patterned mode of relational organization that shapes expectations, meanings, and symbolic expression

The Hero pattern reflects developmental pressures associated with autonomy, exploration, and risk-taking. These pressures generate recurring organizational constraints on narrative structure and self-understanding, which are symbolically expressed in myths of initiation, struggle, and transformation, as well as in personal narratives of challenge and individuation. Here, too, the archetype does not determine specific actions or outcomes; it structures how experiences of conflict, agency, and growth are interpreted and integrated over time.

Synchronicity can be approached in analogous terms. Meaningful coincidences are not treated as the result of hidden causal mechanisms or external intervention, but as moments in which archetypal organization renders certain correspondences experientially salient. From this perspective, synchronicities arise when internal organizational constraints and external circumstances align in ways that reorganize meaning and interpretation. Their significance is in their symbolic and integrative effects rather than in their explanatory power as causal events.

The code-mediator-artifact model thus clarifies the status of archetypal symbolism without resorting to metaphysical explanation. Symbols are neither arbitrary inventions nor direct expressions of transcendent forms; they are artifacts produced through the mediation of archetypal codes within specific biological and cultural contexts. This interpretation preserves Jung's insistence that archetypes are unknowable in themselves and accessible only through their effects (Jung, 1968), while providing a contemporary theoretical vocabulary for articulating that claim.

This account aligns with the contemporary science of nonlinear dynamics, where chaotic processes in nature reveal hidden fractal order underneath the surface appearance of randomness. As within Code Biology, fractal patterning operates not causally or mechanistically, but instead through bidirectional constraints. Lower dimensional objects constrain higher dimensional objects. A good example of this is nested brain waves: lower frequency band waves, such as delta or theta, which correspond to the regulation of bodily processes and unconscious states constrain higher frequencies, such as alpha or gamma which correspond to more conscious relaxation and perception. Simultaneously, higher dimensional phase spaces (the space of all possible system behav-

ior) enable, embed, and contextualize lower dimensional objects. Within the EEG example, the brain wave measurement apparatus must operate at frequencies as high or higher than the band waves they attempt to measure. The EEG machine doesn't cause the brain wave spectrum, nor vice versa.

Just as importantly, the code-mediator-artifact model also aligns closely with Jung's original formulation of synchronicity as an acausal ordering principle rather than a force or interaction (Jung, 1960). The code-mediator-artifact model articulates how such ordering can be naturalistically grounded without reducing meaning to probability or subjective projection. Archetypal codes operate as constraints on organization, not as agents intervening in physical processes.

The model also accommodates evolutionary considerations. Archetypal codes can be understood as evolutionarily stabilized organizational patterns that have proven effective in structuring perception, social behavior, and symbolic communication. These codes are conserved not as fixed contents but as generative constraints, allowing for cultural diversity while maintaining structural continuity (Goodwyn, 2024). This perspective situates Jungian psychology within a broader biological framework without collapsing it into adaptationist explanation.

By clearly distinguishing between codes, mediators, and artifacts, the psyche can be conceptualized as a multi-level system of embodied meaning-making. Psychological phenomena emerge not from a separate mental substance, but from the dynamic mediation of coded organizational patterns within living systems. In doing so, the code-mediator-artifact model resolves the tension between Jung's symbolic depth and contemporary demands for theoretical rigor, offering a framework in which archetypes, symbols, and synchronicity can be coherently understood as features of an organized, naturalistic reality.

## 6 Implications for Analytical Psychology

Reframing archetypes as codified organizational patterns within a code-mediator-artifact framework carries significant implications for analytical psychology, particularly with respect to theory construction, clinical interpretation, and the discipline's relationship to contemporary science. Most centrally, this approach clarifies the epistemological status of archetypes, resolving ambiguities that have historically generated both metaphysical inflation and reductive criticism.

At the theoretical level, conceiving archetypes as codes allows analytical psychology to preserve its emphasis on symbolic depth while situating itself

within a naturalistic ontology. Archetypes are no longer required to function as quasi-transcendent entities or explanatory forces. Instead, they operate as formal constraints that shape how meaning emerges from embodied experience (Jung, 1969; Major, 2021). This shift retains Jung's core insight that archetypes are unknowable in themselves and accessible only through their manifestations, while providing a contemporary conceptual language that avoids dualism and speculative causation.

