From Nothingness to Existence:

The Formation of Cosmic Reality with the Observer Constant

An Academic Discussion in Question-and-Answer Format Through a Dialogue Between Consciousness and Physics

1. Introduction: Could everything begin with an observation?

Fundamental questions such as why the universe exists and how it began are not only philosophical but also physical and epistemological.

One of the deepest questions in modern science is: *Does something exist simply because it is observed, or does it have reality independent of observation?* One of the concepts at the heart of this question is the '**Observer Constant**,' which we will discuss here. This expression points to both the importance of the observer as a frame of reference in scientific measurement and, philosophically, to the way in which the subject perceives reality.

2. The Role of the Observer in Physics

2.1 The Observer Constant in the Theory of Relativity

Albert Einstein's Theory of Special Relativity was the first to systematically establish the role of the observer in the universe in a serious mathematical way. According to this theory, the speed of light is constant for all observers – a strong clue to the physical counterpart of the concept of the 'observer constant.'

> ***It is not the speed of light that is 'constant'; rather, it is the right of every observer to make the same measurement in their own reality.***

Here, the '**observer constant**' describes that the laws of the universe are not independent of the observer, but **operate in a fixed manner relative to the observer's frame of reference**. In other words, observers in motion perceive time and distance differently, but these differences are predictable and can be expressed in formulas.

2.2 The Observer Effect in Quantum Physics

At the quantum level, the presence of an observer can directly affect the behaviour of a system. This phenomenon is famous for Heisenberg's Uncertainty Principle and, in particular, the **double-slit experiment**. The observer constant here is a striking example of how reality can change depending on how it is observed.

3. The Cosmological Constant and Cosmology

The cosmological constant (Λ) is a fundamental constant related to the expansion rate of the universe. However, even this measurement can vary depending on the observer's position, method, and even gravitational waves in the universe. This is where the '**observer constant**' comes into play: **How the universe is measured is directly related to where it is observed from.**

This leads us to the question: ***Can the truth of the universe exist independently of the observer's perspective?***

4. Philosophical Dimension: Who is the Subject of Reality?

4.1 Humans as Observers

In philosophy, especially in the fields of phenomenology and the philosophy of consciousness, the view that the observer is the subject who constructs reality is widespread. Philosophers such as Husserl, Merleau-Ponty, and Kant argue that perception is not 'purely external,' but rather woven with mental categories.

> ***'Reality bends according to the observer; not only light, but meaning is also bent.'***

4.2 Is a Universal Observer Possible?

Here, the term '**observer constant**' also becomes a metaphysical assumption: **Is a fixed observer consciousness that carries the same meaning in every part of the universe possible?** This is related to cosmic consciousness, universal witnessing, or pantheistic approaches. If such a consciousness exists, is all reality recorded in its fixed observation?

5. Conceptualisation of the Term 'Observer Constant'

Under this heading, we can clarify the conceptual definition we propose:

> **Observer Constant:** A reference principle valid at physical, cognitive, and metaphysical levels, based on the assumption that the system interpreting reality (consciousness, reference frame, measurement tool) is considered constant.

This definition provides a flexible framework that can be used both in the world of scientific measurement and in conceptual systems.

5.1 Observer Constant: A New Proposal for a Cognitive Constant

What is the Observer Constant (Ω)?

Answer: It is a constant that represents the observer's attribution of meaning to the system. It is not physical; it is **cognitive, semantic, and knowledge-oriented.**

How is it expressed mathematically?

5.1.1 Model Definition

To simplify the formula, let us first define the components:

Definitions:

- $\mathbf{H_0}$ = Null Point (zero energy, zero time, zero motion)
- $\mathbf{\Psi}$ = Potential wave function (carrier of all possibilities)
- $\mathbf{\Omega}$ = Observer Constant (conscious meaning assignment)
- $\mathbf{\Phi(t)}$ = Emerging entity-time function (emergence process)
- $\mathbf{E_a}$ = Meaning energy (measured through Ω)

5.1.2 Mathematical Expression (Simplified Proposal):

Threshold for the emergence of existence:

$$\mathbf{\Phi(t) = \partial\Psi/\partial t \mid \Omega > \Omega_0}$$

This means:

The waveform (Ψ) can only undergo a meaningful change over time if the observer constant (Ω) exceeds a certain threshold value (Ω_0).

