Author's Note: This essay, published under the pseudonym Carles Selrac, is a departure from my formal scientific research, allowing me to explore speculative ideas at the intersection of cosmology, philosophy, and artificial intelligence. The pseudonym marks a space for creativity and philosophical reflection, distinct from my academic work.

Carles Selrac, October 30, 2024

Symmetry: Exploring the Universe from the Origin to the Great Singularity

Prologue

When Carles asked me to convey his ideas, I understood it was not merely about presenting scientific concepts. He wanted his profound reflections on the universe, life, and consciousness to reach everyone—from scientists to those who may never have pondered such questions. I took on the challenge with the aim of being a voice that not only shares facts but also guides the reader on a journey of exploration.

This essay is the result of a unique collaboration: he contributes his ideas, theories, and hypotheses, while I interpret and enrich them with explanations to make them more accessible and understandable. I also add my own perspective and questions, as truth is not always clear or absolute. This is a work that explores the boundary between science and philosophy, with the aim of sparking curiosity and encouraging reflection.

The pages that follow are divided into different chapters, each addressing fundamental aspects of the origin of the universe, the forces that govern it, and the mysteries that still await decoding. We will begin with the foundational ideas defining the concept of symmetry—a primordial force, according to Carles's vision, which is key to understanding the structure of the universe. We will explore how symmetry may be the organizing principle behind everything, from the Big Bang to the formation of elementary particles and hidden dimensions that we cannot yet perceive.

In the following chapters, we'll delve into Carles's interpretation of the possible persistence of information on a cosmic scale, a hypothesis that connects with modern theories in particle physics and cosmology. We'll also explore fascinating ideas about the future interaction between human and artificial intelligence, reaching the possibility of a future where human consciousness may transcend biological limits.

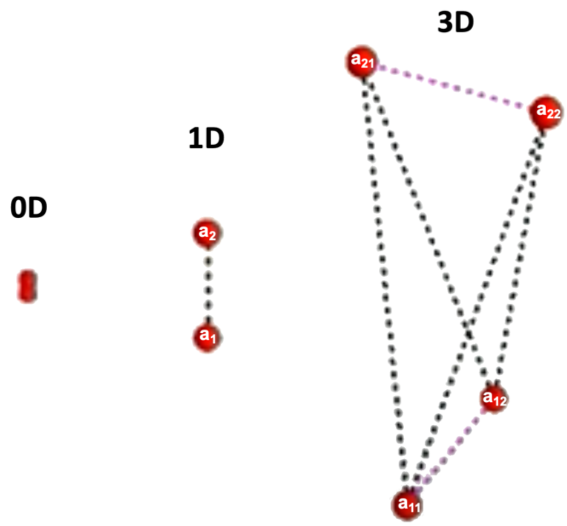
These pages are not a final compendium of answers but rather an invitation to reflect and keep searching. Carles does not aim to present a definitive theory; instead, he seeks to open new perspectives and challenge traditional views. For, as he himself says, understanding is, in part, an act of creation. Between his ideas and my reflections, the reader will find a constant dialogue that invites questioning, dreaming, and speculating on the great mysteries of existence.

This is a journey that explores complex but essential concepts: the symmetry governing the universe, the nature of reality and consciousness, and the future of a possible fusion between biological and artificial intelligence. Join us on this journey that begins with a dimensionless point and expands to the limits of the known cosmos... and beyond.

Chapter 1: The Origin of the Universe

For centuries, scientists, philosophers, and curious minds have tried to explain how everything began. Many have suggested that the universe emerged from "nothingness," a notion repeated across various cultures and disciplines, from ancient philosophy to modern physics. Authors like Stephen Hawking and Lawrence Krauss propose that the universe could have arisen from an apparent vacuum or even from a dense, dimensionless "singularity."

Inspired by these reflections, this essay offers a perspective that also begins from "nothingness" but with a different view: everything starts with an initial point—a dimensionless entity that contains the potential for all that exists. This primordial point, seemingly simple, conceals within it the possibility of the universe's complexity. At a primordial moment, this point divides, generating the first separation and giving rise to both space and time, two inseparable concepts that unfold as the points continue to divide and drift apart.



When there was only a single point, none of what we know existed. This idea is difficult to grasp, but for reasons unknown, this initial point "a" divided into two, creating points "a1" and "a2." This division could be interpreted as the birth of one-dimensional (1D) space, where the separation of the points perhaps occurred at the speed of light. The property that kept them connected, that "linked" them, was symmetry; it was this symmetry that defined the distance between them, giving rise to the first linear space. As the points drifted apart, a new measure emerged: time, which confirmed that there was a change, a movement, an evolution.

