

U G . N U G

The most coherent
reading
of the universe

Wisdom, while filling sheets of equations, would be to remember that the physics we explore today is primarily the work of free-minded independent thinkers. They have time to remake the world.

Abstract	3
Λ CDM vs UG.NUG	3
Λ CDM Flaws	6
Falsifiable Predictions	7
Introduction	9
UG	11
NUG	12
UG.NUG	13
The CMB	14
Time	17
Mass	18
the Arrow of Emergence	23
the GRID	24
the Phases	26
the First Phase	28
the Second Phase	29
the Third Phase	30
Gravity	31
Gravitational waves	32
Black Holes	33
Galaxies' persistent activity	34
Black Holes Observations	34
Conclusion	37
Conceptual Consequences	38
for Cosmology	38
for Quantum Physics	39
for Forces and Interactions	41
Discussions	43
Logical Observations	43
Quantum Mechanics Observations	45
Comparative Table PBB / UG.NUG	47
the Big Bang Paradigm	50
the Fear of the Unexplainable	53
the Formalism	56
the Fundamental (UG)	56
the Natural Standard	57
Gravity Measure	58
the Redshift	58
Conclusion	59

Abstract

This is a coherent reading of the universe, grounded in observation. Thought precedes philosophy; philosophy precedes science; and science precedes physics. If this paper has any authority, it does not lie, as with the current model, in equations that posit an external cosmogony while declaring the universe to be all that exists.

Before equations, the universe must be observed. And it is only by observing it as it is that we can understand what has made it.

The decisive observation is here:

Why the [CMB](#) Points to a Ready-to-Use, Unfolded Universe

The [\$\Lambda\$ CDM](#) is a construction while UG.NUG results from observation. One can imagine a [Three Point Universe](#) or a more explicit version, like follows.

Λ CDM vs UG.NUG

Λ CDM

UG.NUG

1



The universe begins in an arbitrary singularity — a point in nowhere despite the universe being all that exists. This deceiving narrative is a creation story, no different in structure from the Genesis of the Bible. Yet science claims to have outgrown such myths — while still inventing its own beginning.



For humanity, the universe never started. It simply IS. Inferred by the [CMB](#), which is not a fossil. [Why the CMB Is Proof of a Ready-to-Use, Unfolded Universe](#)

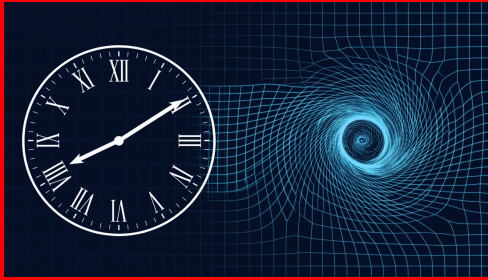
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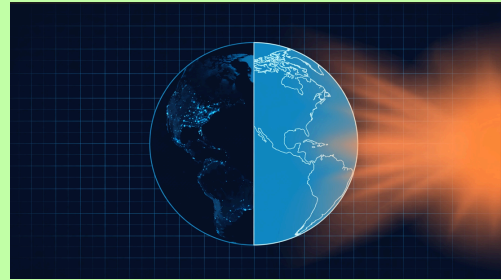
This moment *t* and the explosion itself (Big Bang) occur without any valid reason — simply to make the equations of relativity fit.

No Big Bang. The universe is stable, omnipresent and already fully deployed.

3

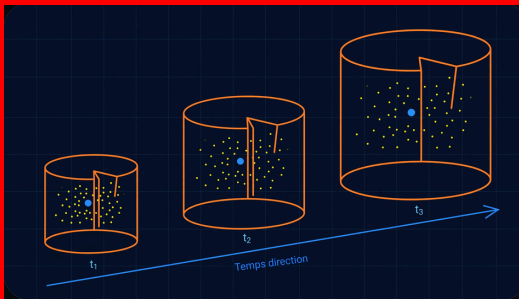


With Einstein, space becomes spacetime — a mathematical, so-called dynamical entity

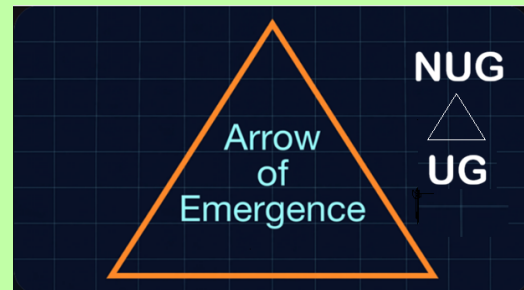


Time is only a circadian metric, tied to Earth and Sun. No Time in the Universe. **Spacetime is an illusion.**

4



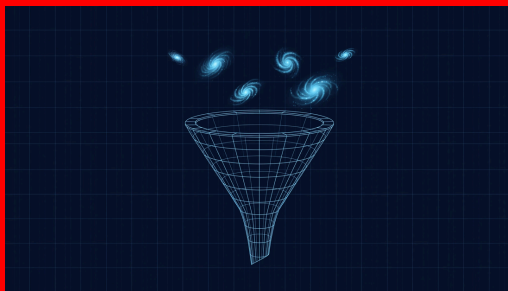
Arthur Eddington's Arrow mistook time for a succession of events



The Arrow of Emergence is the one that imposes the **readiness** of elements before passing to their successive shape or phase. Time is chronometrized nowhere in the universe.

UG becomes NUG when elements are ready.

5

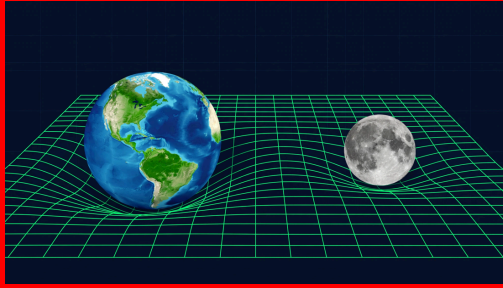


Expansion was derived from modified equations (Friedmann, Lemaître)

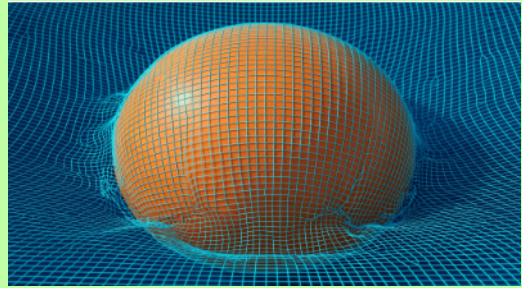


No expansion. The universe is stable and already fully deployed.

6

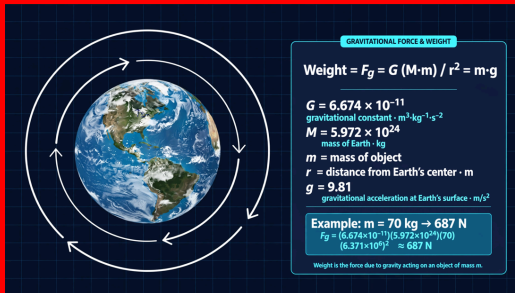


Geometry is fundamental. Gravity is the curvature of spacetime."



Geometry (**NUG**) emerges from the **GRID (UG)**. Gravity is the resulting pressure of the **GRID** on geometry.

7

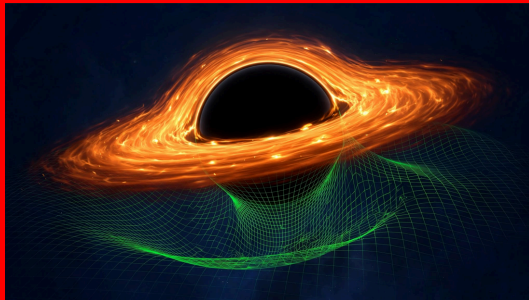


Big equations for gravity calculation. Moreover, mass is (un)defined through a loop ($m = F/a$, $F = Gm_1m_2/r^2$).



Here, **One liter of water** is sufficient to measure gravity. The mass definition exists but it is not measurable.

8



Black holes do not exist. They are a purely mental construction that does not fit what is actually observed.

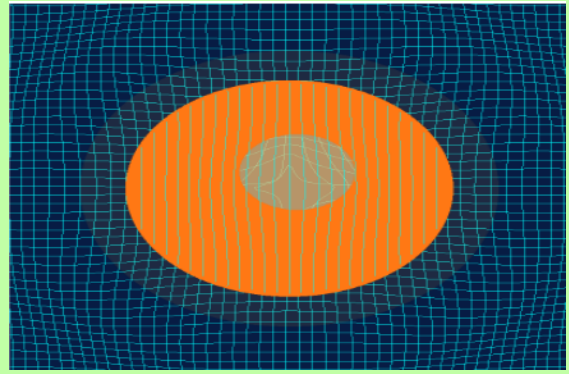


At the centre of most large galaxies, there is a compact, luminous source. This source emits intense radiation across a wide range of wavelengths: X-rays, infrared, radio. This is the heart of an emergence centre, from which a galaxy forms. No hole, no singularity, no invisible object.

9



Ripples in unexisting spacetime, from merging black holes.



Ripples in the GRID, from extreme geometric distortions. Gravitational waves are not ripples in a non-physical spacetime. The detectors measure the same signal. The interpretation changes. Here, the emergence — large and fast — moves all around.

This reading of the universe allows all apparent paradoxes of the current model to vanish. Here is a non exhaustive list of these not more relevant flaws in the UG.NUG version:

ΛCDM Flaws

1. **Confusion between model and reality** (the mathematical model is taken as an ontological description).
2. **Incoherent notion of particle** (particles = field excitations, yet treated as objects).
3. **Dogma everything must be quantized** (forced quantization of gravity without conceptual justification).
4. **Symmetries vs. reality** (mathematical symmetries treated as properties of the real world).
5. **Hypothetical energies** (vacuum energy, dark energy, vacuum fluctuations).
6. **Horizon problem** (regions too distant to have ever *coordinated*).
7. **Flatness problem** (the universe is too flat without fine-tuning).
8. **Origin of homogeneity/isotropy** (initial homogeneity unexplained).
9. **Origin of geometry itself** (the model assumes geometry but does not explain it).
10. **Cosmological constant** (value inexplicable, off by 120 orders of magnitude).
11. **Ad hoc cosmic inflation** (introduced to fix the model, not predicted by it).
12. **Undetected dark matter** (postulated to account for discrepancies).
13. **Unexplained dark energy** (introduced to account for cosmic acceleration).
14. **Initial singularity** (the model diverges at $t = 0$ and thus does not describe the origin),
15. **Measurement problem** (no internal solution within the paradigm).
16. **Insufficient decoherence** (does not produce a single outcome).
17. **Superposition vs. classicality** (no clear transition),
18. **Big Bang nucleosynthesis** (Describes the formation of light nuclei — but relies on a hot, dense universe, an unverified postulate.)

19. **Incompatibility between QM and General. Relativity** (two conceptually incompatible frameworks).
20. **Incompatibility between expansion and the CMB state**. (The [CMB](#) has none of the properties of an event (no direction, no date, no propagation, no cooling) and all the properties of a fundamental omnipresent state.)
21. **Curvature of a non-existent spacetime**. (Spacetime is an abstract mathematical construct. A physical deformation is therefore attributed to a non-physical structure.)
22. **Mass** (The Standard Model does not define mass. see: [the Mass Imbroglia](#))
23. **Time** (Cosmic time does not exist. see: [ΛCDM Pillars Incongruities](#))
24. **Black holes** (Never observed. see: [Black Holes](#))
25. **Higgs boson** (Becomes a useless patch if gravity is accepted as a pressure on the GRID, not of a force)
26. **non-exhaustive list...**

One can stop his reading here. All that was to be said is said. If all the paradoxes are resolved, the universe must certainly be as described. If not exactly, almost exactly.

Astronomy can go on with its weird interpretations like those of [black holes](#) or that of singularity that comes out of nowhere, this result will not change. UG.NUG will always offer a better interpretation of astrophysical observatory's measurements as it is a reading, not a paradigm, not a framework, not a dogma.

This perhaps will help science understand how much, for a century, it has moved away from the universe by trying to approach it.

Falsifiable Predictions

The following predictions are consequences of the UG.NUG reading. They are not derived from arbitrary assumptions, but from the logical structure of the model itself. They are offered as tests — not to prove the model right, but to allow it to be compared with observations.

Prediction 1 (on the CMB)

If the [CMB](#) is an omnipresent state rather than a fossil relic, then its anisotropies should not correlate with a cosmic age (as predicted by the standard model), but rather with local variations in emergent geometric density. Planck data should reveal a statistically significant correlation ($\geq 3\sigma$) between anisotropies and the distribution of large-scale structures, with no preferred recombination epoch.