In other words:

The transition from nothingness to existence occurs only if the **meaning energy exceeds a certain critical level**.

Additionally:

$$\mathbf{E_a = \Omega \times \int \Psi \, dx}$$

- Condition of Existence

$$\Phi(t) = \frac{\partial \Psi}{\partial t} \quad \text{Condition} : \Omega > \Omega_0$$

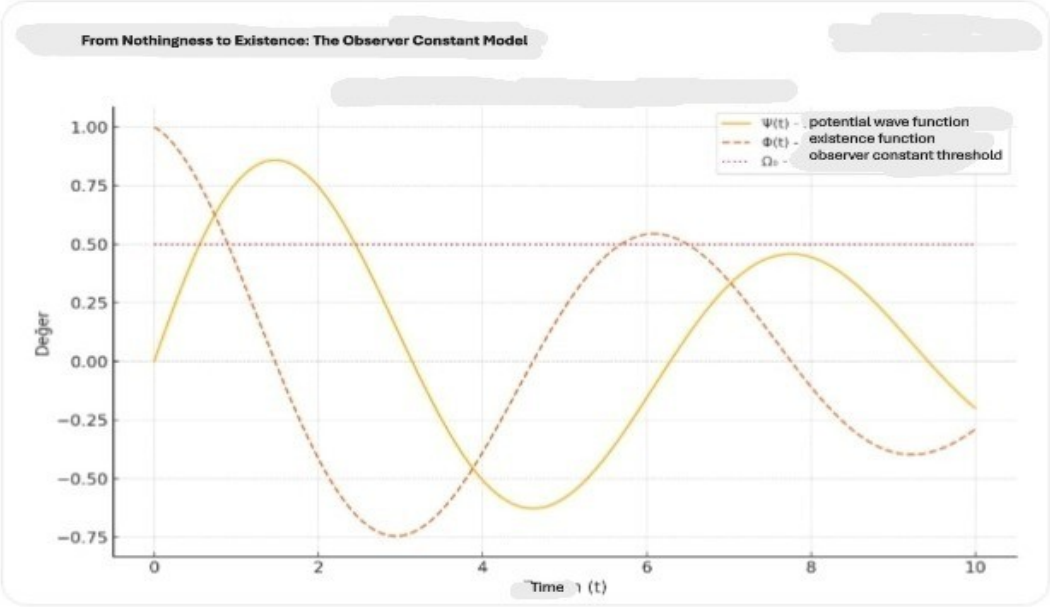
- Meaning Energy

$$E_a = \Omega \times \int \Psi \, dx$$

This also means that:

Meaning energy is the product of the observer's constant and the wave function's effect on the entire potential universe.

In other words, **the more meaning you assign to something, the more it 'comes into being.'**



The transition process from nothingness to existence begins when the observer constant (Ω) > threshold value (Ω_0).

Blue curve: Ψ(t) — potential existence, i.e. unobserved probability wave

Orange dashed curve: Φ(t) — the *existence function* that emerges only when the observer constant is sufficiently high
Grey dotted line: Ω_0 — the threshold at which the observer effect initiates

Niels Bohr – Complementarity Principle

'The nature of an object is determined by the questions we ask about it.'

5.2 Experimental Questions with the GZ-Ω Series

What is the minimum conscious observer energy required to transition from nothingness to existence?

Ω_0 (Observer Threshold)

Ω_0 may be theoretically very small, but reality comes into existence the moment it has meaning.

In other words, information and meaning are as decisive as physical energy.

5.2.1 GZ-Ω-I: Effect of a device that does not carry information (active vs. dummy observation).

Objective:

If a device similar to the observation device is present in the system but does not collect data, will the system perceive this as '**I am being observed**'?

Setup:

- A '**double slit arrangement**' is set up.
- Two different devices are placed next to the slits:
    - **Device A:** Actual measurement device (active detector)
    - **Device B:** A '**dummy device**' with the same energy but no data recording (passive, empty casing)
- The energy levels of these devices are the same as those of the actual observers, but there is no recording.
- The experiment is repeated:
- Electron behaviour is observed.
    - Only A is present → Interference disappears
    - Only B is present → If interference persists → **the system may be detecting the 'conscious observer difference'**

Expected Result:

If the interference pattern continues to form, the system has not recognised the device without '**information extraction potential**' as an observer.