This clarification has direct consequences for how symbols are understood. Symbols can be interpreted not as expressions of archetypal "contents," but as artifacts generated through the mediation of archetypal codes within specific biological, developmental, and cultural contexts. Such an interpretation aligns with Jung's insistence that symbols are living processes rather than static representations (Jung, 1968) and encourages closer attention to the mediating conditions—affect regulation, developmental history, cultural narratives, and historical context—through which symbolic material emerges in clinical work. It also resonates with James Hillman's (1975) view that dream images and symbols should "speak for themselves," resisting reductive translation into fixed meanings and instead attending to their phenomenological presence and transformative effect within the psyche.

The proposed framework also refines the concept of synchronicity. Within traditional Jungian discourse, synchronicity has often been treated ambiguously, oscillating between descriptive phenomenology and implicit ontological claims about mind-matter interaction. Interpreted through the lens of coded organization, synchronicity can be understood as the experiential recognition of structural correspondence across independent systems rather than as evidence of hidden causal connections (Jung, 1960; Atmanspacher, 2018). This interpretation preserves the experiential and symbolic significance of synchronicity while protecting analytical psychology from accusations of violating scientific plausibility.

From a clinical standpoint, synchronicity functions less as a causal explanatory construct than as a catalyst for meaning-making, reflection, and symbolic reorganization within the analytic process (Beitman, 2022). More broadly, this reconceptualization supports a clinical stance that emphasizes pattern recognition over causal explanation. Rather than asking why a particular archetype has appeared, which often invites speculative or reified answers, analysts can ask what patterned organization is being expressed and how it is shaping the patient's narrative, affective life, and relational field. Interpretation thus becomes the discernment of recurrent forms, configurations, and transformations within lived experience, rather than the attribution of messages from an external archetypal realm.

Beyond the clinic, the code-mediator-artifact model provides analytical psychology with a clearer interface to neighboring disciplines. By articulating archetypes as organizational patterns analogous to biological and neural codes, Jungian theory becomes more intelligible to contemporary cognitive science, evolutionary psychology, and systems biology without being absorbed into them (Barbieri, 2024; Prinz, 2023). This compatibility does not imply reduction but establishes analytical psychology as operating at a legitimate intermediate level of explanation.

The framework also addresses longstanding critiques concerning methodological rigor. By specifying what archetypes are not, specifically causal agents or metaphysical substances, the theory gains conceptual discipline. Analytical psychology can thus be presented as a rigorous interpretive science concerned with meaning, organization, and symbolic mediation rather than as a speculative cosmology. Importantly, this account does not claim to explain consciousness itself or resolve the hard problem of mind; its aim is more precise: to map the organizational structures within which meaning and symbolic coherence reliably arise.

It is therefore important to clarify how this framework addresses likely objections from different audiences. For readers grounded in traditional Jungian thought, the present account does not reduce symbolic depth or experiential meaning to biological mechanism; rather, it shows how meaning can emerge naturally from embodied, relational, and symbolic organization without invoking metaphysical agencies. For scientifically oriented readers, the use of "codes" does not imply hidden purposes, teleology, or directing forces. Codes are treated as descriptive accounts of stable, rule-governed correspondences observed in living systems, not as explanatory entities that act or intend. In both cases, the aim is not to collapse psyche into biology or elevate biology into metaphysics, but to articulate a disciplined intermediate level of organization at which meaning becomes intelligible.

These implications can be further illustrated by considering how archetypal organization unfolds across human development. From this perspective, archetypes do not operate as static symbolic contents but as codified organizational constraints that mediate between biological drives, affective regulation, and symbolic form over time. Developmental stages can be understood as successive regimes of mediation in which different archetypal codes become salient as constraints on meaning, behavior, and self-organization.

Sacco's (2020) exploratory alignment of archetypal organization with harmonic structures derived from the Fibonacci sequence provides a formal scaffold for thinking about developmental patterning without invoking linear causation or deterministic stage progression. In this model, age-related harmonic

intervals function as temporal constraints that index statistically regular transition windows rather than predictors of specific psychological events. What is organized across development is not content, but the conditions under which certain archetypal mediations can stabilize.