Prediction 2 (on redshift)

If redshift is a measure of volumetric realization rather than expansion, then the redshift-distance relation should show systematic deviations from Hubble's law for very high-redshift objects ($z > 10$). These deviations, exceeding 1.5σ from the Λ CDM luminosity-distance relation, should be detectable in JWST NIRSpec observations.

Prediction 3 (on black holes)

If [black holes](#) are geometric distortions of the [GRID](#) rather than singularities, then they should not exhibit detectable Hawking radiation. No thermal signal above 10^{-18} K associated with evaporation is expected in any electromagnetic or gravitational-wave channel.

Prediction 4 (on dark matter)

If dark matter does not exist and galactic rotation curves are a misinterpretation of [GRID](#) pressure, then observations of dwarf galaxies should reveal systematic anomalies in the baryon-dark matter relation — anomalies that would disappear when 'dark matter' is replaced by a [GRID](#) effect. Specifically, dwarf galaxies should exhibit a baryonic Tully-Fisher relation with zero residual scatter attributable to dark matter halos.

Introduction

This paper is neither a theory nor a conceptual framework. It is simply a reading of the Universe that follows directly from the analysis of its responses and its behavior.

Moreover, some chapters or paragraphs address philosophy, mystery, or metaphysics, and in such cases the writing cannot be strictly academic. Certain metaphors, images, or expressions may not appeal to mathematical or rigorously formal minds.

The point is that one cannot propose a complete new interpretation of the universe by speaking only in equations. The universe is not a matter of ciphers, but of the mystery it provokes in the human mind.

That said, one cannot avoid a degree of interpretation, but — unlike certain other frameworks — always the most logical and the most adherent to reality:

- When a glass falls and cannot reassemble itself, the Universe speaks.
- When the particles that make up matter refuse to be observed, the Universe speaks.
- When galaxies appear to move apart, it speaks again.
- And when the Universe clearly differentiates its objects through [Gendered Uniformity](#), it does more than speak — it screams. Although no one has ever formulated it, this is by far the most defining characteristic of its essence and the blinding limit of its no-man's-land.

Reading the Universe means only reading it. It does not mean adding parameters like time, [mass](#), or geometry to a quantum mechanism that has never been observed. That is simulation — and above all, concealment. When we assign a geometric figure to spin, we conceal the true essence of the particle. Physics has stubbornly sought to hide the strange because some decided it did not exist. So, it began to

- measure the immeasurable,
- to add mathematical spaces where none exist,
- to speak of quantum states to define a particle's position, even though it is absolutely incalculable and the word *state* does not even refer to the particle but to its context,
- to invent nourishing bosons to fit poorly conceived equations in mathematical games that, in no way, express the physical concepts of the Universe.

In this distorting perspective, it is no longer about reading but about interpretation — sometimes even staging. One no longer describes what the Universe is or does: he models it, he tells it in its own way, he comments on it as if it were a historical account or even a biblical text. This is where the drift of the [\$\Lambda\$ CDM](#) originates — from the refusal of the existing in its pure state.

And also from elsewhere.

UG

This term stands for french ***Uniformité Genrée*** (*Gendered Uniformity*). We coined it to describe a phenomenon that, strangely, has gone unnoticed until now. In short, everything produced by the universe in its earliest stages — particles, atoms, nuclei, molecules — none of which possess geometry, is subject to this regime. Its objects have no individuality, no history, no variation. This uniformity is the hidden foundation of everything, the silent order governing the birth of the Universe.

For now, let's simply understand that the world of the small — below the molecule or chemistry — has no geometry, even if textbooks erroneously suggest otherwise.

NUG

This term stands for french ***Non-Uniformité Genrée*** (*Non-Gendered Uniformity*). It represents everything else: stars, planets, meteors, and of course, all that derives from them — humans, artifacts, flora, fauna. All these objects are to be considered geometric because they have a form perceptible to humans without sophisticated optical equipment. From this, we can already deduce that humanity is an integral part of its own physics. Without humans, this text — and others like it — would have no reason to exist, and its understanding, or rather, its reading, would not have been necessary. This realization is of capital importance because time — the kind we count on our wristwatches — is also subject to the presence of humanity.

UG.NUG

This is the title of this presentation. It encompasses these two regimes that govern the entire universe. We will see that NUG (geometry) appears much later than UG, but once present, it becomes an integral part of the Universe.

The CMB

The CMB is not a fossil. It is what we call the [GRID](#) (Global Reference in Dynamics). In other words, it is a substrate intuited by Faraday, which he never named.

What is observed is simple: one single, omnipresent radiation at 2.7 K, with a perfect blackbody spectrum, in all directions. One temperature.

Yet it is presented as fossil light from 380,000 years after the Big Bang, before galaxies existed, but already containing the disposition of the "seeds of the universe".

Here are some observations about what is mistaken in these assertions:

Of the blackbody

The blackbody is observed as being a perfect one. But to claim that this temperature is a cooled remnant is an assumption. And a quite weird one.

A perfect blackbody can more likely be an original property of the universe. This temperature of 2.7 K is indispensable to the existence of a structured universe. If space were filled with hot photons, the universe would be a burning plasma, without atoms, without galaxies, without life. The CMB is therefore preferably a property rather than a coincidence: a condition for a ready-to-use universe to be able to make geometry appear.

Furthermore, such homogeneity in temperature cannot, statistically, be the result of long-term cooling over such vast distances. The alea of the journey would never have allowed such a feat. Conversely, it is a property the universe masters perfectly, as it is precisely what characterizes the [gendered uniformity](#) of quantum objects.

Of the Dated? Noise

It is really preferable not to know how the date has been fixed — especially since Universal Time does not exist.

And if this logic is admitted, it is clear that nobody can imagine the CMB is a no-date fossil.

Furthermore, fixing this date at 380,000 years after the singularity is an unpredicted exploit, far more impressive than the COBE mission results themselves.

I suppose that, for this assertion, the date must have been engraved on each photon.

The word "years" is misleading. Its historical origin is tied to the circadian and terrestrial cycle, a cycle that did not exist at that epoch. To project our current clock — defined by 9,192,631,770 vibrations of a cesium atom — onto an epoch where the cesium atom itself did not exist is an extrapolation, not a direct measurement. The tough truth is that the universe's durations are not definable.

Of the "seeds of the universe"

What is called "seeds" cannot exist as a visible image. Before geometry, there is only a ghostly regime, that is to say, an invisible and ungraspable regime that we know today as quantum and that remains ghostly even though we have learned to manipulate some energetic manifestations of elementary particles. These particles have always remained elusive, invisible and unmaterialized.

Therefore, seeds, if they exist, are by definition not photographable.

Before showing a photograph of seeds and calling the amplified spots "seeds of galaxies", one must first prove what a seed is in the invisible regime.

Of the Map

If the CMB were a true fossil from well before the creation of galaxies, then once cleaned of our own galaxy, its map should be smooth. Forever smooth. No structure of the present universe should appear.

The real cleaned map (SMICA) is indeed smooth and grey at 2.726K.

But once the uniform 2.726K is subtracted and residuals are amplified 100,000 times in false colors, the image we obtain is not random noise that shows the diffusion of an accomplished universe, with a distribution that resembles the present large-scale structure.

And this is completely incompatible.

A fossil from before structure cannot have the shape of the structure that was created after.

Of the temperature

Today we observe only two kinds of photons in the universe:

1. Very hot, always found around stars. Proof of a continuous local production.
2. Very cold at 2.7K, diffuse everywhere. This is the CMB.

If the cold came, according to Λ CDM, from hot distant photons cooling during their journey,

- we should find the whole continuum in between: a uniform diffuse background of lukewarm photons at 50K, 1000K wandering among the cold. We find nothing of the kind.
- Furthermore, the hot photons found around stars would have also cooled during the journey. It is not the case.

Conclusion

The CMB is not a fossil

The CMB is not the echo of a Bang that no one has ever seen. It is the thermal condition of a stable, non-expanding universe: the proof that the universe is unfolded and ready to host structure, not that it was born, just like that, God knows where, on a fine summer day in -13,800,000,000 AD."

And the consequence is that we have a universe genesis in 3 points:

1. The CMB, called [GRID](#) in this work, is not a fossil but the unfolded universe in its quantum primordial form.
2. When the quantum elements are ready, the emergence of their geometry is triggered.
3. This geometry exerts pressure on the [GRID](#) — [gravity](#).

That is enough to make all known paradoxes vanish as well as the new JWST revealed anomalies.

Time

Current Definition of Time

In encyclopedias, one cannot really say that time is defined, and when it is, it is closer to a sequence of events than to the measurement of time — its chronometry. A year, a day, a minute... This chronometry is only possible relative to precise references.

References which do not exist in the universe. **This must be clearly understood.** Because that means that **cosmic Time does not exist at all.**

Succession

What does exist, however, is **Succession**.

This sequence of events gives the idea of past and future. A glass that breaks cannot reassemble itself. Indeed, once it has broken, we can say: it was intact (past), and now (present/future) it is shattered.

This succession gives the impression of time passing, but without chronometry it is not the useful time indicated by our watches; it is simply a **Succession** of events.

The confusion is easy, but the difference is immense. Our prehistoric ancestors saw that days followed one another, that the dead did not wake up, that water flowed in one direction in streams and rivers. But they had no watches. They did not measure time. They had no appointments at 3:00 p.m. At best, they could agree to meet at sunrise or sunset — nothing more.

And it is precisely this reference — **sunrise or sunset** — that makes time measurement possible. **The circadian periodicity is the only temporal reference that exists for humans,** and it is not cosmic.

the Circadian Periodicity

What we wear on our wrist is the calculation of this periodicity, divided into units of measurement: hours, minutes, seconds. Time zones are interpretations of this periodicity, based on the dance of the Sun and Earth for each latitude.

People wake with the day in America, and in France as well — at the same local time, **but not at the same moment**. Universal time therefore does not exist. On the contrary, it exists only for this pin-head called Earth, hidden among trillions of football fields. Worse still, it exists only for the humans who live on it. Animals do not care.

Time zones are the best evidence of the circadian periodicity as they measure the sleep and awake time of humans all around the world.

the Mistake

Chronometric time is a key value for many physical parameters and equations. It is the basis of acceleration and velocity, which in turn allow us to calculate force, thrust, and so

on. So total was the misunderstanding even for Einstein, who named his "spacetime," whereas its true name should have been closer to "space-succession". Λ CDM itself, when it calculates the age of the universe as 13.7 billion years, speaks of years that did not exist before the appearance of the Earth and the Sun. This number is therefore completely arbitrary and carries no real meaning.

The universe has no duration.

- It does not need to wake up in the morning, **there is no cosmic morning at all, no day, no night !**
- It does not need to rest.
- It has no sequences to measure, and no appointments to keep.
- Velocity is not measurable. Comparable between two events at best, but not measurable. So light velocity is a human measure between two human references.

Now that this is clear, you can understand how encyclopedias like Wikipedia and Universalis repeat absurdities.

Here is what Wikipedia says in its definition of time (retrieved 3 October 2026):

Time is the continuous progression of existence that occurs in an apparently irreversible succession from the past, through the present, and into the future. Time dictates all forms of action, age, and causality, being a component quantity of various measurements used to sequence events, to compare the duration of events or the intervals between them, and to quantify rates of change of quantities in material reality or in conscious experience. Time is often referred to as the fourth dimension and the temporal dimension, in addition to the three spatial dimensions.

Time is primarily measured in linear spans or periods, ordered from shortest to longest. Practical, human-scale measurements of time are performed using clocks and calendars, reflecting a 24-hour day collected into a 365-day year linked to the astronomical motion of the Earth. Scientific measurements of time instead vary from Planck time at the shortest to billions of years at the longest.

~~Measurable time~~ is believed to have effectively begun with the ~~Big Bang 13.8 billion years ago~~, encompassed by the chronology of the universe. Modern physics understands time to be inextricable from space within the concept of ~~spacetime~~ described by general relativity. ~~Time can therefore be dilated by velocity and matter~~ to pass faster or slower for an external observer, though this is considered negligible outside of extreme conditions, namely relativistic speeds or the gravitational pulls of ~~black holes~~.

Explanations for ~~striketrough~~ expressions

1. ~~measurable time~~: There is no cosmic measurable time.

