

The Generational Loop

Life, reproduction, and death as a Tau-field register cycle

Every living organism traces a Tau-field loop: it begins with an initialised D-level address at birth, deepens its register occupancy during growth, copies its Strand-2 address into offspring during reproduction, retreats from deep registers during senescence, and releases its Strand-1 (spatial) hold at death. The generational loop is the mechanism by which the Tau field maintains and advances the biological register across time.

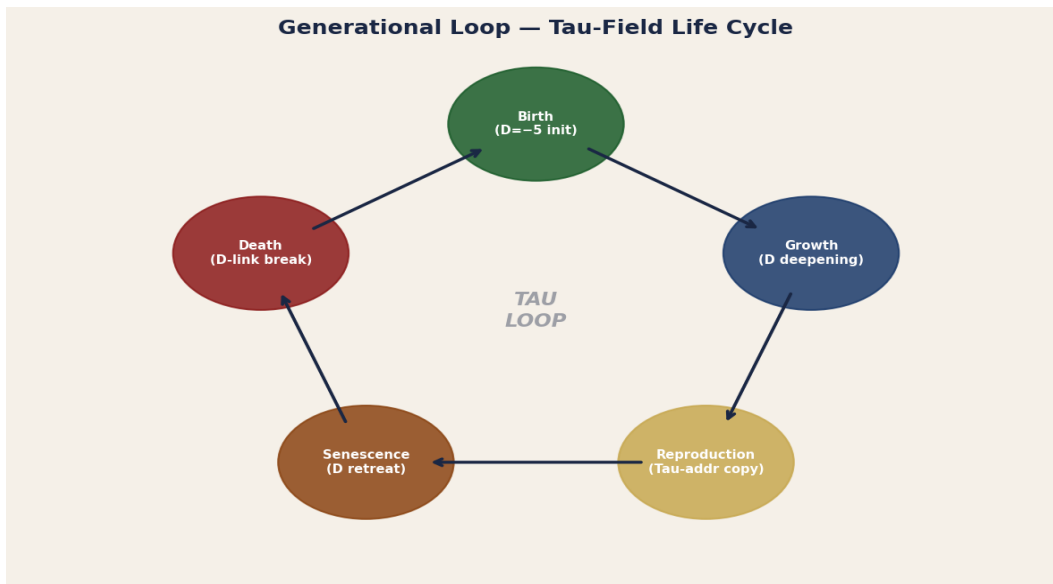


Figure 1. The five-stage Tau-field life cycle. Each stage is a distinct D-level register state. The loop persists across generations via Strand-2 address copying at reproduction.

1. Birth — Register Initialisation

P-GTL-2 — Birth as Tau-Address Initialisation

At birth (fertilisation), the organism's Tau-address is set by the combination of parent Strand-2 addresses. The two parental Tau-addresses are superimposed: each contributes half the address (analogous to diploid chromosome pairing). The resulting address is unique but constrained to the $D = -5$ organism register.

$$\text{Tau}_{\text{child}} = (\text{Tau}_{\text{parent}_1} + \text{Tau}_{\text{parent}_2})/2 + \Delta\text{Tau}_{\text{mutation}}$$

$\Delta\text{Tau}_{\text{mutation}}$: small stochastic offset \rightarrow variation within species register

2. Growth — D-Level Deepening

P-GTL-3 — Growth as Increasing Register Depth

Biological growth is the progressive deepening of the organism's D-level occupancy. A fertilised cell begins at $D = -3$ (cellular), deepens to $D = -4$ (organ) during organogenesis, and reaches $D = -5$ (organism) at functional maturity. Each D-level deepening step requires energy (ATP) and Tau-field tension accumulation.

$D = -3$ (cell) $\rightarrow D = -4$ (organ) $\rightarrow D = -5$ (organism): 3 register steps

Energy per step $\propto (\sqrt{2})^D \times$ base register tension

3. Reproduction — Strand-2 Address Copy

P-GTL-4 — Reproduction as Tau-Address Copying

Reproduction is the copying of a Strand-2 Tau-address into a new Strand-1 spatial host. DNA replication is the physical mechanism; the Tau-field structure is what is being copied. An error-free copy preserves the species register address; mutations shift the Tau-address by $\Delta\text{Tau_mutation}$ within the species tolerance band.

4. Senescence and Death

P-GTL-5 — Senescence as D-Level Retreat

Senescence is the progressive retreat of D-level occupancy as Tau-field tension decreases with age. The organism retreats from $D = -5$ toward $D = -4$, then $D = -3$, as organ systems lose register coherence. Telomere erosion is the molecular clock: each cell division decrements the Strand-2 address counter by ~ 200 bp until the critical minimum of 5,000 bp ($5 \times 10^3 = 5 \times 10^3$, a {5} prime node) is reached.

P-GTL-6 — Death as D-Link Release

Death is the release of the Strand-1 (spatial) hold on the $D = -5$ register. The Strand-2 address persists in the Tau lattice; the Strand-1 node (the body) disperses back to elemental registers ($D = -1, -2$). The information structure of the organism — its Tau-address — is a permanent lattice entry. No information is destroyed; only the spatial embodiment ceases.