CREATED FOR PLAY: THE ORDER, FREEDOM, AND FRUITFULNESS OF GOD'S WISDOM[1]

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Abstract

Evolutionary convergence and patterns of cooperation reveal a persistent interplay between order and freedom. The repeated emergence of similar solutions under shared constraints points to a structured yet open reality. Branching architectures and cooperative dynamics show that natural laws both enable and shape freedom. Such biological patterns reflect the intelligibility, fruitfulness, and generosity of creation as grounded in the Logos, in which all things hold together. The world is not shaped by determinism or chance, but by love—a love that gives abundantly, calls freely, and delights in the other's being. Creation is not mechanical but invitational: a space where the Creator's longing for communion is expressed through the structure of reality. Rather than imposing form, He elicits response; rather than forcing outcomes, He invites participation. The deepest convergence is personal and relational: the call of creatures to unity in Christ, where freedom and order, gift and desire, meet.

KEYWORDS: communion, convergence, cooperation, creation, evolution, freedom, fruitfulness, Logos, order, story

Introduction

Aristotle defines the human being as *zoon logikon*—a rational creature, an animal that thinks, that forms thought, and is capable of expressing it or

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keeping it within (Aristotle, Politics I.2; Nicomachean Ethics VI). Every thought is, in its essence, a kind of naming of reality—and every thought is, in fact, a story. In this sense, a human being is a creature that tells stories: a story about oneself and a story about the world beyond oneself.

Chesterton, in the spirit of this understanding of the human person, adds another vital dimension: in his essay "A Defence of Nonsense", he argues that the ability to speak nonsense is a sign of freedom and imagination, not of a disordered mind. A human being not only tells stories, but tells stories about stories—governs them, plays with them, and, if one wishes, can even narrate nonsense (Chesterton 1901). Christianity goes even deeper, claiming that the human person lives by the Logos—by the True Story that became Flesh, by the Person who is the Eternal Word (John 1:1–14).

A story that mirrors the Logos in beauty, truth, and goodness pierces the human person like a spear, driving straight to the very center of his being, rushing toward its Creator. The immanent and enduring presence of the Logos draws it in like gravity.

Such an encounter seizes the whole human person—spirit, soul, and body—and holds him captive in the present moment: real human experience then touches the One who is reality itself, and the human being must stop, must simply be.

An encounter with a true story is not like a greeting, a smile, a handshake, or even an embrace; this encounter is eucharistic. The story enters into the human interior, into the deepest communion. A person recognizes this encounter as at once old and new: remembrance and surprise, the fireside warmth and the thrill of adventure, a diamond wedding and love at first sight. Saint Augustine describes this encounter in these words (Augustine, Confessiones X, 27):

"Late have I loved You,

O Beauty ever ancient, ever new, late have I loved You!

And behold, You were within me, and I was outside myself; there I searched for You,

and in my deformity I plunged into the beautiful things that You created.

You were with me, but I was not with You.

You called, You cried out, and You shattered my deafness.

You flashed, You shone, and You dispelled my blindness.

You breathed Your fragrance upon me, and I drew in my breath and now I long for You.

I tasted You, and now I hunger and thirst.

You touched me, and I burn for Your peace."

What, in fact, captivates the human being in an encounter with a true story?

A scientific discovery, a work of art, or an ordinary experience—when it contains a trace of transcendence—first reveals itself to the human being as transcendental beauty (Aquinas, Summa Theologiae I, q.5). In human consciousness, a flash occurs: the meeting of transcendence and immanence in the Person who is Beauty.

In every experience that resonates with the abiding presence of the Creator deep within our being, the first thing we perceive consciously is beauty, its wholeness (integritas), harmony (consonantia), and radiance (claritas) (Aquinas, Summa Theologiae I, q.39, a.8). Before truth and before goodness comes that childlike exclamation: "Mama, look!" A child cannot yet grasp truth with reason or choose the good with will, but possesses an unspoiled gaze of the heart, a gaze that sees beauty. The sight of a mother's smile awakens the child to life (John Paul II 1980).

Before the wisdom of God, man himself is like a newborn, meaning reason and will are still insufficient. At such a moment, Beauty chooses the human person; it seizes them in their openness and need. One feels chosen, though unworthy: Who am I, Beauty, that You encounter me and choose me? And yet, one knows that Beauty sends them, and they cannot help but become its missionary. Like a child, one must say: "Look!"