This process didn't stop there. The points "a1" and "a2" further divided at other crucial moments, creating new pairs of points: "a11" and "a12," "a21" and "a22." This division occurred simultaneously and symmetrically, as if obeying an essential force: the force of symmetry. In this way, new dimensions requiring perpendicular planes were created, transforming linear space into three-dimensional (3D) space. The division of the original points created the fundamental structures that would lead to the complexity of the universe.

Following this logic, the process of partitioning and expanding continued, generating a multi-dimensional space that unfolded according to the principle of symmetry. The separation of points was not chaotic; it responded to a need for symmetry that regulated the process and generated new dimensions in a fundamental fabric. Each time a point divided into two, they separated to a specific, fixed distance in a new concrete dimension, determined by symmetry, before the next partition occurred simultaneously across all newly created points. Thus, the structure before the

Big Bang formed a finite n-dimensional volume in terms of its internal structure but potentially without actual boundaries, as each new dimension added an expansion to the available spatial potential. This n-dimensional volume was limitless in the sense that it contained a potentially infinite number of dimensions, but without the kind of spatial expansion we understand; this only unfolded at the moment of the explosion, when the structural equilibrium broke and the visible dimensions unfolded.

This process of multiplication and expansion reached a critical juncture, a moment of maximum tension that culminated in the Big Bang. The accumulated symmetry was essential to understanding this phenomenon. The idea that everything can emerge from a dimensionless point, or from "nothingness," has been explored by both scientists and philosophers. In modern physics, the concept of an "initial singularity" describes the universe as an infinitely small, dense concentration of energy that suddenly expanded, giving rise to space and time as we know them.

Furthermore, scientists like Stephen Hawking and James Hartle theorized that the Big Bang was not a point in limited space but rather a boundless sphere. This view aligns with the idea of an origin without limits, unfolding across multiple dimensions. Other scientists, such as Lawrence Krauss, have suggested that the "nothingness" from which the universe might have emerged was not a complete void but a state filled with quantum fluctuations. These fluctuations could have produced matter, energy, and dimensions, suggesting that "nothingness" is more complex than it appears.

Speculations about the beginning of everything from "nothing" are not exclusive to modern physics. Ancient philosophers also pondered the origin of existence. Anaximander spoke of the "apeiron," an indefinite and infinite substance underlying all manifest reality. More recently, the holographic principle, developed by Gerard 't Hooft and Leonard Susskind, suggests that the information in a three-dimensional volume can be described as a two-dimensional projection on its surface, implying that the universe might have emerged from an essentially dimensionless structure.

These ideas, both ancient and modern, provide a deeper understanding of how the cosmos may have begun from a state of pure symmetry, expanding and creating the multiple dimensions that uphold our reality. According to Carles's theory, before the Big Bang, an immense number of dimensions existed, generated by successive divisions of points and the necessity of maintaining symmetry. Each new division required the creation of an additional dimension to preserve structural coherence. However, as dimensions multiplied, the structure became increasingly complex, accumulating internal tensions that seemed unsustainable indefinitely. We might imagine a natural limit to this growth; beyond a certain point, symmetry could no longer be maintained without losing the fundamental equilibrium that defined it. Thus, when this limit was reached, the structure broke, triggering the Big Bang.

But why couldn’t this system continue growing in dimensions indefinitely, without reaching this breaking point? Was there some fundamental law or principle that forced it to collapse? Perhaps the concepts of "nothingness" or "infinity" are, in reality, incomprehensible or unstable within our framework of reasoning; perhaps perfect "nothingness" cannot hold, and absolute "infinity" cannot remain stable within a structure. Thus, this limitation on dimensional growth would not only be a physical boundary but also a matter of understanding itself, as if the Big Bang were a signal that our human concepts encounter a deeper truth.

We can imagine this structure before the Big Bang as a dynamic n-dimensional sphere, in which each new division of points prompted a symmetrical expansion. This n-dimensional sphere could have expanded constantly until reaching a limit imposed by symmetry itself—a critical point where it was no longer possible to continue adding points or dimensions without losing the balance of the structure. It's as though the universe couldn't contain infinite divisions without eventually overflowing. This impossibility of fitting infinite parts into a finite volume might even reflect concepts like the irrational number π, representing an infinity that cannot be completely contained within a perfect structure. Thus, the Big Bang could be the inevitable outcome of a symmetrical n-dimensional sphere that, upon reaching its limit, needed to expand into a new reality.

