

Temporal Evolution of Coherent Realization

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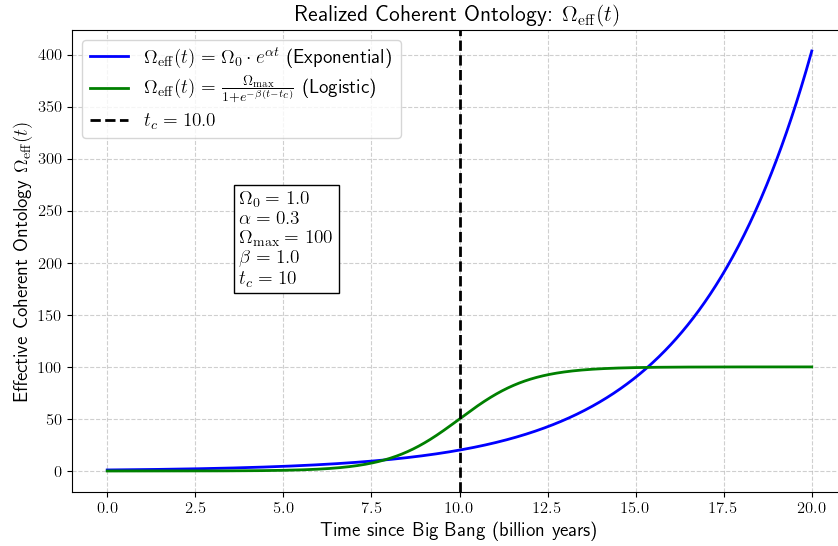


Figure 1: Illustrative model of the effective actualization of coherent structures over time. The blue curve reflects gradual exponential growth; the green curve models a logistic transition induced by observer emergence.

Overview

In the framework of Mandrov Unified Coherent Field Theory (MU-CFT), reality does not consist of all physically possible configurations (Ω), but only of those that are *coherently realized* at a given moment — denoted by $\Omega_{\text{eff}}(t)$.

Definitions

- Ω : the total space of coherent potentialities — the universal possibility field.
- $\Omega_{\text{eff}}(t)$: the subset of Ω that becomes realized at time t through coherence.

Mathematical Models

1. Exponential Model: Natural Growth of Coherence

$$\Omega_{\text{eff}}(t) = \Omega_0 e^{\alpha t}$$

where Ω_0 is the initial realized coherence at the beginning of cosmic evolution, and α is the effective rate of exponential coherent expansion.

2. Logistic Model: Observer-Induced Phase Transition

$$\Omega_{\text{eff}}(t) = \frac{\Omega_{\text{max}}}{1 + e^{-\beta(t-t_c)}}$$

where Ω_{max} is the saturation value of realized coherence, β determines the steepness of the transition, and t_c marks the critical epoch at which observer-induced feedback becomes dominant. This model captures a nonlinear transition, in which self-aware observers act as amplifiers of global coherence, leading to a rapid increase in $\Omega_{\text{eff}}(t)$ around t_c .

Interpretation in MU-CFT

Only those configurations that maintain global coherence within the observer field are realized. The rest remain in potentiality. The evolution of $\Omega_{\text{eff}}(t)$ reflects a selective actualization process driven by coherence. The exponential law describes spontaneous unfolding of coherence, while the logistic law incorporates critical feedback from observers, suggesting that consciousness itself reshapes the trajectory of coherent actualization.

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