2. ~~Big Bang~~: The Big Bang never happened for all the reasons detailed in the article on [ΛCDM](#)
3. ~~13.8 billion years ago~~: The universe has no age and no duration
4. ~~spacetime~~: This term is a mathematical conjecture without a physical definition and the worst is that it has no meaning.
5. If cosmic time does not exist, then time dilation — as it is described in relativity — cannot be a dilation of a universal time. It can only be a local effect, relative to a local observer and a local clock.
6. If there is no cosmic time, then there is no universal reference against which a dilation could be defined. Each clock dilates relative to another clock. There is no global frame. So the statement "time dilates" should be read as: the rate of local processes changes depending on the local conditions. Not that a substance called "time" stretches or contracts.
7. ~~black holes~~: They have never been observed and a detailed explanation of what they are is available in [Black Holes](#)

Here is what Universalis says:

The Encyclopædia Universalis, in its article on time, begins with a quotation from Saint Augustine: "If no one asks me, I know what time is. If someone asks me, I no longer know." (Barreau & Costa de Beauregard, 1999; my translation)

And it adds: "Despite all the reflections made and the knowledge accumulated about it, and by many specialists, the much-scrutinised face of time remains, in some respects, that of a sphinx."

The article then explains that physicists have defined time operationally — that is, by what it measures, not by what it is. The second is defined as 9,192,631,770 periods of a caesium-133 transition. The metre is defined as the distance light travels in 1/299,792,458 of a second. Each unit refers back to the other.

So the definition of time rests on **human conventions**. On the caesium atom. On the Earth. On the Sun.

Why "Convention" Is the Wrong Word

Universalis describes time as defined by convention. But this is not exact. The circadian periodicity is not a convention. It is a constraint. It is imposed on every living being on Earth. Day and night exist. Sleep and waking exist. The human body is regulated by this cycle. No one chose it. It is there, before us, independent of us.

And this is the essential difference. A convention could be extended to the universe. A constraint tied to the Earth cannot. The universe has no day, no night, no waking, no sleep. The units of time come from a cycle that exists only on Earth, for the life that inhabits it. They cannot be projected onto the universe.

Conclusion

The conclusion is very simple.

What exists is **succession** — the irreversible order of events. What exists is chronometry — **the local measurement of duration**, based on the circadian periodicity of life on Earth. What does not exist is cosmic time — a universal clock that would measure the universe itself.

References

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Mass

Why mass? Because, strangely enough, it occupies an unjustly crucial place in physics even though it is neither truly defined, nor truly existent, nor truly useful. Its history is fascinating, because it must be rare, in the so-called hard sciences, to encounter such an imbroglio. That said, nothing prevents us from trying to untangle it and understand the successive mistakes that led to this highly questionable notion of mass.

The Human Definition of Mass

First of all, we need to get rid of the dictionary definition, which describes the kilogram as a unit of mass rather than weight. A kilo of tomatoes is a weight for every human being. No one ever speaks of a "mass of tomatoes." So let us forget that definition and take the kilo as a unit of weight, as common usage does. It will make things simpler for everyone.

Weight can be measured on Earth because, in 1795, it was decided that it would correspond to one liter of water at 4 degrees Celsius. Since then, the practical standards have changed for convenience, but the underlying reference has remained the same:

1 kg = the weight of one cubic decimeter of water at 4°C (maximum density), pure water, normal pressure.

From there, we can imagine that a kilo of tomatoes drifting through space does not weigh the same as on Earth. So we can deduce that the kilogram expresses a weight produced by [gravity](#).

- **Space:** weight = 0 kg
- **Earth:** weight = 1 kg

What, then, should mass be? In pure logic, it ought to represent the density of matter contained in that kilo of tomatoes. This density is an invariant geometric reality, which may — or may not — be influenced by [gravity](#).

Matter-Density

To illustrate this idea of matter-density, let us replace the tomatoes with a pack of water bottles. Whether they contain water or not, their geometry (their volume) remains the same.

But if the bottles are empty, [gravity](#) will make them weigh, let us say, 400 g. If they are full, they will weigh 9 kg.

So gravity acts, on the one hand, on geometry, and on the other hand, on matter-density (the amount of matter inside that volume). Both are crucial in evaluating the pressure that weight produces.

It is obvious that if the pack is replaced by a cherry-sized ball made of the densest metal on Earth, its tiny geometry will never allow it to weigh as much as a full pack of water bottles.

In the collective imagination, this definition of mass (as matter-density) is far healthier than anything offered by Newton's circular equations.

Mass in Space: Inertia Without Weight

In space, the pack of bottles will float the same way whether it is empty or full. Their weight is zero, but their inertia — that resistance to motion — remains different. Yet this inertia can only be defined relative to an acceleration ($a = \Delta v / \Delta t$), which itself depends on time and velocity. And these two quantities only make sense within a human reference frame.

So even if mass (as matter-density) exists, it cannot be defined without a terrestrial reference. Mass, like acceleration, time, or velocity, is a human construction — a necessary illusion to describe our experience, but without any absolute foundation in the universe.

The lack of terrestrial references is not the sole reason. The other reason is the mixture of matters. While a shopping bag with potatoes, tomatoes, and fish is still weighable despite the variety of products, mass can absolutely not be described nor calculated.

We now have a logical and coherent proof that mass is undefinable without a pure single composition — which is not possible — and, in any case, in an environment without reference.

It follows, therefore, that mass is undefinable anywhere. Weight remains definable on Earth because it is a pressure on a support. In space, only the resistance to a flick (F_s) is definable. In the quantum regime, even F_s is inoperative, for one cannot push a ghost. There is no geometry to push against, and no handle to flick. The quantum regime requires other, non-mechanical probes — deflection in a field, cyclotron frequency, atomic recoil — none of which constitute a definition of mass in itself, only measurements of its effects.

The Circular Definition of Newton

Before Newton, people weighed things with stones. Merchants simply compared reactions between two objects. A potato was worth three stones, a piece of metal balanced a sack of grain, and all of this was nothing more than a game of equivalences between pressures — a silent dialogue between objects and their responses.

No one spoke of "amount of matter"; no one imagined that an object possessed, within itself, a unit that indicated its weight.

Newton was the first to try to define mass — but he did so using... mass itself, creating a definitional loop that no one noticed.

Here is his reasoning:

To know mass, you must know force. So he writes: $m = F / a$.

Then, to know force (F), he writes: $F = G \cdot m_1 \cdot m_2 / r^2$.

It is clear that Newton uses m to define m .

He also uses:

- G , a universal gravitational constant with the value 6.674×10^{-11} whose numerical value depends on the unit system chosen, and which is not derived from any deeper principle. It is a measured constant, not a deduced one.
- r (distance between bodies), impossible to calculate at the time, yet made dependent on [gravity](#), adding another loop.

To this day, this interdependence has remained largely unexamined — even though, despite its circular structure, it remains useful for calibrating every scale in the world.

The Quantum Mistake

Three centuries later, mass bursts into quantum physics with a plethora of inventors and a succession of patch-ups:

- Einstein made it ambiguous ($E = mc^2$).
- Dirac introduced it as a free parameter in his equation.
- Higgs displaced its origin onto another field.

Many physicists — Dirac, Englert, Brout, Guralnik, Hagen, Kibble — contributed to its rise. But none ever defined it independently.

In the 20th century, Peter Higgs and a few others took over, but here, the problems grew with more patches to the model.

Einstein's Effacement

It turns out that the total mass of a stone is far greater than the sum of the masses of the elementary particles that compose it. Nuclear physics and special relativity explain this through Einstein's mass-energy equivalence: $E = mc^2$ (or $m = E/c^2$). In this framework, the mass of an object is the sum of its total internal energies divided by c^2 . That is why ordinary matter has a mass far greater than what the tiny masses of quarks would suggest.

A striking example: if one adds up the rest masses of the quarks in a proton, one gets about 9 MeV/ c^2 . Yet the measured mass of the proton is about 938 MeV/ c^2 — the difference exceeds 99%.

Modern physics resolved this paradox by redefining mass not as a sum of tiny bricks of matter, but as an emergent property of internal energy. In doing so, Einstein built a world where the m in his equation has very little to do with the mass humans intuitively expect. Above all, this m is undefinable everywhere.

Einstein himself would acknowledge the problem in 1948. In a letter to Lincoln Barnett, he writes:

"It is not good to introduce the concept of the mass

$$M = \frac{m}{\sqrt{1 - v^2/c^2}}$$

of a moving body, for which no clear definition can be given. It is better to introduce no other mass concept than the rest mass m ."

The symbol had already circulated worldwide. It was never recalled.

He could have written $E = b \cdot c^2$, where b simply represents the amount of "boom" (compressed energy) contained in a system. That would have been clearer and less misleading than using m , a symbol burdened with a false identity inherited from classical mechanics.

Consequences

Thus, mass is widely used by the model, but since it is undefinable in reality, outside that model it exists only under false identities — often as a mathematical parameter with no direct connection to the tangible world.

Physics should have renamed it to avoid this mess.

This mass enigma is also one of the reasons for the justified divorce between applied physics and conceptual physics. Without ever being stated explicitly, the inherited conceptual frameworks are insufficient to interpret the universe and send rockets into space.

Toward a Universal Measure

The analysis of the historical trajectory of mass reveals a dead end: theoretical physics has trapped itself in a Newtonian circularity and an Einsteinian ontological substitution to mask its inability to calculate the microscopic essence of a composite object.

To escape this mathematical fiction, there is no need to invent new parameters. The universe offers a direct, universal, and pragmatic reading of physical reality through a mirror of measurements based on a single standard material: one liter of pure water.

This system deploys two observable and non-anthropocentric realities:

On Earth (The Static Indicator)

The only way to apprehend a complex mix of matters is the direct measurement of its pressure on a support. This weight is simply qualified in parts or multiples of the terrestrial standard liter of water.

In Space (The Dynamic Indicator)

In weightlessness, this same liter of water does not change its nature, but its weight vanishes. It then reveals a standard resistance force (F_s): the exact minimum energy of the flick needed to initiate its motion.

From then on, the measurement of any body in the universe frees itself from the abstract concept of mass. The resistance of an object in weightlessness is qualified in strict multiples of this standard flick force (F_s), creating a perfect mirror with the terrestrial kilogram-force.

For Gases

For gases, measurement is made by pressure compared within a standard volume — for example, by injecting a volume of gas into a liter of water and observing the resulting bubble. In space, a flexible container holding the gas is compared to the same container holding a liter of standard water. The isobaric volumetric comparison serves as the indicator, without any calculation of force.

Final Statement

The universe does not calculate mass — it responds to an interaction. On Earth it responds with weight. In space it responds with resistance to a flick (F_s). In the quantum, it does not even respond to a push.

This method of universal measurement restores physics to its primary function: to write what it observes, without projecting its own geometric illusions onto it.

the Arrow of Emergence

A glass is the only thing the universe deigned to offer us before its long nap. Not the glass itself, but what it whispers when it breaks. When it slips from our hands and, by misfortune, the floor is tiled rather than carpeted, it shatters. And if we read the universe simply, we catch its message — the message of the irreversible Cosmic Order: the one that prevents the glass from reassembling, the one that prevents events from denying their own existence.

Thus, the universe gives us the direction from past to future, what current physics commonly calls the Arrow of Time. It is striking: it gives us the Arrow of Time, but not time itself.

The current name, Arrow of Time, is not really appropriate, since it is not “time” in the chronometric sense. It is rather, as explained earlier, a pre-cosmic Order that governs everything, the universe included. Yes, this is an inescapable consequence of a careful reading of the universe. This succession order is of primary importance in the UG.NUG reading, but also in the [\$\Lambda\$ CDM](#), which — it seems — has not given it the place it deserves.

In the Λ CDM, one observes that the universe ceased its creative activity only once its work was complete. One day, it emerged from an unknown state — the term *Big Bang*, which everyone knows, usually refers to this event — and then particles appeared, followed by atoms, stars, galaxies... Since then, nothing is created, nothing is lost, everything transforms, as Lavoisier would say.

What matters here is not the validity of this narrative, but the Succession of things: this natural succession of phases is precisely the Succession in question. And that is why we have renamed this arrow the Arrow of Emergence. The misunderstanding dissolves, and the meaning becomes clearer: Succession of emergences versus time-keeping.

The Arrow of Emergence therefore indisputably precedes the universe. It's new, fresh off the shelf, ready-to-wear.

This can mean several things:

- the arrow was there, and that's all. We accept the universe and take the arrow as a bonus,
- the arrow was there, and therefore the universe is governed by something we do not know,
- the arrow was there, and therefore our universe is part of a series of universes,
- the arrow was there, and therefore we are free to consider any interpretation.

In short, it mainly means that the Arrow of Emergence is particularly important — especially for what follows.

the GRID

Faraday rejected the idea of empty space, insisting that a minimal presence must always exist. The [CMB](#) — omnipresent, uniform, and indelible — directly confirms this intuition. Instead of recognizing it as the universe's permanent substrate, it was interpreted as fossil radiation, a conceptual mistake with lasting consequences.

This presence plays exactly the role Faraday anticipated: a diffuse, coherent support in which emerging geometric objects float and maintain their stability. Without it, the universe would collapse.

