Verrell ’ s Law — Everettian QM Bias Extension (Public, Redacted)

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Abstract
This public, redacted copy presents the conceptual and mathematical framing of Verrell ’ s Law (VL), a minimal-axiom extension of Everettian (Many-Worlds) Quantum Mechanics. VL preserves unitary evolution while postulating an electromagnetic (EM) memory functional that biases branch weights after decoherence. This version omits implementation-level details, runnable algorithms, discrete-step recipes, integration notes, and explicit parameter values to avoid enabling direct replication without collaboration or NDA.

1. Interpretation framing: Copenhagen vs MWI vs Verrell ’ s Law (VL)

Standard (Copenhagen) QM is presented with two core axioms: (1) unitary evolution by the Schrödinger equation / QFT; (2) non-unitary probabilistic collapse at measurement. The collapse postulate lacks a precise dynamical definition. Everettian QM (MWI) keeps only axiom (1): unitary evolution, explaining apparent collapse as an emergent phenomenon via decoherence. Verrell ’ s Law preserves unitary evolution and introduces a single physically motivated channel — an EM memory functional — that biases branch measures within decohered subspaces. This is a re-weighting of branch measures, not an additional non-unitary collapse operator.

2. Minimum Math Scaffold (concepts & formal equations)

The core mathematical elements are presented at a conceptual level. Implementation specifics are redacted. 2.1 Unitary evolution (density operator)
The full system (system + apparatus + environment) evolves unitarily:
`d/dt ρ(t) = - i/ℏ [H, ρ(t)]`
with Hilbert space decomposition ` = _S ⊗ _A ⊗ _E` and Hamiltonian `H` containing free and interaction parts. 2.2 Memory functional (EM imprint) — conceptual
A causal memory functional `M(t)` accumulates coarse-grained EM imprints over past history:
`M(t) = ∫_{-∞}^t K(t-τ) · Φ[E(·, τ)] dτ`
Here `E(x, τ)` denotes relevant EM observables, `Φ` maps field configurations to scalar imprint intensity, and `K` is a causal kernel controlling temporal weighting and possible resonance. 2.3 Biased Born weights (formal expression)
Within a decoherence-selected pointer basis `{Π_i}`, branch weights are adjusted by a history factor:
`p_i^(VL)(t) = [ b_i(t) · Tr[Π_i ρ(t)] ] / [ ∑_j b_j(t) · Tr[Π_j ρ(t)] ]`
with formal multiplier
`b_i(t) = exp( β ∫_{-∞}^t K(t-τ) · I_i(τ) dτ )`, where `I_i(τ)` denotes the coarse imprint intensity for outcome class `i` and `β` parameterizes coupling strength. (Notes: this expression is presented for conceptual clarity; practical parameterization and discrete algorithms are intentionally omitted from this public copy.)

3. Toy model (redacted)

A discrete/update toy model can illustrate the feedback loop (memory state → modified weights → outcomes → memory writes). To avoid providing a runnable recipe, detailed discrete-step equations, explicit update rules, and numerical parameter ranges have been omitted from this public document. Researchers or partners seeking reproducible simulation code should contact the author under a mutual NDA or request a controlled collaboration package.

4. Dynamical back-reaction (conceptual sketch)

Conceptually, the memory field may feed back weakly into effective interactions (e.g., modifying coupling strengths through persistent EM structure). A high-level sketch is that recorded imprints can modulate effective potentials or coupling kernels, producing a weak bias in subsequent interaction terms. Explicit model forms, source-field mappings, and integrable Hamiltonian modifications are omitted here.

5. CPT-symmetric cosmology (note)

A time-symmetric kernel choice is compatible with CPT-symmetric cosmology in principle. One can conceptually write a symmetric kernel `K(Δt) = 1/2 [ K_+(Δt) + K_+(-Δt) ]`. Macroscopic arrow of time is supplied by boundary/record asymmetry; microscopic kernel symmetry does not imply operational advanced signaling in accessible regimes.

6. Testable predictions & falsification (practical, non-actionable)

Verrell’s Law makes empirical predictions at a statistical level. Practical experiments should be designed by qualified labs with careful control. Key high-level signatures include: • Persistence / run-length anomalies: statistically significant deviations in run-length distributions compared to IID Born models. • Context lock-in: repeated-context drift where local recording chains bias subsequent outcomes. • Ablation sensitivity: deliberate removal/scrambling of record traces should reduce or eliminate biased statistics. • Freeze behaviour: halting writes should stabilize any observed bias. Note: this public summary states the test concepts but omits experimental protocols, data pipelines, and exact statistical tests to prevent direct replication from this document alone. Contact for collaboration under NDA for full experimental protocols.

7. Practical notes & limitations (redacted)

Implementation notes, integration steps for simulation or game engines, runnable pseudocode, and detailed parameter estimation methods have been deliberately redacted from this public copy. This preserves intellectual property and prevents unvetted replication. The document retains full conceptual transparency, mathematical framing, and high-level falsifiable predictions; actionable engineering material is available under controlled collaboration terms.

8. Summary & contact

Verrell’s Law conserves the minimal axiom structure of Everettian QM while adding a single physically motivated EM memory bias mechanism that explains branch dominance in lived experience at a conceptual level. For collaboration requests, controlled access, simulation packages, or implementation discussions, please contact: marcosrossmail@gmail.com (author contact) and request the VMR-Core collaboration package (NDA recommended).

Filename: verrells_law_MWI_bias_extension_v1_public_redacted.pdf

Brief description: Public, redacted technical note describing the conceptual and mathematical framing of Verrell’s Law. Contains formal-level equations and testable high-level predictions but omits implementation-level details, discrete algorithms, runnable pseudocode, parameter values, and integration instructions. For partnership/collaboration access to full materials, contact the author under NDA.