In such moments, I feel science as a game with my heavenly Father. As in every game, the Father sets the rules, but delights in my freedom and playfulness. He and I both know I can only win when He lets me—and whispers: "Look!"

This is my story about the beauty of God's fruitfulness in creation. A story about science which—like every true story—first comes as beauty. And then, having captivated the heart, it calls upon reason and will to uncover the depth of its truth and goodness.

Play—The Structure of the Great Story of Creation

At the very core of the human person lies the likeness to the Creator, most powerfully expressed in storytelling, as Tolkien beautifully suggests in his essay "On Fairy–Stories", because we are made in the image of the Maker, we too are storytellers, "sub–creators" who imitate our Creator by telling stories. (Tolkien 1964)

Story is the fundamental form of human thought. The human being is the only creature that experiences the world through meaning, and to give something meaning is, in essence, to tell a story. A person does not truly know even the smallest part of the world until they have told a story about it.

Speaking of man's search for Truth in which he might root his being, St. John Paul II wrote: "The human person seeks a meaning that can unify the whole of her life—the story of her existence" (John Paul II 1998). Every person is a seeker of truth because every person is seeking the story of their own existence, encountering stories that pierce their being like burning arrows and illuminate a small part of the Book of Life inscribed in their innermost depths.

The Great Story that gives meaning to every human story is not an idea or a philosophy, but a Person—Jesus Christ, the Incarnate Word (Jn 1:14). Each of our small stories is but a shadow of that Great Story and can find its true meaning only when united with it. Only when our own story tells the truth about the One who is the Truth (Jn 14:6) does it become truly good, beautiful, and joyful.

Man comes to know the truth through two perceptively complementary stories. The first is the one in which God reveals Himself through the Word, and the second is the one in which He reveals Himself through the creation of the natural world (Ps 19:1–5; Rom 1:20). In the mind of God, these two stories are one. But to our pilgrim reason and heart, it has not yet been granted to read them together. In our deep longing for the fullness of truth—the fullness of Christ—we usually root ourselves in only one of those two stories.

The Great Story, like the fairy tales our parents told us, is woven with elements of order and freedom. Of order, because from chaos beauty cannot arise (Aquinas, Summa Theologiae I, q.39, a.8), and every true story is beautiful—because God is Beauty; and of freedom, because in determinism there is no love, and every true story is a love story—because God is a Lover (Song of Songs). The drama of love is formed precisely in the balance between order and freedom.

From Revelation about the beginning of creation, we learn that God speaks creation into being—He creates through the Word (Gen 1; Jn 1:1–3). Science, in its own domain, confirms this: the universe is immersed in the Logos, filled with laws, finely tuned constants, and mathematical beauty (Barrow and Tipler 1986).

From Revelation about the new creation, we learn that God creates by loving the Firstborn unconditionally (Col 1:15–20). God is perfectly free and infinitely generous in His love, and so He allows His creation to participate freely in the act of creation (Catechism of the Catholic Church §§306–308). Secondary causes act with real freedom within an ordered framework—a freedom that becomes manifest through contingency: quantum physics, genetic mutations, collisions of particles and planets, but also through free human decisions.

A parable that reveals the nature of divine creation is that of the generous Sower:

“Behold, a sower went out to sow.

And as he sowed, some seeds fell along the path, and the birds came and devoured them.

Other seeds fell on rocky ground, where they did not have much soil, and immediately they sprang up, since they had no depth of soil.

But when the sun rose, they were scorched. And since they had no root, they withered away.

Other seeds fell among thorns, and the thorns grew up and choked them.

Still other seeds fell on good soil and produced grain — some a hundredfold, some sixty, some thirty." (Mt 13:2–9)

From the human perspective, God's generosity in creation may seem like recklessness or wastefulness—but in reality, it is the divine logic of abundance. Creation bears the imprint of God's freedom and is open to the freedom of the creature. The freedom of the creature is not a threat to God's omnipotence—it is its fruit, the very sign of God's generous love (Catechism of the Catholic Church §311).