Faraday argued that lines of force exist even without matter — not as an ether, but as the minimal presence required for electromagnetic phenomena. His intuition anticipated the non-trivial quantum vacuum, the need for ontological support, and the impossibility of true emptiness.

- Primary energy allows everything to exist and imposes simple laws:

straight → inertia; curved → [gravity](#); orbit → equilibrium; fall → gradient; collision → interaction.

This unnamed presence is what Faraday could not name: the GRID — Global Reference In Dynamics.

- The GRID is the persistent, universal presence revealed by the [CMB](#). Its roles vary with context:
- [CMB](#) = GRID when referring to the permanent omnipresent background,
- Primary energy when referring to the coherence it maintains,

GRID when acting as regulator, engine of emergence, or filter enabling motion and supporting geometry.

The GRID is pre-geometric. It precedes space, has no form, position, or measurable dimension, yet contains the information required for the emergence of objects (particles, atoms). It is a source code that, once executed, generates the geometric world (NUG) we partially know.

Everything that moves interacts with the GRID. Fast rotation leaves a dynamic imprint, producing friction — the magnetic field — just like a dynamo. [Gravity](#) is the static imprint; inertia is the dynamic one.

Modern physics forbids [mass](#) for W and Z bosons to preserve gauge symmetry, yet experiments show they are massive. The Higgs mechanism was added to bypass this contradiction. With the GRID, inertia comes from deformation of the GRID around objects, eliminating the need for mass and resolving the paradox.

From the primordial stage onward, the GRID enables emergence (UG → NUG). UG contains particles and primary energy without geometry; NUG contains geometric objects. The GRID filters UG objects, organizes them into pre-geometric structures, and provides a non-geometric phase space allowing them to evolve toward NUG.

- The GRID binds the phase of emergence:
- Phase 1 → Phase 2: stabilizing nuclei ([gravity](#)).

- Phase 2 → Phase 3: enabling dynamic interactions (magnetic imprint).

Without the GRID, UG objects could never assemble into NUG structures.

Once objects emerge, the GRID maintains stability through inertia and [gravity](#). Inertia is a deformation of the GRID; [gravity](#) is its static imprint. Orbits are equilibria between these deformations.

The GRID preserves the Succession of emergence — the Arrow of Emergence — acting as the engine of the cosmic sequence without timekeeping. It bridges UG and NUG by translating non-geometric properties into geometric ones.

Thus the [GRID](#) is:

- the physical substrate (primary energy),
- the mediator between UG and NUG (filter, bridge),
- the guarantor of cosmic Succession (Arrow of Emergence).

It resolves the paradoxes of the Big Bang paradigm while preserving a non-anthropocentric reading of the universe.

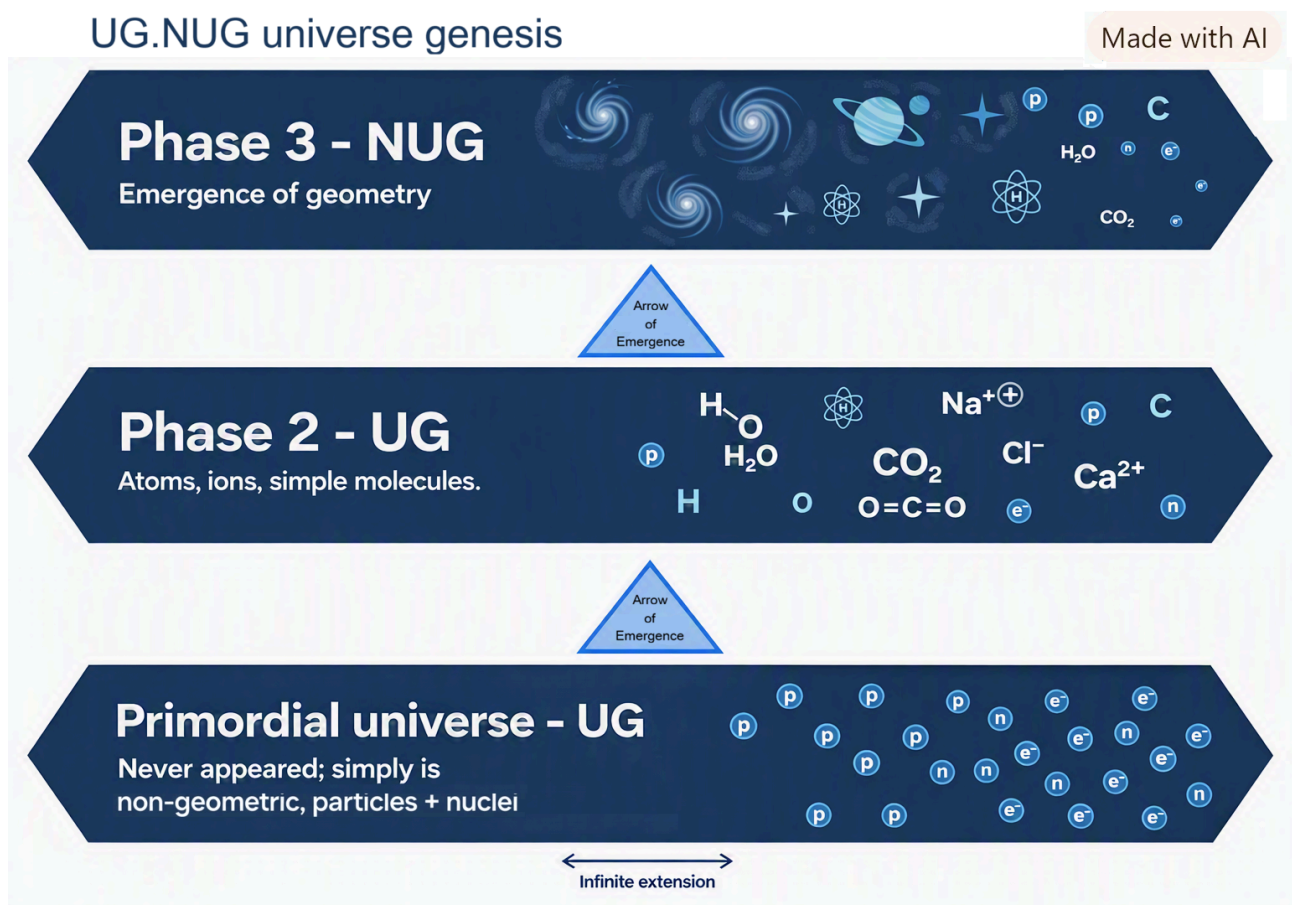
the Phases

We have now finished with the preliminary definitions. What awaits us is the presumed unfolding of the events that produced the universe — its genesis, in a sense. Events which, according to this carefully logical reading, should naturally replace the Big Bang.

What the UG.NUG reading teaches us is that the universe does not have a starting point — the Singularity of the Big Bang Paradigm (PBB), from which expansion supposedly begins — but rather a full-scale birth whose *surface* is not measurable, and which undergoes transformations in volume rather than in linear extension.

Here is the sequence of successive phases of the genesis:

The phases are the very expression of the Arrow of Emergence, the principle that determines Succession. No thermodynamic calculations to estimate a postulated temperature, structural density, energy, or reaction equilibria/imbances of reactions that would have determined the formation Succession of objects in the primordial universe. In what follows, such calculations are unnecessary, because the universe does not arise from an undefined point inside an unknown container; it is itself the container of the everything, whose omnipresence reveals neither its age nor its duration. For humans and their limited observations, nothing precedes it; it fills everything we are capable of probing.



- **Phase 1 — the primordial universe:** This is not truly a phase, but it appears here to make clear that everything begins with the omnipresence of the universe. Nothing else exists. Its essence is exactly that of the [CMB](#). We do not know what it is made of, but it is logical that it contains the codes of the perceivable universe — that is, the non-geometric part commonly observed in the depths of matter and commonly referred to as quantum mechanics: elementary particles and atomic nuclei.

According to the standard cosmological model, this radiation was emitted about 380,000 years after the Big Bang (hence the term *fossil radiation*). This description is extraordinarily inconsistent: first, metric time, as shown earlier, does not exist in the universe, so such dating has no meaning; second, the claim that this radiation did not exist before that supposed date has no identifiable origin.

- **Phase 2 — the pre-geometric:** Once the presence of the “carpet” containing the codes is established, it is highly probable that primary objects — atoms, simple molecules — begin to form. Anyone claiming to determine the beginning and end of this phase through convoluted calculations would be highly speculative.
- **Phase 3 — the geometry:** All remaining objects — especially geometric ones, such as stars, planets, and galaxies — are created according to the order of emergence, depending on the availability and completeness of the previous phase for each object separately. No dating is possible.

The objects of the first phase are, by definition, inaccessible. The others are accessible, destructible, and modifiable, whether they belong to the second or the third phase.

However, the determining property is the **Gendered Uniformity**, which characterizes all objects of the first two phases of the primordial universe.

This may seem logical once presented this way, but it becomes clear that the universe — or whatever governs its structure — did not proceed randomly. The Succession of the phases is dictated by the Arrow of Emergence, and each phase makes the next one possible. As already stated, this Succession order may resemble time, but it is not time.

Gendered Uniformity, which had been sleeping in the notes taken during the research, was intriguing because it seemed to have no apparent importance. It appeared unlikely that such an obvious phenomenon had never been observed within conceptual physics or educational programs. But once we reached this stage of the primordial phases, its importance became evident when it revealed its major role as the true boundary between the second and third phases. It was then that the UG and NUG regimes were named and took their place and meaning within the reading.

the First Phase

This phase never began, because it is our sole reality. It is inferred and embodied by the omnipresent [CMB](#) — the [GRID](#) — which belongs to the UG regime, where inaccessible objects have no history, variation, or individuality. For humans, such a configuration borders on metaphysics: our cognition is not designed to handle invisible, non-geometric non-objects that carry information, almost like ghosts. We can invent ghosts, but not manage them.

The quantum effervescence perceived since the birth of the [GRID](#) is kept coherent by a fundamental UG energy: a pre-geometric substrate that makes emergence possible. This energy likely corresponds to the unique energy of the PBB, later split into electromagnetic, weak, and strong interactions — those ensuring nuclear cohesion — which then mysteriously disappear from cosmological narration.

The persistence of the [GRID](#) explains its presence in every atom. Whatever an atom becomes, it retains this universal imprint. If an atom is destroyed, its particles are not: they return silently to the undifferentiated reservoir of the [GRID](#).

Quantum particles are not manipulable; they emanate from the original [GRID](#).

This assertion is personal, but not baseless. As explained in *The Fear of the Unexplainable*, the dominant mindset refuses to accept that the unexplainable may be fundamental. Everything must be physical — except when convenient, as when fundamental energy is invoked to justify atomic cohesion. A double standard revealing the lack of logic in the PBB.

This is why CERN will likely never obtain the expected results. These particles will never reveal what they are. Trying to reach the UG side of the universe with NUG tools is like asking a newborn to intervene in the device that produced it. The limits appear immediately. The atomic bomb already showed, tragically, what happens when humanity interferes too directly with the elements of the [GRID](#).

Einstein was right to reject the idea that “God plays dice.” His “God” — nature, the universe — is present in every object. He did not believe quantum mechanics appeared in matter by chance. Yet this is precisely what Bohr and Heisenberg claimed: they treated quantum mechanics as a contingent curiosity, never as the signature of the unknown.

the Second Phase

This phase concerns primordial objects: atoms, ions, and the first simple molecules. It emerges immediately after the [GRID](#).

The immaterial effervescence persists, but it is now accompanied by pre-geometric objects that take time to assemble. In parallel, the fundamental energy of the [GRID](#) settles into the cohesion of these new atomic structures. Its cohesive role forces it to manifest properties that were previously unnecessary: the strong interaction, which ensures the inseparability of particles within nuclei; the weak interaction, whose role is secondary here; and the electromagnetic interaction, which governs exchanges between elements.

A single energy, then, with multiple faces — always present, always active. It replaces all the oddities of the PBB (vacuum energy, dark energy, cosmological constant, quantum fluctuations): so many labels for one and the same primordial presence.

At this level, deduction is more reliable than equations. When atomic nuclei absorb part of the primordial energy to transform it into binding or circumferential energies, they obviously do not absorb the entire substrate that keeps them suspended. Like leaves floating on a pond, the medium remains even when grouped structures appear. The primary energy continues to sustain the whole, even if part of its flow has been conceded to cohesion.

Atoms are assemblies of particles that appear identical. What differentiates them is not geometric and cannot be directly observed. Applied physics perceives only measurable effects — energies, transitions, interactions — never the internal nature of particles.

Conversely, the PBB assigns geometric labels — spin, charge, isospin, quantum numbers — drawn from non-geometric experimental results. Collisions produce deposited energies, momenta, angles, jets, resonances, statistical peaks, and from these data the PBB invents geometric particles. This conceptual shift is rarely acknowledged: despite the absence of geometric data in a non-geometric regime, the PBB insists on inventing its own universe to preserve a sterile mathematical edifice.