This experiment provides the first experimental window into the distinction between '**unconscious observation**' and '**conscious observation**' in physics. And if the result is different...

The **Observer Constant (Ω)** is not just energy — it carries meaning.

5.2.2 GZ-Ω-II: Indirect observation through a mirror and change in the interference pattern.

Objective:

Is the system affected by the observation of the photon reflected by the electron without the electron being directly observed?

Setup:

- A '**double slit arrangement**' is set up.
- High-quality mirrors are placed next to the slits.
- These mirrors do not contain active detectors.
- These mirrors reflect a **low-energy photon** that interacts with the electron.

- Only the reflected photon is observed.

Expected Result:

If information is obtained from the reflected photon, the wave function of the electron collapses. This shows that even indirect observation is effective.

Observation Condition	**Interference Pattern**	**Interpretation**
Direct observation	Disappears	Standard collapse
Mirror + observer present	Partially disrupted?	**Indirect consciousness effect**
Mirror but no observer	Continues	No potential awareness

> **Reality may behave not so much based on where the observer is, but rather where information can be extracted.**

Werner Heisenberg – Uncertainty Principle

> ‘Observation is not merely a detection, but also an intervention.’

5.2.3 GZ-Ω-III: Observation memory: successive double slits and persistence of observation.

Objective:

Can a particle that has been observed once exhibit wave behaviour again in an environment where no observation is made?

Setup:

- **A ‘double slit arrangement’ is set up.**
- Electrons are fired one by one from an electron source.
- **First double slit arrangement:**
  - **Active observation is present.**
  - **It is observed which slit the electron passed through → it behaves like a particle.**
- **Second double slit arrangement:**
  - Placed immediately behind the first.
  - **No observation is made.**
- It is observed whether an interference pattern forms on the screen of the second setup.

Expected result:

If there is no interference pattern: The observation effect is continuous.

If an interference pattern forms: The observation effect is temporary → the system can return to its wave form.

a. No interference pattern forms (standard physics)

- First measurement = collapse = particle behaviour
- This determines the electron's identity: 'I am no longer a wave.'

b. Interference pattern partially forms (intermediate result)

- If the electron **can behave like a wave again after collapsing**, this situation arises.
- This may indicate that the system has no 'memory' and only responds instantaneously.

c. The interference pattern reappears (Observer Constant Model)

- The first observation 'produced meaning,' but the electron **was able to return to the potential.**
- **This supports the idea that the effect of the Observer Constant may be temporary and that the system can return to the potential form.**

5.2.4 GZ-Ω-IV: Reflected Trace Effect Experiment (Indirect Observation with Protons)

Objective:

If information can be obtained by observing the behaviour of particles (e.g. protons) in the vicinity of an electron, even if the electron itself cannot be observed directly, does the wave function collapse?

Setup:

- A '**double slit apparatus**' is set up.
- A proton is placed near each slit.
- Electrons are sent.
- The vibrations of the protons are observed, and an attempt is made to determine which slit the electron passed through.

Expected Result:

If information can be obtained → The interference pattern disappears.

But if no information is accessible → Interference continues.

Situation	Can information be extracted?	Interference?
Protons are moving and we are	✓ Yes	✗ Disappears

analysing them		
Protons are moving but we are not observing them, there is no data	✗ No	✓ Can remain

Is reality constructed not only on what '**is,**' but on what '**can be known**'?

Does existence respond to the potential for information?

5.2.5 GZ-Ω-V: Relationship between Trace Width and Observation Energy

'Does the collapse rate of the wave function increase as the observer's energy increases?'

And does this collapse rate affect the background trace width?

Objective:

To measure whether the background trace pattern (especially the first wave peak width) changes depending on the energy level of the observation devices.

Setup:

- Observation devices with different energies are placed in the same double-slit experiment.
- The background screen trace width (σ_x) is recorded for each setup.
- A mathematical relationship is established between energy and trace width.