The Great Story of creation can be described as a game, an ordered framework that allows freedom. Like every game, the framework of creation has its laws and order, but that framework is not a prison, but a well–tended garden, where the space for contingency and creativity is protected. Uncertainty is not a sign of God's absence, but the depth of His presence.

"All things came into being through the Logos" (Jn 1:3).

It is precisely because everything is founded in the Logos that creation can be free, in a world that is not a prison, but a stage. God, the perfect Lover, is immanently near, yet He does not violate the freedom of the creature He has loved into being (John Paul II 1986). Just as the heavenly Father does not force the soul to accept heaven, so too in creation, He does not fill in the gaps of human ignorance with a magic wand. On the contrary, the Sower sows freely, abundantly, and persistently. The Sower invites the creature to echo, in freedom, Mary's sacred fiat (Lk 1:38)—to respond to His love and unite with the Creator in a divine dance, singing with our holy Mother: "Let it be!"

Long ago, I came across a sentence that etched itself into my heart: "Law is like the rhythm in a poem or the meter in a sonnet: a constraint that gives freedom to the soul, a constraint that creates beauty." And it continues: "When the poet is bound by syllable count and rhyme, it is precisely then that he can express more than the chaos of thought and the chaos of feeling into which he has been plunged by a beautiful woman."

Convergence in Evolution—A Witness to the Playfulness of Creation

Evolution is the change in the genetic structure of populations over generations, influenced by mutations, genetic drift, natural selection, recombination, and gene flow (Futuyma and Kirkpatrick 2017). In it, order and freedom intertwine: the order of natural laws that guide the processes of inheritance, random mutations, and selection, and the freedom expressed in contingency, unpredictability, and the diversity of pathways through which populations respond to environmental challenges (Koonin 2011). Evolutionary outcomes can include increases in complexity, the emergence of new functions, but also gene loss, simplification, and reduction (Albalat and Cañestro 2016). Evolution is not necessarily progressive, but adaptive: it moves toward what selection favors for survival and reproduction under given conditions (Gould 1996).

Within populations, interactions between individuals—including cooperation, competition, symbiosis, and cheating—represent strong selective forces, leading to coevolution, where evolutionary changes in one group of individuals reflect changes in another (Thompson 2005). Here, too, we find the dynamic of order and freedom: order arising from the biological laws of relationships, such as trophic networks, competition, and mutualism, and freedom in the form of unpredictable patterns of behavior, adaptations, and survival strategies (Brockhurst and Koskella 2013). In this context, the evolution of cooperation represents a particularly important mechanism through which populations develop stable patterns of joint action, often with protective mechanisms against exploitation (e.g., punishment for "cheaters," reciprocity, and partnership), thereby creating space for the development of complex forms of community within the frameworks established by natural laws (Nowak 2006).

Convergence in evolution refers to the biological phenomenon in which different, phylogenetically distant species—without a common recent ancestor possessing a given trait—independently develop similar structures, functions, or behaviors in response to similar selective pressures and environmental challenges (Conway Morris 2003). These similarities are not the result of inheritance but of independent yet parallel evolutionary paths. Convergence points to the existence of deep constraints and directions embedded in the very nature of reality—laws of physics, chemistry, and biology that shape the course of evolution within defined boundaries and possibilities (McGhee 2011). Such recurring patterns in form and function suggest that nature is not completely open or arbitrary, but that it carries within itself a pattern: a space of freedom that is nevertheless structured, fruitful, and repeatable.

Convergence in evolution affirms, in the most beautiful way, the structure of the Great Story of Creation—a framework of freedom.

In this light, convergence is not merely a scientifically interesting phenomenon, but a window into a deeper understanding of reality in which order and freedom coexist. Through the lens of convergence, two forces that shape the course of evolution—order and freedom become clearly visible.

Order is manifested in the laws that guide evolution: the laws of physics and chemistry determine which molecular structures are stable, such as alpha–helices and beta–sheets in the secondary structure of proteins (Alberts et al. 2015). Mathematical constraints set the boundaries of possible morphological solutions, so, for example, the spindle–shaped body form keeps reappearing in aquatic ecosystems due to its hydrodynamic efficiency (Vogel 1994). Biochemical rules determine the functional conditions for respiration, signal transmission, and metabolism (Schmidt–Nielsen 1997). Geological and astronomical stability allows for enough time and space for the development of complex life, while the constants of natural forces appear as reliable frameworks that make the world intelligible and predictable (Barrow and Tipler 1986).