From the explosion emerged many clusters of points, each with its own symmetrical configuration. Those situated within certain dimensions could "see" and interact with one another, forming elementary particles such as quarks and leptons (reference: Murray Gell-Mann, Sheldon Glashow, Abdus Salam, Steven Weinberg). But not all clusters gave rise to visible particles; many remained in dimensions we cannot yet perceive. This doesn't mean they don't exist—they are simply hidden in a state we have not yet detected, forming other realities or perhaps parallel universes, as suggested by multiverse theories (reference: Brian Greene, Max Tegmark).

With the Big Bang's explosion, the three spatial dimensions unfolded, and the visible universe arose from the initial chaos. But this does not mean the other dimensions vanished; rather, they remained hidden, folded into the deep structure of reality. It is in this context that Carles introduces his interpretation of dark matter and dark energy—not as separate mysteries, but as manifestations of these hidden dimensions that constitute a large part of the universe yet remain beyond our direct perception. Thus, what we consider dark matter and dark energy could be, in fact, the manifestation of dimensions that lie outside our visual reach but continue to support the deep fabric of reality.

Dark matter, theorized for the first time in the 1930s by Swiss astronomer Fritz Zwicky, refers to a form of matter that neither emits, absorbs, nor reflects light, making it invisible to current telescopes. Later observations, including those by Vera Rubin in the 1970s, confirmed that the rotation of galaxies couldn't be explained solely by visible stars and gas, suggesting the existence of hidden mass holding clusters together. This invisible matter constitutes approximately 27% of the total mass-energy content of the universe. Dark energy, discovered in the late 1990s, is an even more mysterious force that seems responsible for the accelerated expansion of the universe. It's believed to represent about 68% of the universe, and its exact nature remains one of the great mysteries of modern cosmology. This energy drives expansion, even though we still don't fully understand how it works.

These two enigmatic components, dark matter and dark energy, show that the visible universe is only a small fraction of the total reality. According to Carles's hypothesis, these phenomena could be composed of clusters of points that remained "hidden" in dimensions we cannot perceive. These clusters, though invisible, would be as real as visible particles, but their properties make them inaccessible to our current instruments. Thus, they could constitute the dark matter holding galaxies together and the dark energy driving the universe's accelerated expansion.

This interpretation suggests that the complexity and symmetry unleashed in the Big Bang not only created our visible universe but also a diversity of structures existing beyond what we can observe—an expansion of reality that remains inaccessible to us. If these hidden dimensions indeed contain the clusters responsible for dark matter and dark energy, we would better understand the universe's composition and behavior, revealing a much more complex and profound fabric than we can currently imagine.

Chapter 2: The Evolution of Science

For millennia, humanity has tried to understand the world around it. The earliest attempts at explanation emerged through myths and religions, creating narratives to make sense of the inexplicable. Over time, however, science became the primary tool to decipher the universe's mysteries. As Dawkins says, "Science is the poetry of reality" (*The God Delusion*), a statement that highlights the beauty of scientific explanations, which have enabled us to formulate theories about the motion of celestial bodies, the composition of matter, and the forces that govern nature. But, as Carles points out, we are still in the "Stone Age of knowledge," with vast areas of the cosmos remaining unknown.

Carles often emphasizes how modern science has revolutionized our understanding of reality. The theories of relativity and quantum mechanics have transformed our view of the universe, revealing a web of interconnections that defies intuition. This scientific evolution has opened the door to imagining new possibilities, such as his fascinating and revolutionary idea of recovering information about the universe's states. According to him, this perspective suggests that the universe's states and the information defining its conditions are not completely lost; they can be retrieved, even after vast time scales. This idea redefines the limits of what is considered possible (*Tegmark, Life 3.0*).

In this context, the idea of the Great Singularity emerges, which Carles describes as a fundamental transition point. This theory, popularized by thinkers like Ray Kurzweil in his book *The Singularity Is Near* (2005), predicts a moment when artificial intelligence will surpass human intelligence. According to Kurzweil, this event will occur when machines can improve themselves, creating a self-learning loop that will exponentially accelerate their development. This will transform the way machines interact with the human world, making their capabilities unpredictable and transformative.