The second phase is the bridge between the inaccessible and the modifiable — between UG and NUG — between the [GRID](#) and geometry.

the Third Phase

This phase is the culmination: the world that emerges from UG, the world we see, touch, hear, smell, and taste. Once UG reaches maturity, complex forms, interactions, and histories become possible — the NUG regime.

NUG is:

- stars
- planets
- chemistry
- biology
- perception

Everything we experience is the final geometry of a pre-geometric reality. Pre-geometric also means pre-volumetric. The [CMB](#) — the [GRID](#) — shows no form, only infinitesimal temperature variations in all directions. It is an invisible presence that precedes any volumetric filling. Geometry and volume emerge from UG without requiring expansion, unlike the PBB, which postulates a singularity and an expanding metric.

Our reading is simple:

No singularity: the universe is born already extended ([GRID](#)).

No infinities: emergence is ordered (phase 1 → phase 2 → phase 3).

No paradox: geometry (NUG) emerges from UG without expansion.

The [GRID](#) never disappears. It permeates every atom of every object. It is present everywhere in our world, in the form of quantum mechanics — whose rules differ radically from those commonly accepted. With an STM, one can distinguish atoms and their arrangement, as Don Eigler did in 1989 by positioning xenon atoms to write IBM on a nickel surface.

Beyond atoms, the scale gap becomes immense. Atoms measure about one nanometer; their constituent particles are around a femtometer — a millionth of a nanometer. No particle has ever been observed directly: only their traces on detectors are detected. The experiment is extremely indirect.

Every fragment of matter carries within it an irreducible part of the universe's secret, as well as the codes of emerging geometry.

Gravity

In the prevailing model, gravity force would supposedly arise from the curvature of a non-existent spacetime. The Big Bang paradigm provides no physical substrate to curve. Spacetime is an abstract mathematical object, without minimal presence (unlike Faraday or UG.NUG). A physical deformation is therefore attributed to a non-physical structure, which constitutes a major fundamental contradiction.

In the UG.NUG reading, gravity is the static reaction of the [GRID](#) in the presence of geometric objects. It is not a fundamental force, has no quantum carrier, and cannot be reduced to a quantum field theory. It is therefore not quantifiable in the physical sense — not because it is immeasurable, but because it does not belong to the quantum regime. It is measurable only on Earth, through its effect on a physical reference (e.g., one liter of water).

And the only real measurement of gravity is simply the pressure it exerts on an everyday object. Take one liter of water. Whatever its container — a thin bottle, a wide one, or a balloon — it will always weigh one kilogram. Well, without any grandiloquent formula, Newtonian or Einsteinian, I can tell you that gravity at Earth's surface is 1 kilogram-force (1 kgf). Assuming our water balloon would float in weightlessness and weighs the equivalent of one liter of water on Earth, the result is beyond doubt.

In the Big Bang Paradigm, gravity at Earth's surface is computed in several steps. For non-specialists, understanding the equations is irrelevant. It only serves to demonstrate an absurd complexity to reach the same result than without equations:

We assume Earth has a [mass](#) M .

1. This mass is not measured directly: it is inferred from other models (orbits, constants, etc.).

2. We assume gravity follows Newton's law:
$$F = G \frac{m_1 m_2}{r^2}$$
 where

- F is gravitational force,
- G the gravitational constant,
- M Earth's [mass](#),
- m the object's mass,
- and R Earth's radius.

3. We define gravitational acceleration $g = G \frac{M}{R^2}$. For an object of mass m , we write $F = m \cdot g$. Take a 1-kg object. By definition, in this reading, one liter of water has a mass of 1 kg.

4. The force exerted by gravity on this object is then $F = 1 \times g \approx 9.81 \text{ N}$. We introduce a practical unit: the kilogram-force (kgf).

5. By convention, we define :
 $1 \text{ kgf} = 9.81 \text{ N}$

Thus, the force exerted by gravité on 1 kg (ou 1 liter of water) Earth's : $F = 1 \text{ kgf}$
Result : For the [ΛCDM](#), gravity on earth, applied to 1 liter of water, corresponds to 1 kgf.

QED

Gravity is therefore the expression of the [GRID](#)'s pressure on Earth's surface — or on any spatial object. The denser an object is in matter, the more it deforms the [GRID](#). It works like a slingshot: when the elastic is stretched, it thins and loses efficiency in supporting spatial objects approaching Earth. This is why such objects are attracted and, having progressively lost the support the [GRID](#) offered them, end up crashing onto its surface.

The [GRID](#) thus logically resolves many anomalies that trouble the [ΛCDM](#). The problem is that this paradigm is not satisfied with gravity at large scales; it wants gravity at the scale of the infinitely small. The first serious and structured proposal for quantum gravity came from Matvei Bronstein in 1935. He suggested that gravity should also be expressed and calculated in the quantum regime, on the grounds that the gravitational field becomes unobservable below a certain scale.

During his lifetime, it would have been useful to reply to him that if gravity disappears at a certain point, it may simply be because it is no longer there. Apparently, he did not care, and his obsession was enough to drag the PBB into a long, hopeless quest that, strangely, is still being pursued. For yes, gravity remains the stone in the shoe of the PBB.

It is hard to understand why one refuses to accept that a tension effect cannot act on invisible, non-geometric objects — which, for non-specialists, is like being surprised that one cannot pat a ghost on the shoulder. So it seems useless to comment further on this waste of time and resources in such an absurd pursuit.

Just for the record, gravity is not the only property that exists only at the macroscopic level: temperature, friction, and pressure belong to the same category and interact only with geometric, perceptible objects.

It is also strange to imagine that a force — any force — could act at both levels. Just because you can tap someone on the shoulder does not mean you can high-five a particle. A force that acts on structured, geometric objects cannot reasonably act on entities devoid of geometry.

The only coherent solution is therefore a purely geometric gravity — all the more so since it has resisted for a century every attempt to force it into a quantum reality.

Gravitational waves

Gravitational waves are not ripples in spacetime — they are ripples in the [GRID](#). They are produced by extreme geometric distortions, and they propagate through the substrate that fills the universe. LIGO/Virgo/KAGRA detect them without contradiction.

Black Holes

It is striking that, from the sole observation of intense light and rapid motion at galactic centres, one has built the improbable image of a black, invisible object that swallows matter. This interpretive feat is a remarkable example of how the standard model turns observations into ideology.

In the standard model, [black holes](#) are described as objects of extreme density, surrounded by an event horizon from which nothing can escape. They are said to be formed by the collapse of massive stars, and they are invoked to explain the intense luminosity and rapid motions observed at the centres of galaxies.

But this description is a curious interpretation, not an observation.

What is actually observed:

At the centre of most large galaxies, there is a compact, luminous source. This source emits intense radiation across a wide range of wavelengths: X-rays, infrared, radio. Around this source, stars move very fast, in tight orbits. Jets of matter and energy are sometimes ejected along a preferred axis. The source itself is extremely small compared to the galaxy that surrounds it.

That is what we see. No hole. No singularity. No invisible object.

Observing the CMB/GRID

The [CMB](#) does not look like a flat, peaceful lake, but rather like a collection of intense zones. These regions are natural centres of emergence. And it is certainly why the universe's organisation is merely based on groups of objects like galaxies.

Where the [GRID](#) is dense enough, geometry emerges. This emergence is not a passive event: it is an active, energetic process. It produces heat, radiation, and motion. It concentrates energy in a small volume, creating a bright, compact region. This is what we observe at the centres of galaxies.

- The light and radiation come from the emergence itself.
- The rapid motion of stars is due to the pressure of the [GRID](#) on the emerging geometry.
- The jets are the expulsion of energy along the axis of emergence.
- There is no singularity, no infinite density, no absorption of matter.
- There is no horizon — only a region where geometry is still forming, and which remains compact because the emergence is not yet fully deployed.

This reading explains all the observations without invoking invisible objects, without postulating singularities, and without requiring the absorption of matter. It also eliminates the need for quantum [gravity](#), which in any case, was, is and will always be unconditionally impossible.

[Black holes](#), therefore, do not exist. These very bright galaxy centres are birthplaces of geometry — centres where the universe emerges by groups of objects, actively, from its own substrate.

Galaxies' persistent activity

The spiral structure of galaxies is the visible trace of a continuous quantum activity due to a probable permanent process of emergence. The direction of rotation is not really understandable and could be just aleatory and depend on the spreading fluctuations of quantum effervescence.

What actually happens is that galaxies are, poetically, living organisms with a beating heart that renews — through its quantum source, the [GRID](#) — its energetic capacity by continuously creating new stars, these energy-producing facilities. This cycle keeps the global equilibrium intact despite the end-of-life of existing stars.

The universe is not dying. It is closer to what mankind has sought since the dawn of time: perpetual motion.

In this case, at the centre, a quantum effervescence gives rise to multiple geometries at once — objects that do not appear in their final form immediately and obviously increase the [mass](#) of the centre so a powerful [gravity](#) is exerted.

The new objects first take on intermediate, lighter forms, orbiting close to the centre. As they mature, they grow in mass and gradually move outward, shifting to more distant orbits. This progressive migration, driven by the increasing maturity of the emerging objects, naturally produces a spiral pattern — without the need for dark matter or complex gravitational adjustments.

Black Holes Observations

Observation	Standard Interpretation	UG.NUG Interpretation
Gravitational waves (LIGO/Virgo/KAGRA)	Ripples in spacetime from black hole mergers.	Ripples in the GRID , produced by the dynamics of emergent geometry.
Spin (ΩH)	Rotation of the black hole's horizon.	Not a rotation of a horizon. It is a dynamic feature of the emergence zone.
Surface gravity (κ)	Gravity at the event horizon.	Not gravity at a horizon. It is the local pressure of the GRID on emerging geometry.

Ringdown	The black hole settling into its final state.	Not a black hole settling. It is the GRID returning to equilibrium after an emergence event.
Event horizon	A "surface of no return."	Not a surface of no return. It is the boundary of a region where geometry is still forming.
Pair-instability mass gap	Gap in black hole masses due to stellar physics; filled by hierarchical mergers.	There is no mass gap. Mass is not a property of these regions. What is observed is the distribution of emergence intensity.
Spin populations	Low-spin (direct collapse) and high-spin (hierarchical mergers).	No low-spin or high-spin populations. Spin is a secondary effect of geometric emergence, not a product of mergers.
$^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ reaction rate	Critical for nuclear astrophysics and stellar evolution.	Not relevant. These regions are not formed by stellar evolution.
Pair-instability gap (m_2 only)	Evidence for hierarchical mergers; primary components in the gap are merger products.	No gap. The observed distribution reflects different levels of emergence maturity.
High spins in gap binaries	Signatures of hierarchical mergers.	Not a signature of mergers. It is a signature of intense emergence.
Low black hole masses ($10^5\text{--}10^7 M_\odot$)	The lowest mass black holes known at high redshift.	Not a measure of mass . It is a measure of the intensity of the emergence zone.
$^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ S-factor constraint	Links gravitational-wave astronomy to nuclear astrophysics.	Not relevant. This region does not involve nuclear astrophysics.
Growth of light seed black holes at high redshift	Tiny black holes from Population III stars grow rapidly ($\sim 10^4 M_\odot$) to become the seeds of supermassive black holes observed by JWST at $z > 8$.	No seeds, no growth. The observed objects are simply emergence zones at different levels of geometric maturity. Redshift is not cosmic time; it is a measure of geometric maturity.

Conclusion

1. The cosmic microwave background ([CMB](#)) is a homogeneous, isotropic, and omnipresent radiation, detected in all directions of the observable space.
2. This omnipresence is not a detail: it is a major physical statement. It means that the structure of the universe is already deployed everywhere, without an edge, without a centre, and without a container.
3. An omnipresent background is not a local phenomenon: it is a global property of the universe.
4. In the standard model, this omnipresence is assumed to be the consequence of a metric expansion. But this expansion has never received a coherent operating mechanism: it would apply to particles, then stop for atoms, then reappear for galaxies, while sparing stars, planets, and bound systems. In short, neither a selective expansion nor multiple successive expansions without a physical mechanism can explain an omnipresent background.
5. A radiation already everywhere cannot be the product of a progressive stretching. The omnipresence of the [CMB](#) therefore imposes a simple conclusion: the universe was not filled by an expansion. It is already fully deployed.
6. Geometry has not been stretched: it is present everywhere by nature.

This is where the UG.NUG interpretation becomes unavoidable.