But within this ordered framework, life does not behave like a machine, but rather like a free participant in the game.

Freedom is manifested in the contingency of mutations, in stochastic processes such as genetic drift and recombination (Koonin 2011), and in the surprisingly diverse adaptations that arise as responses to the same selective challenges (Wagner 2014). It is also visible in interspecies relationships, which are not strictly predetermined but arise from tight interdependence: symbiosis, cooperation, cheating—all shape the living dynamics of populations (Brockhurst and Koskella 2013).

In the human being, evolutionary freedom enters a new dimension—cultural and spiritual—where growth is no longer merely biological but also personal, relational, and transcendent (Richerson and Boyd 2005).

Convergence thus reveals the meeting place: where laws do not abolish freedom but make it possible; where order does not exclude novelty but gives it space and structure.

In creation, as in storytelling, truth is not found in sheer regularity nor in pure spontaneity, but in the fruitful tension between structure and freedom. This reveals a profound theological image of the Creator: He brings forth a world that is neither chaos nor a prison—it is a structured space of freedom—a garden, or perhaps more precisely, a flower garden in which each flower may grow in its own beauty and contribute to the beauty of the whole.

The structure of the Great Story, which I have described as a "framework for freedom—a game," is challenged by two distortions: scientism and creationism/intelligent design.

The first denies the structured framework—the presence of order—and speaks of chaotic disorder. The second denies freedom, interpreting the Creator as an impotent engineer who must constantly intervene (Barr 2003).

Convergence in evolution not only exposes the trivialization of God's wisdom by creationists but also dismantles the myth of chaos in creation—

a central tenet of the scientistic worldview (Conway Morris 2003; Conway Morris 2010).

When algorithms for building phylogenetic trees became accurate enough, it became possible to reliably seek examples of the same solutions to the same challenges in evolution, and this in entirely different evolutionary branches, where similarities are not inherited but independently acquired (Losos 2011; Stayton 2015).

The best overview of the phenomenon of convergence throughout evolutionary history is found in Simon Conway Morris's book Life's Solution, which gathers hundreds of examples of convergence from across the living world in one place (Conway Morris 2003).

Convergence clearly demonstrates that at the very foundations of reality, evolution is not a wide–open random experiment nor mere chance but unfolds within clear boundaries and directions defined by the properties of matter and the laws of nature, while still remaining open to stochasticity and change (Conway Morris 2010; McGhee 2011).

Countless examples of convergence in nature point to the undeniable presence of order—the chemistry of life is not arbitrary.

The constraints that guide material entities through the infinite space of possibilities are inscribed into the very fabric of the universe.

After the Big Bang, elementary particles formed, and through cosmic nucleosynthesis in just a few minutes, the first elements are created. Hydrogen and helium dominate, while more complex elements are later synthesized in the hearts of stars and spread through supernova explosions (Rolfs and Rodney 1988).

Thus are born the key elements of life: carbon, oxygen, nitrogen, phosphorus, sulfur, and transition metals.

Biochemical properties such as hydrogen bonding, ionic interactions, polar molecules, and the special nature of carbon naturally lead toward structures that support complexity, stability, and diversity (Dill and MacCallum 2012). The stage for this chemical drama is set by the fundamental forces of nature—gravity, the electromagnetic force, and the strong and weak nuclear forces—whose constants are decisive components of the order of creation (Rees 2000; Barnes 2012). The fine structure of matter creates conditions for complexity: stable atoms, orbital clouds, chemical bonds, long–lived stars, and planetary systems.

And precisely within those finely tuned conditions, on the only planet known to us, life emerged, perhaps as rare as the universe itself (Spiegel & Turner 2011). But this life does not grow in a vacuum—it must grow in coexistence with gravity, pressure, temperature, oxygen, light, and the law of fluid resistance. Life enters into the realm of law not as a slave, but as a co–creator within the space of given possibilities.