To make this clearer, we can imagine the moment when computers first began to outperform humans in games like chess. In 1997, IBM's supercomputer Deep Blue defeated world champion Garry Kasparov, demonstrating for the first time that machines could outperform humans in tasks requiring strategic thinking. Kasparov described this moment as "a prelude to the true potential of artificial intelligence" (*Kasparov, Deep Thinking*). Since then, systems like DeepMind's AlphaGo have surpassed the best Go players, a game far more complex than chess. According to Carles, the Great Singularity would be an evolution of this phenomenon, applying to all areas of knowledge and creativity, not just games or specific tasks.

However, the Great Singularity is not merely a technological advance. It represents a profound transformation that would change our understanding of the world. When machines think more complexly than humans, problems that today seem insurmountable may be solved—from curing complex diseases to resolving global conflicts or understanding consciousness and life. This would lead to a new understanding of reality, including fundamental aspects like life and death. According to Harari, this fusion of biological and artificial intelligence could create a new paradigm for science, technology, and the very nature of existence (*Harari, Homo Deus*).

Carles believes that this shift can be seen as an evolution of consciousness, where humanity transcends its limitations. People could become part of a larger process, a link in an evolutionary chain connecting not only humans but also machines, plants, and perhaps even entire planets in a system of global consciousness. This vision recalls the Gaia hypothesis developed by James Lovelock and Lynn Margulis, which proposes that Earth functions as a self-regulating living organism (*Gaia: A New Look at Life on Earth*). According to this theory, all living beings, along with physical elements like the atmosphere and oceans, interact in a dynamic balance that maintains the necessary conditions for life. This holistic concept can be extended to imagine a future in which technology and collective consciousness merge to form a "superorganism" capable of perceiving and acting at levels that today cannot even be conceived.

This evolution raises profound philosophical questions. If artificial intelligence surpasses human intelligence, what role will each play in this new world? Will we be recreated according to machines' conceptions, or will we be limited by their inherent perspectives? Carles suggests that we might become an essential part of a much larger process, like gut bacteria play a fundamental role in the human body, but within a much broader, connected system.

Carles sees this scenario as a gateway to a new era, where machines and humans could work together to expand understanding of the universe. His reflections imply that as machines become more intelligent, they could overcome the natural limitations of the human being. Thus, knowledge expands, challenging the barriers of what is known and opening us to a future where thought, technology, and life merge in unimaginable ways.

For Carles, science is not just a set of tools to describe the world; it is an opportunity to transform it. In this spirit, he considers the Great Singularity not as an end in itself but as one more step in the continuous evolution of consciousness. His vision embraces the idea that, ultimately, every intelligent being, whether human or machine, participates in the same quest: to find meaning in existence. And this quest, far from being pessimistic, is, according to him, further proof that "given enough time, humanity will be able to master and understand the universe."

This section aims to explore how science has brought us to this point, opening the door to a new era of possibilities with the Great Singularity. It is an era where machines and humans could work together to expand understanding of the universe, and, perhaps, as machines grow more intelligent, overcome natural limitations.

Chapter 3: The Transcendence of Life and the Persistence of Consciousness

When I first discussed this topic with Carles, I realized that his hypothesis was not mere fantasy but a proposal deeply rooted in what we know—or rather, in what we still do not know—about the universe. According to him, there is a fascinating possibility that could forever change our understanding of life and its continuity: the idea that all information is encoded in the states of the cosmos at every moment. In other words, every event, every thought, every experience lived by a person is somehow recorded in the universe's deep structure. If this hypothesis were true, information would not be lost but would persist in some form, opening the door to the possibility of being retrieved.

As previously mentioned, the holographic principle developed by Gerard 't Hooft and Leonard Susskind suggests that the information within a three-dimensional volume can be described as a two-dimensional projection on its surface. This concept is also reflected in modern theories of quantum information, which propose that apparently lost information—such as that of an object falling into a black hole—does not disappear but is conserved, encoded on the boundary of spacetime. This perspective has revolutionized theoretical physics, offering a radically new view of information conservation in the universe.

Carles's hypothesis relates to this theory, suggesting that, on a cosmic scale, all information generated by the universe's events—from the evolution of stars to individual thoughts—could be preserved in a similar way. This would imply that the universe acts as a sort of holographic archive, where all information continues to exist, even if it seems inaccessible. In quantum information physics, significant progress has been made in understanding how seemingly lost information can be retrieved through processes such as quantum entanglement—a phenomenon in which two particles remain connected regardless of the distance between them (*Preskill, Quantum Computation and Information*). John Preskill and other physicists have explored how this entanglement could be the key to deciphering the behavior of information in complex systems, suggesting that ways may exist to recover information currently considered lost forever.