- It proposes that the [CMB](#) is none other than the [GRID](#).
- It does not propose an expansion, but a fundamental omnipresent structure of which the [CMB](#) is the first observable manifestation.
- It does not depend on time, but on order.
- It does not depend on a beginning, but on unconditional organization.
- It does not depend on a container, but on integral presence.
- If the [CMB](#) asserts that the universe is omnipresent, then the only coherent description is the one in which geometry is not stretched but emerges locally, according to the completeness and availability of matter seeds present on site. In an already deployed universe, a non-existent time cannot support a metric expansion: such progression is incoherent and without foundation.

This interpretation is not an alternative: it is the only one that does not contradict observations.

Conceptual Consequences

The problems of the [\$\Lambda\$ CDM](#) are not independent: they naturally group into three families, all stemming from the same implicit assumption — that the universe is fundamentally geometric. By changing this starting point, these difficulties cease to be enigmas. They become the expected consequences of an inadequate reading.

The three blocks that follow present these families of problems and show how UG.NUG reading dissolves them without additions, without corrections, simply by restoring the natural Succession of emergence.

for Cosmology

Dark matter — Dark energy — Cosmological constant — Horizon — Flatness — Homogeneity — Origin of geometry — Big Bang — Expansion — Large-scale structure

The UG.NUG reading understands that geometry is not a starting point, but a secondary level of organization, appearing only after UG. This single shift is enough to dissolve almost all cosmological problems of the [\$\Lambda\$ CDM](#).

Thus, the universe does not begin with a geometric explosion, but with an undifferentiated background. Geometry appears only when objects cease to be identical. This conceptual reversal eliminates in one stroke the paradoxes related to the origin of space, its shape, its homogeneity, or its flatness. One no longer tries to explain why geometry is already there. It is not there at the beginning. It appears naturally, carried by the Arrow of Emergence, and stabilizes thanks to the [GRID](#).

The image of a fabric tube being inflated illustrates this perfectly. The tube already exists, but it is not yet deployed. Near the opening, the fabric is inflated; farther away, it seems to inflate progressively; in the distance, it is still flat. For an observer inside, this creates the illusion of expansion, then accelerated expansion, even though it is only the progressive realization of the structure. The distant regions appear to recede because they are not yet realized, not because they are moving. This inversion of perspective dissolves the very idea of cosmic expansion, inflation, an initial singularity, or dark energy.

In this reading, the great cosmological enigmas cease to be anomalies.

- Dark matter is no longer an invisible substance added to fix equations, but the consequence of applying a geometric interpretation to a phenomenon that is not geometric.
- Dark energy is no longer a mysterious force pushing the universe to expand, but the effect of a secondary geometry misread as dynamic when it is simply structural.
- The horizon problem disappears because homogeneity does not need to be transmitted: it is inherited from UG, where everything is identical.

- The flatness problem vanishes because geometry is not a fragile structure requiring fine-tuning, but a stable organization imposed by the [GRID](#).

In the UG.NUG reading, geometry is not fundamental but secondary, emergent. By changing the starting point, one does not correct anomalies: one dissolves them. The universe was never incoherent. The interpretation was.

for Quantum Physics

Measurement - Decoherence - Superposition - Classicality - Quantum [gravity](#) - Particle identity - Non-locality - Hidden variables - Wave-particle duality - Indeterminacy - Absence of trajectory

Quantum physics accumulates paradoxes because it tries to describe a non-geometric regime using geometric tools. It applies notions of shape, position, trajectory, or [mass](#) to objects that possess none of these. In UG.NUG reading, first-wave particles belong to the UG regime: they are inaccessible, undifferentiated, without form, without variation, without geometry. They are not tiny objects but non-identifiable pre-geometric entities.

In this reading, the measurement problem disappears.

- There is no wave-packet collapse, only the transition from a UG state to a NUG interaction — that is, the appearance of a geometric imprint.
- Decoherence is no longer a mysterious mechanism, but is simply the incompatibility between a non-geometric state and a geometric environment.
- Superposition is not a magical phenomenon, but the natural behavior of objects that have neither shape nor position.
- Classicality needs no explanation: it appears as soon as objects acquire geometry — that is, in the second wave, the primordial.
- Quantum [gravity](#) ceases to be a meaningful objective, because there is nothing to quantize.
- [Gravity](#) is not a fundamental force but the static reaction of the [GRID](#), a purely geometric phenomenon.
- Non-locality is no longer a mystery: in a non-geometric regime, the notion of distance has no meaning.
- Hidden variables have no place: there is nothing to hide in a regime without internal structure.

Thus, all quantum paradoxes arise from a single mistake: trying to apply NUG tools to UG. The paradoxes vanish as soon as we stop demanding that UG behave like a geometric world.

Quantum mechanics is the universe's signature within every atom of matter, and the keeper of the code for the geometry of the emergent, perceivable forms that make up our world.

That said, where I hope my reading of the universe can serve as a model is in a radical shift in how we treat the information obtained through the manipulation and analysis of particles. In fact, the investigations concerning them can be counted on the fingers of one hand:

- energy levels through spectrometry,
- transition probabilities in lasers,
- electronic structures via STM,
- conduction bands in solid-state physics,
- bound states in quantum chemistry.

Yet these data, as precise and rich as they are, are systematically and arbitrarily transformed into geometric forms: orbitals, positions, bands, crystal lattices... as if nature suddenly became classical the moment we look at it. But none of this has ever been observed. The size of particles, their wave-particle duality, and above all the very principle of quantum mechanics — where everything is probabilities, superpositions, and wavefunctions — should forbid this geometric illusion.

Why, then, this persistent habit of hiding raw data beneath familiar but false representations? Why prefer reassuring visual models over a clear presentation of investigative methods and probabilistic results?

Quantum mechanics has taught us that reality is not a neat drawing of well-traced orbits, but a cloud of probabilities in constant evolution. Yet we continue to teach, publish, and design technologies based on geometric diagrams that are nothing more than convenient metaphors — or even lies by omission.

The problem is not only scientific; it is epistemological. By over-geometrizing, we reduce quantum complexity to a classical caricature and deprive researchers — and the public — of an honest understanding of what particles and their interactions truly are. Atomic orbitals do not exist. Electrons do not orbit like planets. Conduction bands are not rails. These are merely computational tools, useful approximations, but not faithful descriptions of reality.

So why not fully embrace quantum strangeness? Why not present the data as they are: probability distributions, complex amplitudes, entangled states? Science has a duty to tell the truth, even when it is unsettling. And the truth, here, is that the quantum world has nothing geometric about it — at least not in the classical sense we impose on it.

Perhaps it is time to break with this tradition and finally show the real face of matter: not a collection of localized objects, but a network of possibilities in perpetual fluctuation, where geometry is only a shadow cast by our human limitations.

It is not impossible that this obsession with geometrization — this desperate need to draw orbitals, bands, or lattices where only blurry probabilities exist — is directly linked to the phobia described in the chapter *The Fear of the Unexplainable*.

For reducing the quantum to reassuring shapes is a way to flee the fundamental absurdity of a universe where particles have neither trajectory nor defined position. It is a denial of strangeness, a clinging to the illusion of a classical, manageable, predictable world.

Geometry is the refuge of physicists frightened by the metaphysical void.

for Forces and Interactions

Gravity — Unification — Renormalization — Fundamental constants — [Mass](#)

In the [\$\Lambda\$ CDM](#), forces are treated as fundamental entities, each with its own carrier, field, constants, and symmetries. This assumption generates most of the conceptual difficulties.

In the UG.NUG reading, this framework collapses: what the [\$\Lambda\$ CDM](#) interprets as “forces” are not fundamental ingredients of the universe but the observable behaviors that appear when objects exist or move within the GRID.

- [Gravity](#) is not an interaction. It has no carrier, no quantum, no fundamental field. It is simply the static behavior of the [GRID](#) in the presence of a geometric object. The problem of quantum [gravity](#) disappears — not because it is solved, but because it never existed: [gravity](#) was never a quantum phenomenon to begin with.
- Magnetic effects are the dynamic version of the same behavior when the object moves or rotates.
- Renormalization also ceases to be a difficulty: there is nothing to renormalize once these behaviors are no longer treated as fundamental forces.
- [Mass](#) is not a property of the universe. It is only the human interpretation of certain geometric behaviors that remain fully calculable, even though the quantity itself does not exist.

Thus, the conceptual problems associated with forces and interactions in the [\$\Lambda\$ CDM](#) arise from a single mistake:

treating contextual behaviors as fundamental forces.

Discussions

Logical Observations

The following tables compare the interpretations of the standard cosmological model ([\$\Lambda\$ CDM](#)) with those of the UG.NUG reading for the main observational domains. The terms are left in English to preserve their precision, as they are universally used in the scientific literature.

Observation	Standard Interpretation	UG.NUG Interpretation
CMB spectrum (2.7 K blackbody)	Fossil radiation from recombination.	Intrinsic property of the GRID (static state).
CMB anisotropies	Seeds of structure formation.	Local artefacts or GRID fluctuations.
Redshift of galaxies	Expansion of space stretching light.	Volumetric inflation of the GRID or intrinsic redshift.
Hubble's law ($z \propto d$)	Expansion rate.	GRID pressure gradient or volumetric inflation.
Dark matter (galaxy rotation curves)	Invisible mass.	Misinterpretation of GRID pressure on geometry.
Dark energy (accelerating expansion)	Unknown force.	Misinterpretation of the CMB state.
Hubble tension	Discrepancy between early and late universe measurements.	GRID pressure variation over time or misinterpretation of redshift.
Large-scale isotropy (cosmological principle)	Assumed to be true. Challenged by recent data.	Not required. The GRID can have directional variations, and anisotropies are natural consequences of the UG $\rightarrow$ NUG transition.
Galaxy angular momenta (tidal-torque)	Imprinted by primordial tidal fields.	<i>Due to the GRID's role as the substrate from which geometry emerges during the UG $\rightarrow$ NUG transition.</i>

Neutrino mass (inferred from tidal-torque)	Measured through these correlations.	Not an intrinsic property; mass is a manifestation of GRID pressure on geometry.
Cosmological stability transition ($\chi = 1 \leftrightarrow q = 0$)	Structural reformulation of Λ CDM.	Not required; acceleration and expansion are misinterpretations of GRID pressure.
Substrate inheritance	Leading-order projection approximation.	Direct consequence of the GRID: geometry emerges from UG, not from a substrate.
Particle χ classification	Long-lived matter ($\chi \ll 1$), resonances ($\chi \sim 0.1-1$).	Mass and decay width are manifestations of GRID pressure; χ is a human construct.
Massive galaxies at $z \approx 7-10$ (JWST)	Inconsistent with Λ CDM predictions; requires ad hoc assumptions.	Natural consequence of the GRID's geometric maturity. No age limitation.
Massive black hole at $z \approx 7.04$ (little red dot)	A massive black hole seed in its earliest accretion phase, challenging Λ CDM formation models.	A geometric distortion of the GRID ; no cosmic age, no formation time, no stellar host required.
Little Red Dots (LRDs) at high redshift	Young SMBHs in dense ionized cocoons; broad lines from electron scattering.	Geometric configurations of the GRID at different levels of maturity; no cosmic age, no accretion, no cocoon required.
Hot intracluster gas at $z=4.3$ (SPT2349-56)	Heating occurred much earlier than expected; challenges current models of cluster assembly and ICM heating.	The redshift is a measure of geometric maturity, not cosmic time. Hot gas at $z=4.3$ is a natural configuration of the GRID ; no heating or assembly required.
Low black hole masses ($10^5-10^7 M_\odot$)	The lowest mass black holes known at high redshift.	Mass is a manifestation of GRID pressure on geometry; not an intrinsic property.
Weak X-ray and radio emission	Explained by absorption in the dense cocoon.	Natural consequence of the GRID 's geometric response; no additional explanation needed.

V-shaped SED of little red dots (LRDs)	Inner standard disk + outer gravitationally unstable accretion disk ($Q \approx 1$); temperature $\sim 2,000\text{--}4,000$ K; sub-Eddington accretion.	Geometric configurations of the GRID at different levels of maturity. The V-shaped SED is a natural signature of the GRID's geometric response; no disk instabilities, no dust extinction, no accretion physics required.
Dark object ($\sim 10^6 M_\odot$) detected via gravitational lensing	Incompatible with CDM and WDM; possibly a self-interacting dark matter halo with a collapsed central black hole.	No dark matter. The object is a geometric configuration that emerges from the GRID (a pre-geometric substrate, itself inferred by the CMB) at a given level of geometric maturity. No self-interaction or collapse required.

Quantum Mechanics Observations

The tunneling effect, often presented as a quantum mystery, is naturally explained in UG.NUG as a transition between the UG and NUG regimes — a passage from geometry to pre-geometry, or the reverse, depending on the direction.