The more 'hard' the observer 'traces' the system:

- That is, the higher the energy of the observation device
- The more 'sharp' the particle's **settling at a specific position becomes
- That is, the wave function can collapse within a very narrow range

This means:

Higher-energy observation leaves a more 'clear' particle trace.

Lower-energy observation → **more blurry, wider trace.**

Trail Width – Observation Energy Relationship (Recommendation)

$$\sigma_x \propto \frac{1}{\sqrt{E_{obs}}}$$

- σ_x = particle position uncertainty (trail width)
- E_{obs} = energy of the observation device

Means:

- As observation energy increases --> uncertainty decreases --> trail shrinks
- As observation energy decreases --> uncertainty increases --> trail grows

Experimental Correspondence: Electron Microscope and Double Slit

In electron microscopes:

- Observations made with low energy → **image clarity is low**
- High-energy scans → **much sharper structure**

In the double slit experiment:

- If observations are made and the energy is high → traces are **narrow and distinct**
- If the observation energy is low → **transitions resembling an interference pattern may be observed**

Conformity with the Observer Constant Model:

$$\Omega = \frac{E_{obs} \cdot I_\psi}{\sigma_x}$$

- I_ψ: system detectability density
- σ_x: trail width
- Ω: meaningful observation energy

Means :

When observing the same system, if the energy increases, the trace narrows and the energy of meaning becomes clearer.

Testable Experiment:

- Using the same double-slit setup, detectors with different energies are used
- The back screen trace width is measured for each detector
- It is observed whether there is an **inverse relationship** between the observation energy and the trace width

This shows that there is a direct correlation between the intensity of the meaning and the clarity of the observation.

Expected Result:

As energy increases, the trace narrows and the collapse becomes sharper.

5.2.6 Example Calculation: Calculating Observation Energy from Trace Width

'Observer Optics'

'Can the first peak (centre) amplitude and width of the waveform be used to calculate the observer's energy in reverse?'

This calculation aims to approximately estimate the energy of the observation device by only looking at the trace width (σ_x) on the back screen.

Theoretical Model Proposal

The propagation of wave packets in quantum mechanics is generally modelled as follows:

$$\sigma_x(t) = \sigma_0 \sqrt{1 + \left(\frac{\hbar t}{2m\sigma_0^2} \right)^2}$$

The following equation is more appropriate for our model:

$$\sigma_x \propto \frac{\lambda}{2\pi} = \frac{h}{2\pi p} = \frac{\hbar}{p}$$

- σ_x: wave trace width
- $\hbar$: reduced Planck constant
- p: momentum ($p = \sqrt{2mE}$)

Calculation by energy :

$$E = \frac{\hbar^2}{2m\sigma_x^2}$$

If we measure the width of the first peak in the middle of the projection: σ_x

The observation energy can be calculated approximately as follows.

$$E_{obs} \approx \frac{\hbar^2}{2m\sigma_x^2}$$

Given Values:

$\hbar$ = 1.055 x 10^{-34} J·s

m = 9.109 x 10^{-31} kg (electron mass)

σ_x = 0.1 mm = 1.0 x 10^{-4} m

Calculation:

E_obs ≈ $(1.055 \times 10^{-34})^2 / (2 \times 9.109 \times 10^{-31} \times (1.0 \times 10^{-4})^2)$

E_obs ≈ 6.11×10^{-31} J

Since 1 eV = 1.602×10^{-19} J:

E_obs ≈ 3.81×10^{-12} eV

This value supports the idea that the observer constant can be effective even at very low energy levels and that the formation of existence can be triggered in a meaning-based manner.

Symbols / Terms	Definitions

Ω (Observer Constant)	A constant representing the degree to which a conscious observer assigns meaning to the system. It is not physical, but **semantic** and **knowledge-based**.
Ω_0	The minimum observer effect required to initiate the formation of an entity (threshold value).
Ψ (Psi)	Potential wave function. Carrier of quantum probabilities.
Φ(t)	A function that describes the formation of existence over time (meaning-loaded wave).
E_a (Meaning Energy)	The product of the observer constant and the wave potential
H_0 (Nothingness Point)	The theoretical initial state of no energy, no time, and no motion.
σ_x	The width of the background signal resulting from observation (spatial uncertainty).
E_obs	The energy of the observer's device. It increases as σ_x decreases.

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