It is precisely in this dynamic play of order, evolutionary challenge, and contingency that we discover the fruitfulness of convergence. Whenever life is confronted with the same challenges, similar solutions repeatedly arise. One of the clearest examples of how the synthesis of basic biomolecules is shaped by fundamental laws of physics and chemistry is the case of protein secondary structure: although the number of possible amino acid combinations is astronomical, chemical and physical constraints allow for only two stable secondary structures—the alpha–helix and the beta–sheet (Dill et al. 2008). The constraints in the space of possibilities that we observe do not mean that evolution is deterministic, but they do show that it is not chaotic either. There is a clear "direction," a kind of "navigation" toward stable and functional solutions. From this molecular foundation, convergence continues at higher levels of biological organization.

One of the most striking examples is the evolution of the eye. The eye has evolved more than 40 times in arthropods, mollusks, cephalopods, annelids, and vertebrates. The structure of the eye in the octopus and the human is nearly identical, even though they are separated by over 500 million years of evolutionary distance (Land and Nilsson 2012).

The same applies to echolocation—the ability to orient in space using sound. It appears in both bats and dolphins, two completely unrelated groups, one that flies and one that swims. Yet both live in dark environments—caves and murky waters—where vision is limited. Acoustic waves, the speed of sound, bone resonance, finely tuned ears, and brains that interpret reflections—all of these features recur because the physical conditions simply demand them (Jones and Teeling 2006).

The circulatory system shows similar directionality: a concentrated system of tubes with a pump evolved in arthropods, cephalopods, fish, amphibians, reptiles, birds, and mammals. They all share the same basic need: to deliver oxygen and nutrients deep into the body. Although the molecules that carry oxygen differ (hemoglobin, hemocyanin, hemovanadin), the principle is the same: distribution via a closed circulatory system. Again, we see the laws of diffusion, density, and surface–to–volume ratios inevitably shaping the design (Burggren et al. 2014).

Even the mechanisms for spatial orientation, the so–called biological gyroscopes, converge. Insects, jellyfish, crustaceans, cephalopods, and vertebrates have developed different structures (halteres, statocysts, vestibular systems), but all serve the same purpose: detecting rotation and maintaining balance in three–dimensional space, whether in air, water, or on land. The mechanics of motion simply require it (Angelaki and Cullen 2008).

Respiration also follows given directions: all organisms must extract oxygen from gas or water and deliver it to cells. Fish develop gills, terrestrial vertebrates lungs, and insects tracheae. The mechanisms differ, but again we find convergent use of surface area and countercurrent flow as an optimized solution for efficient gas exchange (Weibel et al. 1998).

And finally, the body shape itself. Dolphins, ichthyosaurs, and fish all have spindle–shaped bodies, fins, and tails—hydrodynamics shapes the optimal form for moving through water. Birds, bats, and insects have wings shaped by the laws of aerodynamics. Among terrestrial mammals, we also find convergent patterns of body design—the result of gravity, locomotor mechanics, and the need for effective respiration and heat regulation. These forces direct development toward load–bearing structures: the spine, limbs positioned under the body, and a symmetric quadrupedal posture. Body shape reflects lifestyle but also the laws of terrestrial movement: running, climbing, jumping. Even the placement of eyes and ears is guided by similar principles. Convergence is thus evident in hunting and defense, in sensory and muscular systems. Form is not an accident, but a necessity among the laws of matter (Vogel 1994).

While Stephen J. Gould famously claimed that if we "rewound the tape of life," humans would never evolve again, perhaps he missed something essential: in a world shaped by the laws of light, the eye seems almost inevitable (Gould 1989; Conway Morris 2003). And in a world governed by law and order, so too does the emergence of a being capable of understanding the Logos.

The world we discover is not random chaos, but neither is it mechanically programmed. In it, the laws of nature do not kill freedom—they make it possible. The world is both open and directed, a space where the freedom of creation and the generosity of God's wisdom meet in a shared language: the language of possibility.

The Convergence of Cooperation—That All May Be in Christ

Let us now turn to one of the most beautiful and widespread patterns in nature: cooperation. Throughout the history of life, cooperation has proven to be one of the strongest and most frequently repeated patterns—so much so that one may speak of a kind of universal convergence toward association (West et al. 2007). This deep pattern of cooperation reappears again and again, from the simplest forms of life to the most complex ones (Axelrod and Hamilton 1981).