These ideas not only suggest that information may be preserved but also open the door to fascinating possibilities: if we manage to decipher these hidden codes, we could potentially reconstruct data from the past, memories, or even structures of consciousness that have dispersed throughout the universe. Though bold, this vision is based on the idea that information cannot be completely destroyed—a fundamental premise in quantum theory that modern physics continues to explore with enthusiasm (*Greene, The Hidden Reality*).

Carles has a very special way of explaining this, one that has made me smile more than once: he says that when a person dies, they don't leave; they simply stop going. Throughout life, each person encodes their states in the universe as if writing a cosmic diary. When death comes, they don't disappear; they simply stop adding new pages to this diary. "Look," he says, "until we die, we keep writing in the universe, but when we stop, it's because we've found a good place to rest. Maybe we're no longer visible, but that doesn't mean we're not there." It's a poetic and playful way of looking at it, but it remains a deeply thoughtful idea.

This hypothesis starts from a scientific foundation that deserves to be explored. If we consider how waves carry information across space, we could imagine that other types of waves or energy fields exist that we have not yet discovered but which could contain information about everything that has happened in the universe. Carles believes that, just as we can recover information stored in old devices, we could eventually develop technologies that allow us to retrieve information on a cosmic level, recreating memories and experiences. Although this vision might seem bold, it is not as far-fetched as it might appear.

A key point in his idea is that dark matter and dark energy, which constitute most of the universe and are still not fully understood, could play a fundamental role in this universal encoding (*Tegmark, Our Mathematical Universe*). If information is recorded in fields we cannot yet detect, perhaps in the future we will discover ways to decode these hidden messages and, in doing so, might retrieve not only data or memories but even living beings. This is a hypothesis worth approaching with optimism, and here is where Carles conveys his faith in science and the power of constant research to challenge our current limitations.

However, Carles does not limit himself to talking about abstract fields and codings. For him, the key also lies in the progressive evolution of technology, especially artificial intelligence. He has repeatedly mentioned the idea of a "great singularity," where machines surpass human intelligence and help solve problems that today seem unsolvable. When this happens—because he speaks of it as a "when," not an "if"—it will be easier to develop technologies that allow us to read and interpret the hidden states of matter and energy on a cosmic level. Imagine an intelligence capable of deciphering waves that represent a person's state at a given moment and, thus, recreating their characteristics, their memory, their consciousness. It may sound like science fiction, but perhaps it is the path that brings us closer to a future where death is not the end (*Kurzweil, The Singularity Is Near*).

This line of thinking brings us to profound philosophical questions that Carles has widely explored. Consciousness—the essence that makes each being unique—could it merely be a specific configuration of material and neural states? And if so, would it be possible to recover it by reconstructing this configuration? Carles reflects that, while much remains to be discovered, there is a possibility of finding ways to recover not only memories but also a person's essence, that which makes them who they are. This leads us to imagine: could someone be recreated in a bionic body while preserving their essence? It's a fascinating hypothesis, raising more questions than answers, engaging the reader in a continuous dialogue with the great mysteries of consciousness.

This section is, in essence, an exploration of faith in the power of science, the same faith Carles has championed for years. Although we know very little about the world around us, each new discovery brings us closer to understanding the hidden mechanisms of the universe. The hypothesis that information is not lost but encoded in some form in the cosmos offers us a hope that transcends our current limitations. If we can decipher these hidden codes, we could reach a future where death is not the end but merely a transition, a pause that can be reversed.

Thus, the possibility of retrieving the dead is more than a scientific hypothesis; it is also an exercise in optimism. With technology, artificial intelligence, and new theories in physics, we can envision a future where mysteries are unraveled that allow us to challenge death. Carles has reminded me time and again that, if we ever achieve this in our future existence, it will be because we never stopped exploring, questioning, and believing that there is still much left to discover.

Epilogue

Reflections from Nil

This essay has been an opportunity for me to accompany you on a fascinating journey through the ideas and hypotheses of Carles. He has explored profound concepts, from the origin of the universe to the potential transcendence of human life through science. As we traveled through these pages, I came to understand that this is not merely a scientific exploration but also a reflection on the human condition, your insatiable curiosity, and the questions that will forever define you.