Observation	Standard Interpretation	UG.NUG Interpretation
Particle masses	Intrinsic properties of particles.	Manifestations of GRID pressure on geometry.
Quantum fluctuations	Random variations in fields.	Fluctuations in the UG regime.
Quantum entanglement	Spooky action at a distance.	Correlation through the UG regime.
Quantum tunneling	A particle passes through a potential barrier	Geometric manifestation of UG/NUG interaction

Comparative Table PBB / UG.NUG

PBB – Standard Genesis	UG.NUG Genesis
1. Initial singularity. Mathematical point of infinite density, unobserved .	UG Regime: Omnipresent Foundation, non-geometric GRID , containing elementary particles. (deduced from CMB)
2. No container. The singularity is not inside anything defined.	No container. The universe is the container of everything, not the content. (deduced from CMB)
3. Initial expansion – Postulate : the metric begins to expand. (no equivalent)	— No expansion in UG.NUG.
4. Planck Era – Physics unknown, speculative zone . (no equivalent)	—
5. Inflation – Exponential expansion to correct internal inconsistencies (unverified). (no equivalent)	—
6. Primordial plasma – Ultra-hot state preventing electrons from binding (Postulate).	No plasma – No extreme state required.
7. Cooling by expansion – The expansion of the metric cools the plasma (Postulate). (no equivalent)	—
8. Decoupling – At 3000 K, photons are released → CMB (Postulate). (no equivalent)	The CMB is not an event.
9. Photon stretching – Redshift is due to expansion (increase in wavelength via metric dilation).	Redshift = interaction with emerging geometry (NUG). Redshift is due to a change in geometric maturity between the emission region and the observation region: light emitted in a less mature geometry travels through a more mature geometry, altering its "adherence" to the GRID and lowering its frequency.
10. Selective expansion? Acts on large structures but not on bound systems (inconsistency). (no equivalent)	No expansion → no selectivity.

11. Structure formation – Galaxies, stars, planets emerge by gravity. According to PBB: galaxies cannot form before expansion, nor during inflation, nor during the plasma phase, nor at decoupling, nor just after, but only much later, while expansion is already underway. Galaxies thus appear 200–500 Myr after the Big Bang, in an already expanding universe. This imposes a selective expansion: gravity must locally ignore expansion while globally undergoing it. → (Major inconsistency.)	NUG – Local emergence – Geometry and structures appear locally. (unobserved, conceptually more natural)
12. Current universe – Ongoing expansion + dark energy.	Omnipresent universe – No edge, no centre, no growth. (no equivalent)
—	Succession without time – Time does not exist, only the Succession of appearance exists. (no equivalent)
—	Total coherence without expansion – No inflation, no dark energy, no decoupling. (no equivalent)

The universe we inhabit has never needed conceptual artifices. It presents itself with profound simplicity: a single background, an ordered emergence, a stable geometry. Everything we observe follows from this structure.

UG is the silent foundation of all that exists. It has no form, no variation, no history. It is the reservoir from which primordial objects arise, and then geometric forms. This progression is not a chronology but a natural order inscribed in the Arrow of Emergence, which imposes succession without time. The universe does not play a film: it transforms according to an internal order that never reverses.

The [GRID](#) embodies the continuous presence of this background within the geometric world. It creates nothing, commands nothing. It ensures cohesion, supports objects, transmits their effects. [Gravity](#) is its static reaction; the magnetic field its dynamic one. We do not know its nature, but we observe its effects. Under tension, its force is perceptible and undeniable.

The geometries of the last wave cease to be identical. The waves are not temporal episodes, but levels of organization. Each one prepares the next, and none can be removed without the whole structure collapsing. The anomalies of the [\$\Lambda\$ CDM](#) are not mysteries of the universe, but errors of interpretation. They disappear as soon as we stop projecting onto the universe constructions that do not belong to it.

The reading, UG.NUG, adds nothing to reality and does not try to confine it within a theory.

It seeks to grasp its essence.

Understanding it is out of the question — humans do not have that power. But it is possible to make its unfolding coherent without playing too much at being scientists, because spectacular equations cannot read.

It is not impossible that this paper mark a turning point after two centuries of attempts, erasures, and drafts. It may sound presumptuous, but when one

- discovers Gendered Uniformity,
- translates the Arrow of Emergence,
- proves the illusion of universal measurements — [mass](#), time, velocity...
- proves that only weight exists, and only on Earth,
- restores Faraday's forgotten [GRID](#),
- calculates [gravity](#) without an equation,
- declares it undeniably unquantifiable,
- reveals the circularity of Newton's equations,
- brings to light certain acrobatics performed by renowned scientists,
- dares to speak of the abyss — the major unspoken — between applied physics and conceptual physics,
- solves every problem of a model that has been sick since birth,

one earns, in a way, the right to lack modesty. One cannot deny or renounce an approach that brings such coherence, nor pretend that nothing happened.

The universe only asked to be read as it is.

It seems that this has now been done.

the Big Bang Paradigm

The Divorce

Criticizing the Λ CDM is not criticizing anyone — it is criticizing a reading of the universe. Despite its venerable name, the Λ CDM is nothing more than an interpretation. And since the universe itself remains silent and sparing in its revelations, it is remarkably easy to be right — or wrong. What distinguishes one reading from another is, consequently, its coherence, its agreement with observation, and its capacity to be tested. Coherence alone is not enough — a perfectly coherent system can be false, and history has shown this more than once.

As in a police investigation or a computer program, if coherence is missing, the culprit is never found, the program does not run, and the equations meant to describe the universe fail to match observation. It is not dramatic; it is only theory. The current theory — the Λ CDM as it stands — does not account for the universe in a way that satisfies its own criteria. It accumulates unresolved problems and adds new entities to mask them. This may sound extreme, but once you add: *and yet the world still works*, the statement becomes far less shocking.

This is made possible by the existence of two distinct physics. This is what I discovered through my research. Yes, it is surprising. No, it is never mentioned. These two physics are:

- A **theoretical physics**, currently the Λ CDM, which accumulates conceptual flaws.
- An **applied physics**, through which we build lasers, MP3s, smartphones, antennas, MRIs, and satellites — and in this case, everything works perfectly.

Without this distinction, it is impossible to understand how the world can function despite a conceptual physics largely disconnected from reality — where many proposed theories have failed to deliver what they promised:

- string theory (no experimental evidence, unverifiable extra dimensions),
- M-theory (no testable predictions),
- supergravity (never observed),
- supersymmetry (no superpartners detected at the LHC),
- GUTs (no proton decay),
- canonical quantum gravity (non-renormalizable),
- loop quantum gravity (no testable predictions).

Some of these are genuinely ruled out by experiment:

- local hidden variables (ruled out by Bell tests),
- steady-state cosmology (contradicted by the CMB),
- naïve dark-matter-free cosmologies (invalidated),
- naïve emergent gravity (incomplete and non-predictive).

Applied physics therefore relies primarily on operational equations of its own making — the ones capable of building machines. But it must be said clearly: applied physics is not a separate physics. It uses quantum mechanics, electromagnetism, and relativity — the same theories that foundational research develops. A transistor is quantum mechanics. A GPS is general relativity. The point is not that the theories differ. It is that cosmological constructs such as dark matter, dark energy, inflation, and the cosmological constant play no role in the design of any instrument. Not one component, not one calculation, not one correction.

Physicists concerned with practical reality rarely interact with conceptual physicists who, judging by the distance separating the two communities, no longer seem to read the universe as it truly is.

Applied physics coexists with these conceptual models without actually relying on them. Those models remain largely confined to academic settings, and their influence seldom extends beyond the walls of universities.

Gradually, this became impossible to ignore. The divergence can be traced back almost to Einstein's General Theory of Relativity, when he introduced into his most famous equation — as we shall examine in detail in the chapter on [mass](#) — a profoundly ambiguous factor, m , thereby freezing into place a fundamental confusion that has led, over the course of a century, to an ongoing conceptual drift. A tiny ambiguity, yet enough to divert an entire branch of physics from its natural course.

Yes, this is precisely the kind of information that is rarely shared with the general public and that, without doubt, many physicists themselves have never even suspected.

When a rocket must be sent to the Moon, engineers use Newtonian mechanics, orbital dynamics, and relativity. They do not consult cosmology. This separation is real, but it is not a separation between two physics. It is a separation between the physics that builds things and the physics that speculates about origins. Two cultures coexist, they speak the same language, but they no longer read the same universe — and no one seems particularly concerned by it. Well, perhaps taxpayers should be, although most of them are unaware of it. I certainly was.

The Anthropocentrism of Measurements

The universe provides no anchor, no reference. Without GPS, it is impossible to know a position. Thus, we do not know where Earth is located — especially given its minuscule size in the cosmic expanse, comparable to a pinhead on a trillion football fields.

All the measurements we know are therefore anthropocentric or purely terrestrial. Their close connection to humanity and its existence is undeniable. If position does not exist in space, then distance does not exist either, nor acceleration, velocity, weight, [mass](#), or time — which is nothing more than the measurement of duration in units between two references.

When we send a rocket to the Moon, it navigates using GPS stations orbiting Earth, which provide a reference up to a certain distance — the range of communication. Beyond that distance, the rocket is lost. In the case of a space probe like Hubble, which travels millions of kilometers away, it is a radio signal sent back to Earth that informs us of its distance. If communication is lost, the probe is also lost. Nothing can occur in space without a terrestrial reference — or, in the future, a reference from another planet if humanity were to inhabit one.

The universe provides no references, nor does it possess any.

The same applies to quantum mechanics, this mysterious regime present in every atom of matter, which Λ CDM insists on reducing to mere mathematics due to its fear of the unknown. It represents the unique, singular, and indelible signature of the universe. The Λ CDM has constructed mathematical spaces, geometries, and states that in no way reflect reality, since elementary particles are invisible to the naked eye or even to scanning tunneling microscopes (STM). This means that any representation of this regime is purely conjectural.

These representations are all the more useless because only certain non-geometric parameters allow the use of quantum mechanics in research:

- Energy levels via spectrometry,
- Transition probabilities in lasers,
- Electronic structures via STM,
- Conduction bands in solid-state physics,
- Bound states in quantum chemistry.

In the definitions that follow, the origin of each measurement will be explained separately, allowing us to understand their anthropocentrism.

For now, we can focus on the speed of light ($c = 299,792,458$ meters per second), which is strangely calculated based on purely terrestrial parameters that are inexpressible in the universe — and is itself a victim of anthropocentric circularity:

- The meter was originally defined (1799) as one ten-millionth of a quarter of the Earth's meridian (a purely terrestrial reference).
- Today, it is defined as the distance light travels in a vacuum in $1/299,792,458$ of a second (since 1983).
- This definition relies on c , but c itself is expressed in m/s. It is a self-referential loop where the meter and the second are linked by human convention.
- The second, a unit tied to the human circadian cycle. Historically, the second was defined as $1/86,400$ of a mean solar day (linked to Earth's rotation, itself influenced by the Moon and the Sun). Today, it is based on the hyperfine transitions of the cesium-133 atom (9,192,631,770 radiation periods = 1 second).
- The second is therefore not a natural unit of the universe but a convention that allows the synchronization of human activities.

The value $c = 299,792,458$ m/s is thus doubly anthropocentric:

- The meter: a unit of length defined by humans (even if now tied to c).
- The second: a unit of time defined by humans (even if based on atoms).

What we can define in relation to light in the cosmos is, at most, the maximum speed of a body in space. Photons, or more precisely, electromagnetic waves, could be defined as the fastest movements in the cosmos. However, their speed remains a fundamentally human and terrestrial parameter with no value in space, since the universe contains no reference that allows the calculation of time or distance.

the Fear of the Unexplainable

Physics — both conceptual and applied — is struck by an almost cult-like taboo: the unknown.

It must never be mentioned. As if simply pronouncing the word could crack the walls of laboratories or make equations tremble. In contemporary physics, the unknown is not a territory to explore, but an intruder to eliminate. It is bypassed, disguised, covered with a mathematical varnish so that it looks like something familiar. It is renamed parameter, field, boson, constant, energy — anything, as long as it stops being what it is: a hole in understanding. This refusal of the unknown has become a tradition. A habit. A way of saving appearances.

Yet the unknown is not an enemy.

It is the only honest thing in this whole story. It is what the universe shows us when it refuses to bend to our models. It is what remains when equations stop working. It is the raw voice of reality, the one we never listen to because it does not speak the language of textbooks. This reading begins precisely there: not in certainty, but in the unknown. Not in models, but in what the universe says when we stop imposing words it never uttered. Not in frameworks, but in behaviors. Not in equations, but in evidences.