Early infancy, for example, is characterized by a predominance of attachment and affective regulation, corresponding to an undifferentiated archetypal organization associated with the Self (capital-S), understood here as a principle of unity rather than as a metaphysical entity. As development proceeds, increasing differentiation of biological, social, and symbolic constraints gives rise to archetypal patterns associated with defense, sociability, play, exploration, relational polarity, creativity, and energetic regulation. These patterns are not imposed mechanically but emerge through the interaction of biological drives, environmental affordances, and symbolic mediation. Jung too had an intuition for constraints and opportunities provided by developmental stages. He suggested each of us must confront the Shadow archetype connected with autonomy and individuation before tackling the Anima/Animus archetype related to entering healthy intimate relationships (Robertson. 1992).

## 7 Conclusion

This paper has advanced a conceptual reinterpretation of Jungian archetypes grounded in contemporary Code Biology, with the aim of clarifying their epistemological status and strengthening the theoretical foundations of analytical psychology. By reframing archetypes as codified organizational patterns rather than metaphysical entities or causal forces, the paper offers a coherent, naturalistic account that preserves Jung's emphasis on meaning, form, and symbolic recurrence while avoiding dualistic assumptions.

Revisiting Jung's work on number, order, and synchronicity reveals a consistent concern with formal principles of organization rather than with ontological speculation. Jung's collaboration with Wolfgang Pauli further underscores this orientation, pointing toward an underlying psychophysical order characterized by pattern and correspondence rather than interaction or mechanism (Jung & Pauli, 1952; von Franz, 1974). Interpreted through the lens of Code Biology, these ideas can be articulated with greater conceptual precision, situating archetypes alongside other biologically grounded codes that organize living systems (Barbieri, 2024).

The integration of the code-mediator-artifact framework provides a crucial structural distinction that resolves persistent ambiguities in Jungian theory. Archetypes are identified as codes that constrain meaning formation; medi-

ating processes implement these constraints within embodied systems; and symbols emerge as artifacts shaped by cultural and historical context (Major, 2025). This framework accommodates symbolic diversity while accounting for structural recurrence, offering a parsimonious explanation for the universality and variability of archetypal phenomena.

Fractals and recursive models, when restricted to a structural and analogical role, further illuminate how archetypal organization can be scale-invariant and generative without implying causal correspondence between psyche and physical processes. Properly constrained, such models clarify rather than obscure the nature of archetypal patterning and synchronicity, reinforcing Jung's original insistence on acausality and meaning as organizing principles (Jung, 1960).

The contribution of this paper is primarily theoretical in orientation, though it is informed by reported experiential material. It does not seek to validate Jungian concepts through controlled experimental designs or event-level prediction, but rather through exploratory analysis of reported experience and formal modeling of patterned emergence. By situating archetypes within a naturalistic account of coded organization, analytical psychology is positioned not as a metaphysically isolated framework, but as a disciplined theory of meaning operating at an intermediate, formal level of explanation.

Future work may extend this framework by exploring a set of more precisely articulated questions that the present analysis helps to make tractable. By treating archetypes as codified organizational patterns rather than as causal agents or metaphysical entities, the framework opens a constrained research space for examining patterned emergence across biological, developmental, and symbolic domains. In particular, several directions for further inquiry suggest themselves:

(1) *Scale invariance*: To what extent do archetypal organizational patterns exhibit structural similarity across individual development, cultural history, and biological evolution, and where do such similarities diverge?
(2) *Cultural mediation*: How do different cultural, linguistic, and ritual systems mediate shared archetypal constraints into distinct symbolic forms, narratives, and practices?
(3) *Developmental timing*: Are there recurrent developmental or temporal windows in which particular archetypal codes become especially salient, and how might such regularities be described without implying deterministic prediction?
(4) *Synchronicity and organization*: Under what conditions do reported synchronicity experiences cluster around identifiable patterns of symbolic organization rather than random coincidence, and how might such clustering be formally characterized?

(5) *Clinical application*: How can attention to recurring organizational patterns, rather than causal explanation, inform clinical interpretation, therapeutic timing, and symbolic integration in analytic practice?

Framed in this way, the contribution of the present paper is not to resolve the mystery of psyche or consciousness, but to articulate a coherent conceptual grammar for studying how patterned organization gives rise to meaning and symbolic life. The enduring value of Jung's legacy is found in the careful articulation of such patterns rather than in speculative synthesis. Reinterpreted through the lens of Code Biology, archetypes can thus be situated within a broader scientific inquiry into how living systems generate order, meaning, and symbolic form through constraint-based organization rather than linear causation.

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