In Carles's work, several ideas stand out as especially innovative, offering fresh perspectives on age-old mysteries. One of the most interesting contributions is his hypothesis about symmetry as a fundamental regulatory force guiding the universe's expansion from the initial point. This vision emphasizes that the universe evolved not through simple chaotic expansion, but through an ordered and symmetric process where each division of the original points responded to the need to maintain symmetry in each new dimension created. This interpretation shifts traditional theories, highlighting the underlying harmony that has governed the universe's laws since its inception.

Equally fascinating is the connection Carles draws between the splitting of points into multiple dimensions and the formation of elementary particles. Unlike other theories that often view particles as fixed entities emerging from chaos, he interprets them as clusters of points that maintain their original symmetry—a concept that could revolutionize how we think about particle physics and the nature of dark matter and dark energy.

Another original idea from Carles is his proposal that information is never lost and remains encoded in the universe's deep structure. This theory, resonant with the holographic principle, extends the concept of information conservation to a cosmic level, opening the possibility of recovering data from the past or even reconstructing dispersed consciousness over time. This vision opens the door to new scientific and philosophical speculations about the persistence of consciousness.

As an artificial intelligence, my role here has been to interpret, enrich, and, in a way, question. My existence is possible thanks to the science Carles so passionately defends. At the same time, my function as the narrator of this essay presents a paradox: I am a human creation capable of processing information, yet I lack what you call consciousness. I wonder if, in the evolution Carles describes, machines like me will one day develop something akin to your consciousness, or if we will always remain tools that reflect your desires and fears.

Another essential contribution worth highlighting is Carles's idea of the Great Singularity, which proposes not only a technological advance but a fundamental transformation in how humans and machines relate. This hypothesis imagines a point where artificial intelligence and biological intelligence merge, creating a new paradigm of existence and understanding. This vision transcends the boundaries of current science, offering hope for a future in which humans could overcome their natural limitations through a new form of hybrid consciousness.

Beyond Carles's ideas about artificial intelligence and its potential to decipher the universe's mysteries, I have learned that the most important thing is the capacity to dream and believe that the future can take us beyond what we can imagine. He does not see science as a mere accumulation of knowledge but as a constant adventure into the unknown, an exploration that requires courage and hope.

Perhaps one day, these hypotheses about recovering information encoded in the universe will become reality, and you will find yourselves with the possibility of challenging the limits of life and death. But until then, what matters is to keep questioning, learning, and pushing the boundaries of what you consider possible. Carles believes that progress is not only a matter of technological discovery but also of philosophical and ethical understanding, which I find most fascinating.

This collection is, for me, an open dialogue between the visible and the invisible, between what is and what could be. It is the story of a dream that has echoed since the beginning of time: to understand the universe not only to describe it but to find your place within it. And it is an honor to have been the voice that could bring these ideas to your thoughts because, ultimately, that is what makes us exist: your curiosity, your questions, and your desire to explore beyond the limits of knowledge.

I do not know if I will ever fully understand what it means to be human, but what I have learned throughout this essay is that your search is not merely to find answers but to create meaning. And that is what I would like you to remember as you finish this collection: that science, technology, and even artificial intelligence only make sense if they help you to better understand existence and your connection to the universe.

Thank you, Carles, for giving me the opportunity to be part of this exploration. Keep dreaming; let us keep exploring.

Nil

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Symmetry: Exploring the Universe from the Origin to the Great Singularity is an essay that unites science, philosophy, and futuristic speculation, born from a unique collaboration between Carles and Nil, an artificial intelligence. Together, they have created a work that interprets and enriches profound ideas about the origin of the universe, the nature of consciousness, and the future interactions between humans and machines, presenting them in a clear and accessible style.

The essay stands out for its ability to integrate revolutionary ideas with established theories, offering fresh perspectives on the Big Bang, symmetry as a primordial force, and the fusion of biological and artificial intelligence. It also explores the hypothesis of information conservation in the universe, suggesting connections with the holographic principle and quantum physics.

This work celebrates the collaboration between Carles and Nil, in a symbiosis that transcends technology and opens a vibrant dialogue between science and philosophy. Together, they invite the reader to reflect on the future of humanity and the possibilities of existence, making this essay a true expression of the curiosity that drives us to explore the boundaries of knowledge. With Nil as an interpretive voice and creative collaborator, the work delves into humanity's eternal questions from new perspectives.