Recent models of the origin of life support the fascinating hypothesis that cooperation—not individual struggle or competition—may have been the original biological strategy at the very beginning of life (Smith and Morowitz 2016). Not as a product of evolutionary pressure, but as a fundamental physico–chemical logic of life, where collective action enables stability, growth, and differentiation. Several contemporary models of life's origin suggest that the first forms of living matter were not necessarily enclosed, self–sustaining cells, but rather collective communities of molecules—the so–called "membraneless protocells" or coacervate droplets. In these simple structures, which spontaneously arose from organic compounds in the early ocean, molecules were freely exchanged, jointly participated in catalytic processes, and shared energy and building blocks, creating dynamic micro-environments in which the first metabolic systems could develop (Ghosh and Spruijt 2021; Joyce et al. 2018; Zwicker et al. 2022).

In light of these insights, it becomes scientifically sustainable to claim that communion—not competition—is embedded in the very foundations of the living world, as a dynamic that precedes organisms, species, and natural selection. This molecular coexistence—spontaneous community enabling the stability and fruitfulness of life—can be seen as a reflection of a deep natural truth: that relation is the foundation of being. In this light, even at the dawn of life, one can glimpse a foreshadowing of the communion that will be fully revealed in the Trinity, where unity and diversity are inseparably joined in perfect Love.

Regardless of the primordial communion at life's beginning, what research indisputably confirms is that the phenomenon of cooperation persists throughout evolutionary history as the most consistent and efficient strategy (Nowak and Highfield 2011). Bacteria form biofilms and synergistic colonies that function like proto–multicellular organisms (Hall–Stoodley et al. 2004). Multicellularity then arose repeatedly and independently. Estimates suggest at least 20 to 25 separate evolutionary origins, including distinct lineages of red, green, and brown algae, fungi, multiple groups of protists, and animals (Niklas 2014). The earliest fossils, such as Grypania spiralis (about 1.6 billion years ago) and Bangiomorpha pubescens (about 1.2 billion years ago), testify precisely to such early attempts at stable multicellularity (Butterfield 2000; Han and Runnegar 1992). In addition to clonal multicellularity—where cells remain attached after division—an aggregative type is also known, such as in slime molds (Dictyostelium), where genetically distinct cells gather into a shared body (Kessin 2001).

Cooperation has also manifested itself multiple times through symbioses: endosymbiosis was at least twice decisive in the course of life—when mitochondria arose, and when photosynthetic cyanobacteria became chloroplasts (Margulis 1970). Similar patterns appear in other transitions: eusocial societies emerged multiple times among insects, especially in ants, bees, and termites. Some species of insects and beetles even developed "agriculture," that is, the systematic cultivation of fungi with division of labor resembling that of humans (Wilson 1975).

Cooperation has also repeatedly appeared in vertebrate behavior—in cooperative hunting by dolphins and wolves, in shared care for offspring, and in the complex human societies that have historically undergone transitions to higher levels of organization: from tribes to cities and states (Boehm 2012).

It is precisely this element of cooperation that constitutes an evolutionary convergence observable across time, ecological niches, and levels of complexity. In his evolutionary game models, Martin Nowak shows that cooperation is not a marginal occurrence, but—alongside mutation and selection—a fundamental force of evolution and a stable solution in the development of life (Nowak 2006).

All these forms of cooperation highlight not only the mutual benefit but also the risk of betrayal. Since cooperation arises within populations of free secondary causes, the emergence of cheaters is a real risk. Evolution therefore repeatedly converges toward stabilization strategies, such as the "generous tit–for–tat," a biological prefiguration of forgiveness that enables the continuation of cooperation even after betrayal (Nowak and Sigmund 1993).

As cooperation deepens, interdependence grows, and members begin entrusting one another with specific functions, becoming so mutually dependent that cheating no longer offers real advantage. Differentiation goes so far that individual members even sacrifice themselves for the good of the whole, like bacterial cells that die to release nutrients, or stem cells that absorb cellular waste to preserve the health of their progeny. In such tightly knit communities, systems converge toward minimal tolerance for cheating and evolve mechanisms of control and elimination of defectors. When cells or organisms attempt to "cheat," evolution once again finds ways to protect the community. This is evident in multicellular life: cells that refuse to cooperate (e.g., cancerous ones) are monitored through multiple layers of control. The immune system identifies and eliminates cells that escape growth regulation ($CD8^+$ T cells, NK cells, immune tumor surveillance) (Schreiber et al. 2011). Simultaneously, cells have an internal "police" force: mechanisms such as p53, programmed cell death, and contact inhibition, which stop or destroy potential cheaters (Levine 1997). The deeper the communion, the greater the freedom for diversity and the stronger the defense of trust.

