A Layman and Mathematical Definition of Reality

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Abstract

This paper introduces a layman definition of Reality alongside a formal mathematical representation. The central claim is that Reality exists independently of observation, belief, or perspective. The proposed equations formalize Reality as both invariant under transformations of perspective and as the limit of perception as observational error vanishes.

Layman Definition

Reality is what remains unchanged no matter who is looking at it or how it is being looked at. This sentence expresses the independence of Reality from belief, perception, or measurement.

Mathematical Formalization

1. Invariance Form:
Equation: $g(R) = R, \forall g \in G$

Where:
R = Reality (the objective state of existence)
G = set of all possible transformations corresponding to different observers or observation methods
$g \in G$ = specific transformation (change in perspective, frame of reference, or measurement technique)

Interpretation: Reality is invariant under all admissible transformations.

2. Limit Form:
Equation: $R = \lim(\varepsilon \to 0) \Phi_{\varepsilon,o}(\Omega) = \Omega$

Where:
R = Reality
Ω = the true underlying state of existence
$\Phi_{\varepsilon,o}(\Omega)$ = the representation of Ω as perceived by observer o with distortion/error ε
ε = degree of perceptual or observational error/noise

Interpretation: As observational error ε tends toward zero, the perceived state converges to the true state Ω. In the limit of perfect observation, what remains is Reality itself, independent of the observer.

Combined Statement:
Together, these equations demonstrate that Reality is both:
1. Invariant under transformations of perspective ($g(R) = R$)
2. The limit of perception as error vanishes ($R = \lim(\varepsilon \to 0) \Phi_{\varepsilon,o}(\Omega) = \Omega$)

This dual structure mathematically expresses the layman definition: Reality is what remains unchanged no matter who is looking or how it is being looked at.

References

Philip K. Dick, *I Hope I Shall Arrive Soon*, 1985. Quote: 'Reality is that which, when you stop believing in it, doesn't go away.'

Deepak Chopra, *How to Know God*, 2000. Quote: 'Traditional science assumes, for the most part, that an objective observer independent reality exists...'

Teal Swan, Public Teachings, 2014. Quote: 'An objective reality exists, regardless of whether an individual perceives it or not.'

LivingInBecoming.com, '23 Quotes on Perception and Reality', online resource.

Philosophical concept 'Sub specie aeternitatis' (under the aspect of eternity), associated with Baruch Spinoza.

Author's Note

My approach to this work was not purely academic, but also spiritual. The inspiration for this definition and its mathematical structure emerged from my own journey of questioning the tools of perception, belief, and manifestation. I came to see these tools as part of what I call the 'little r' reality—useful in daily life, yet ultimately transcended by the 'Big R' Reality that exists regardless of who is looking. This fusion of spiritual insight with mathematical expression is my attempt to honor both the human search for meaning and the universal laws that underlie existence.