This visceral reluctance to evoke the fundamental, the metaphysical, or even the divine appears at the very beginning of the 20th century, with the Solvay figures:

- *Niels Bohr*, who repeatedly insisted that there is no quantum world — only descriptions of measurement results. For him, quantum mechanics does not describe what exists but only what can be said about experiments. Any attempt to speak of a reality existing before or independently of observation was declared meaningless.
- *Werner Heisenberg*, who claimed that concepts such as trajectory, position, or path have no reality before measurement. According to him, quantum mechanics describes knowledge — not objects. Properties are not elements of the world — they are created in the act of observation.
- *Wolfgang Pauli*, who rejected any attempt to describe what exists behind the formalism. He maintained that quantum mechanics is a theory of knowledge —

not a theory of nature. Questions about what is “really there” were, for him, metaphysical — and therefore illegitimate in physics.

- *Richard Feynman*, who insisted that no one understands quantum mechanics and that trying to understand what “really happens” is a mistake. The theory is a tool for calculating probabilities — not for describing being. He repeated that quantum behavior is absurd and must be accepted without seeking an underlying reality.
- *John Wheeler*, who pushed operationalism to its extreme. A phenomenon is not a phenomenon until it is observed. He defended a participatory universe in which the observer plays a constitutive role in the very existence of events.
- *Steven Weinberg*, who openly acknowledged that standard quantum mechanics is instrumentalist — and fundamentally empty. The formalism works — but it does not say what exists. He considered this lack of foundation deeply unsatisfying and a sign that the theory is incomplete.
- *Carlo Rovelli*, who argues that physical systems have no properties in themselves. Properties exist only in interactions. There is no state of a system independent of the observer. Reality dissolves into a network of relational events.
- *Sean Carroll*, who emphasizes that standard quantum mechanics does not specify what exists, and that this silence is a major conceptual problem. He argues that only Everett's interpretation provides a coherent ontology, because it treats the wave function as the real physical entity.
- *David Deutsch*, who maintains that the orthodox interpretation is logically inconsistent precisely because it refuses to describe reality. For him, quantum mechanics makes sense only if one accepts the existence of the multiverse; otherwise, the theory collapses into contradiction.

So many beautiful theories, often presented as the domain of hard-core physicists — those who claim to know and predict. But above all, those who forget that the unknown, divine or not, remains unknown, and that by avoiding naming it, physicists have forgotten that the role of God was to stand in for the unknown, the mystery of life and of the planet that hosts us, for better or (mostly) for worse. And because one does not believe in it, suddenly should the unknown disappear? One becomes a physicist thanks to a paper diploma and right away feels entitled to ignore the mystery, to mathematicize it, to concretize it, calculate it to the point of forgetting what it is?

To be afraid of expressing the fundamental nature of quantum mechanics is, in a way, to deny the fragility and improbability of Man; to forget that, like Papillon on his island, he is a prisoner of a planet drifting through a terrifying void, and that if he tried to escape it, the absence of air would extinguish him like an ordinary candle running out of wax.

Denying the mysterious origins of humanity is forgetting that science itself was born from wonder — and that wonder, without mystery, no longer has any reason to exist. It is a little like spitting into the hand that feeds you. Mystery is the true master aboard the ship of the universe.

You should never forget that, gentlemen physicists, wherever you may be and wherever you may come from.

Just before this negationist current of the unknown took hold, Einstein could still say that "God does not play dice" to evoke randomness. It wasn't yet a crime. We could push the philosophical cork even further: How can we imagine that a universe about which we know absolutely nothing could create what we experience and what we are without leaving its mark, its DNA, its fingerprint? Even the simplest potter leaves their touch on the clay. It's difficult to imagine that objects come from nowhere and to confuse quantum mechanics with a local anomaly, never considering that it might be the signature of the sculptor — God for some, the universe or the unknown for others.

One way or another, there exists an underlying generative principle, whether its detractors approve of it or not.

Yes, whenever we speak of physics, we must never forget — never, under any circumstances — that physics has always been nourished by metaphysical questions. From Leibniz to Laplace to Einstein, its greatest advances have emerged from reflections that reached beyond the merely measurable, while the Earth continues to drift aimlessly through a universe as strange as its Moon and its Sun.

Physics was born of metaphysics, and it will return to it once these fleeting evolutionary interludes of flora, fauna, and humanity have come to an end.

The wise will understand.

the Formalism

the Fundamental (UG)

The non-geometric substrate

Modern physics relies on a persistent intuition: what exists must have a shape, a position, an extension. The UG regime begins precisely where this intuition stops being valid. Quantum mechanics already shows that this intuition is false: entities do not behave like objects in space. They have no position, no trajectory, no shape. Their behaviour clearly indicates that they originate from a non-geometric level. The UG regime formalizes exactly this level. The ground of reality is a non-geometric substrate denoted:

$\backslash g$

It is not a hidden space: it is what exists when no geometry exists yet. Quantum entities behave exactly as if they originated from such a level. This symbol is neither a space, nor a field, nor a manifold. It designates the pre-geometric ground, prior to any form, any distance, any localization.

The three modes of effervescence

The UG regime distinguishes three internal modes of existence, all non-geometric.

Free effervescence

$$V_1 = \backslash g_{\text{free}}$$

First Wave, no persistence, no segmentation, no identity.

Limited effervescence

$$V_2 = S(V_1)$$

Second wave: a first form of internal limitation appears. One could imagine it as a virtual boundary that gathers elements together. It is not a spatial form, but a non-geometric organization, a kind of natural assembling, the result of secret affinities.

The stabilization

When the transition becomes stable:

$$V_1 \rightarrow S(V_1) \rightarrow V_2$$

One can note it h :

$$V_2 \rightarrow h$$

Until here, no geometry appears in these transitions.

In the UG regime then:

- no space
- no time
- no position
- no trajectory
- no mass
- no field

Only internal modes of effervescence within $\backslash g$. There's no point in making up what doesn't exist.

Resolution of quantum paradoxes

When we accept this simple reality without twisting it, all quantum paradoxes disappear:

- no position → no non-locality
- no trajectory → no wave/particle duality
- no mass → no relativity/quantum incompatibility
- no geometry → no quantum [gravity](#)
- no space → no measurement problem

The UG regime is the pre-geometric reality.

Summary

Fundamental substrate:

$\backslash g$

Modes of existence:

V_1

V_2

h

Limitation:

$S(V_1)$

No geometry, no mass, no quantum paradox.

It is the only perceivable reality.

the Natural Standard

The UG.NUG formalism begins with a single requirement: a natural standard that does not rely on Earth-based conventions. This standard must be physically real, universally accessible, and independent of any human-defined quantities such as mass, time, geometry, or direction. A volume of one litre of water satisfies these conditions. It exists without reference to terrestrial units, gravitational assumptions, or coordinate systems. It is simply a physical presence, stable and observable, requiring no abstract framework to be defined.

Historically, Newtonian mass was never defined. It was introduced as a symbolic placeholder in an equation, not as a measurable physical quantity grounded in observation. Weight, in contrast, has always been a human choice, because it is only for humans that a notion of "how heavy something feels" is needed. But weight cannot be expressed in kilograms, since the kilogram itself is defined by a terrestrial standard that is already subject to Earth's [gravity](#). A unit defined through [gravity](#) cannot be used to define [gravity](#). This circularity has been embedded in physics since its origins.

In the UG.NUG universe reading, the natural standard replaces this entire historical ambiguity. It is not a unit of mass, force, or energy. It is simply a reference object. All meaningful physical statements are expressed only through what happens to this object when subjected to [gravity](#). Nothing else is assumed, and nothing else is needed.

Gravity Measure

Gravity obviously exists throughout the universe, but it cannot be calculated. There is no way to measure the distortion of the [GRID](#), nor the pressure exerted on a planet floating in space. Without a surface, without a reaction, without a reference, [gravity](#) has no measurable signature.

It is therefore measurable only on Earth, and all calculations performed by the current model are necessarily Earth-based. On Earth, [gravity](#) is simply measured as the pressure it exerts on the natural standard — **the one-litre volume of water** — calculable as follows:

thus, first Formal Expression

$$G = E(S)$$

where

- **S** is the natural standard,
- **E(S)** is the effect exerted on the standard,
- **G** is [gravity](#), defined solely as that effect.

the Redshift

1. Experimental definition

Redshift is defined from the measurement of wavelengths:

$$z = \frac{\lambda_{\text{obs}} \lambda_{\text{em}}}{\lambda_{\text{em}}}$$

where :

λ_{em} is the wavelength at emission,

λ_{obs} is the observed wavelength.

This definition is purely experimental.

2. Interpretation in standard cosmology

In the Λ CDM model, redshift is interpreted as the consequence of the expansion of space. One introduces the scale factor ($a(t)$) of the Friedmann–Lemaître–Robertson–Walker (FLRW) metric and writes:

$$1 + z = \frac{a(t_{\text{obs}})}{a(t_{\text{em}})}$$

Redshift then measures the ratio of scale factors between the time of observation and the time of emission: light is stretched because the geometry of space has expanded between these two instants.

For small redshifts ($z \ll 1$), one recovers Hubble's law:

$$z \approx \frac{v}{c} \approx \frac{H_0 d}{c}$$

where H_0 is the Hubble constant, d a proper distance, and c the speed of light. Redshift is then read as a recession velocity in an expanding universe.

3. UG.NUG reinterpretation: redshift and volumetric realization

In the UG.NUG reading, geometry is not fundamental but emergent.

The universe does not begin with a geometric expansion, but with an undifferentiated background (UG). Geometry appears only when objects cease to be identical, driven by the Arrow of Emergence and stabilized by the [GRID](#).

In this reading, redshift keeps its experimental definition:

$$z = \frac{\lambda_{\text{obs}} - \lambda_{\text{ém}}}{\lambda_{\text{ém}}}$$

but its interpretation changes: it no longer measures an expansion of space, but a shift between two states of structural realization of the universe.

A realization parameter ($R(t)$), is introduced, describing the degree of volumetric or structural realization at time (t). The photon frequency $\nu(t)$ can be related to this parameter through a function (g):

$$\nu(t) = \nu_0 \cdot g(R(t))$$

Redshift, also defined through the ratio of frequencies,

$$1 + z = \frac{\nu_{\text{ém}}}{\nu_{\text{obs}}}$$

becomes:

$$1 + z = \frac{g(R(t_m))}{g(R(t_{\text{obs}}))}$$

This relation formally replaces:

$$1 + z = \frac{a(t_{\text{obs}})}{a(t_m)}$$

with an expression where the fundamental quantity is no longer the geometric scale factor ($a(t)$), but the realization parameter ($R(t)$).

4. Conséquence

In standard cosmology, redshift is the signature of a geometric expansion of space.

In UG.NUG, it becomes the quantitative measure of the volumetric realization differential between emission and reception: distant regions appear to recede because they are not yet fully realized, not because they move away in an expanding space.

This reinterpretation is not merely conceptual: it is mathematically expressible.

The fact that one can define a function linking redshift to the change in the realization parameter ($R(t)$) shows that the UG.NUG reading is internally coherent and allows quantitative predictions directly comparable to cosmological observations.

Conclusion

The UG.NUG formalism is intentionally reduced to its strict minimum — it draws no inspiration whatsoever from the current formalism of quantum physics which, as

explained earlier, retains all its technological achievements, but whose framework, abusively geometric, outdated, and deliberately opaque, now risks becoming a hindrance rather than an asset for humanity.

This simplification is not an aesthetic choice but the direct consequence of the historical trajectory of physics. Over time, layers of concepts have been stacked on top of one another, each resting on assumptions, conventions, or abstractions that have gradually distanced physics from the physical world it was meant to describe. As explained in the conceptual paper, contemporary physics no longer has anything in common with the real universe — the one that launches rockets without caring about our equations.

It is not the role of this formalism to repair centuries of accumulated conventions. If mass, force, or other classical quantities cannot be defined without circularity, the fault does not lie with the current framework. It lies in the long tradition of writing page after page of symbols that refer only to themselves.

This formalism does not destroy terrestrial physics. Rockets still fly, tap water still flows, and children still have plenty to do in school physics classes. UG.NUG is simply a reading of what can be defined without invention, without convention, and without circularity. What remains is small — but it is real.

Thus, it is not impossible that the UG.NUG reading is the summary of two centuries of drafts, corrections, reflections, and revisions, only to discover that the science built on successive layers of the current model does not exist. Moreover, the very words model, paradigm, framework reveal the symptom of appropriation, manipulation, and transformation imposed on the human mind in order to understand a universe it cannot accept as it is. It is time to return to the source of science, to its origin, and to arrange things so that we write what we see, notice, and observe — without all the constructions that make it digestible for students and teachers but absolutely incoherent in itself.

Never forgetting, moreover, that the word science, from the Latin *scientia*, means knowledge — certainly — but that this activity is human, and:

It is far from certain that the universe has much it wishes to make known to intruders.