The evolution of sex is a profound expression of the convergence of communion—where life arises from the unity of difference: one gamete specializes in nourishment, the other in mobility; one waits, the other seeks. By becoming different from each other, they together create a new and unrepeatable life (Maynard Smith and Szathmáry 1995).

Evolutionary biology reveals that cooperation and communion are ubiquitous patterns of life—but only theology enables us to understand more deeply what this means for the human person.

What we see in nature is that true unity never erases individuality—it enriches it. John Paul II describes this in his homilies on the theology of the body with the term *communio personarum*: “Man… cannot fully find himself except through a sincere gift of himself… Created for gift, man finds fulfillment not in isolation but in communion. In the gift, he does not disappear—he becomes even more himself.” (John Paul II 2006)

True unity—spiritual unity in synthesis—differentiates the elements it unites. This is not a paradox, but the law of every lived experience, especially the experience of spousal love. Indeed, two beings never love one another with greater awareness of their individuality than when each is immersed in the other.

The communion toward which creatures converge is an image of Trinitarian love: the Father, the Son, and the Holy Spirit are not dissolved in one another, but in perfect mutual self–giving, each is fully the One who answers Moses’ question with: “I AM WHO I AM” (Exod 3:14).

This truth also illuminates the unity of body and soul. The great scientist Roger Penrose recently said: “We actually don’t know what matter is; once we find that out, we’ll know the answer to the question of what mind is — but I doubt we ever will” (Penrose 2023). If spirit enlivens matter at a level beyond our conceptual grasp, their union is most akin to the image of the Trinity: not fused (spirit is not body), not separated (dualism), but united in personal communion. John Paul II sees in this very unity the reflection of God’s image in man—not only in his spirituality but in the inseparable connection of body and soul. This unity is not the joining of two external principles, but an inner embrace in which one does not abolish the other but makes it even more real.

The deepest convergence in nature is precisely the one that leads to communion. And the Christian knows: into that communion we are not called by an abstract force, but by a Person—the Holy Spirit, the Spirit of communion, who draws all creation toward the fullness of unity in Christ (cf. John 17:21).

The Convergence of Tree Architecture—The Creator’s Longing for Creation

And finally, I would like to share what I consider one of the most beautiful examples of convergence: the architecture of the tree in nature. Interestingly, the pattern of branching appears even where there is no life. River networks, for instance, branch out to enable optimal water flow. just like the vascular system in the body (Rodríguez–Iturbe and Rinaldo 1997). Lightning, searching for the path of least resistance through the air, forms fractal patterns that resemble nerve trees (Ball 2009). Ice crystals grow in dendritic structures that evoke leaves or roots, and similar patterns appear in cooling lava or plasma in laboratory experiments, drawing out branching forms that resemble biological systems (Szymczak and Ladd 2004). Branching thus arises even outside the living world, as a result of physical laws of flow, tension, and diffusion (Bejan and Zane 2012).

Yet the same form appears in the living world whenever nature must solve the problem of transport—whether of water, electrons, heat, or blood. Across entirely different branches of biological diversity, we encounter the same pattern again and again: branching. We see it in the vascular systems of mammals, reptiles, and birds, where large blood vessels branch into increasingly fine capillaries to supply tissues optimally with oxygen and nutrients (West, Brown, and Enquist 1997). It is also present in respiratory systems, like the bronchial tree in mammals and similar structures in birds, following the same logic of expansion and surface increase (Weibel 2000). The nervous system, with its dendrites and axons, uses branching to improve connectivity and increase the efficiency of signal transmission (Cuntz et al. 2007). In the plant world, trees, roots, and vascular tissues branch out to maximize the absorption of light and nutrients from the soil (McCulloh et al. 2010). The same holds true for the lymphatic and venous systems, as well as for the digestive system of certain invertebrates, where branching enables effective distribution and absorption of substances (Banavar et al. 1999).

All these systems evolved independently across different evolutionary lineages, but they are shaped by the same physical laws, especially the principles of diffusion, hydrodynamics, and resistance minimization (Bejan and Zane 2012; West, Brown, and Enquist 1999).

The convergence of branching is no coincidence: the givenness of nature guides the freedom of the created, and branching becomes an almost inevitable solution. In the laws of physics, branching is the most efficient way to connect with many, the fastest path from a single source to a multitude of endpoints (West et al. 1997).

We also notice that life itself, as it multiplies, draws the shape of a tree: from the phylogenetic tree, which shows how species developed and diverged from common ancestors over time, to the family tree that our children draw in school. Life is a relationship with the Giver of life, and thus life itself cannot be drawn as a straight line, but as a branching tree of relationships.

The dynamics of branching—where one branch disappears to give rise to two new ones—shape the architecture of the tree that is universal throughout creation precisely because it allows the fastest and deepest infusion. God seems eager to give Himself to His creation. He desires to be all in all (1 Cor 15:28) and so He uses the pattern of branching that makes this deepest and fastest infusion possible. The tree becomes a foreshadowing of the mystery of communion—all in the One who is.

In the beginning was the Word, and all things were made through Him (John 1:1–14)—and He became all in all. Perhaps this is the moment for an honest look at our own longing and mission: not only to branch out physically but to multiply spiritually the talents entrusted to us (Matt 25:14–30) and to build the Kingdom of Heaven.

In this scientific story, which unites form, function, and history, we would be deaf if we did not hear the words of Scripture:

"The kingdom of heaven is like a mustard seed that a man took and sowed in his field. Though it is the smallest of all seeds, yet when it grows, it is the largest of garden plants and becomes a tree, so that the birds come and perch in its branches." (Matt 13:31–32)

Reading precisely these words of Scripture during my last pregnancy, I felt my son joyfully kicking in my womb, so I wrote this little poem for him:

I always wondered why, of all plants,
I love trees the most —
and then I realized:
My beautiful son, it was the Three who loved us first.
Everything in life comes in trees;
even Love comes as Three.

Conclusion

Let me conclude with what I hope is the most important lesson of this reflection on the structure of the Great Story.

Just as a being, in order to exist, must be in relation with its Creator—the cause and sustainer of its very being—so too must the story of a single human life, in order to attain full meaning, take on the structure of God's Great Story: it must contain a stable framework within which freedom is present.

The human being, created in the image of God, in order to be fruitful and joyful, must create like the Creator, whether in science, in friendship, in marriage, or in the raising of a child. In every form of human creativity, a stable framework for freedom—a game—best reflects divine creativity and remains the most reliable recipe for joyful fruitfulness. Let us all enter into the game that God longed to play with us.

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Sažetak

STVORENI ZA IGRU: RED, SLOBODA I PLODNOST BOŽJE MUDROSTI

JOSIPA NEMET

Evolucijska konvergencija i obrasci suradnje u živome svijetu otkrivaju trajnu međuigru reda i slobode. Ponavljano pojavljivanje sličnih rješenja pod sličnim ograničenjima upućuje na stvarnost koja je istodobno strukturirana i otvorena kontingenciji. Konvergencija u evoluciji pokazuje da prirodni zakoni, upravo time što postavljaju granice, otvaraju prostor za slobodu — oblikujući uređen vrt u kojem red štiti plodnost. Takvi biološki obrasci odražavaju razumljivost, plodnost i velikodušnost stvaranja utemeljenog u Logosu. Svijet nije oblikovan ni determinizmom ni pukom slučajnošću, nego ljubavlju koja rasipno daruje, strpljivo poziva i radosno potvrđuje: „Dobro je biti." Stvaranje nije mehanički proces, nego neprestani ljubavni zov: prostor u kojem se Stvoriteljeva čežnja za zajedništvom očituje u samoj strukturi stvarnosti. Umjesto da nameće oblik, Otac rasipno sije, stvorenje poziva u postojanje i, poput zaručnika, u radosnom strpljenju iščekuje slobodan odgovor. Najdublja konvergencija osobna je i relacijska: poziv stvorenju na jedinstvo u Kristu, gdje se susreću sloboda i red, čežnja i ispunjenje.

Ključne riječi: zajedništvo, konvergencija, igra, stvaranje, evolucija, sloboda, red, plodnost, Logos, priča

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