

Section 2. Core Postulates (QIA Postulates)

2.1 Postulate I: Information as Wave-Pattern Encoding

In the CUWF Quantum Information Architecture (QIA), information is not treated as an abstract bookkeeping entity nor reduced to classical bit-strings. Instead, information is defined as a physically real encoding implemented by wave-pattern structure. The word “pattern” is used in a precise sense: it is a structured configuration that can be identified independently of how much energy the wave carries or what material substrate it is associated with. Within QIA, a wave-pattern is characterized at minimum by three coupled components: (i) the phase structure, which determines relative timing and interference relationships; (ii) the amplitude structure, which determines distribution and intensity; and (iii) the correlation structure, which specifies how degrees of freedom co-vary and remain linked across subsystems. Under this postulate, information is therefore not the carrier itself, but the organized form of the wave.

2.2 Postulate II: Universe as Lossless Entropic Network

QIA models the universe as a network composed of entropic nodes and channels through which wave-pattern information propagates and reorganizes. The term “lossless” is used in its universal meaning: total information is not destroyed in a closed universe. However, what appears as loss at the observational level is explained as a change in accessibility. Information may become redistributed across many degrees of freedom, scrambled into high-dimensional correlations, or re-encoded into forms that are practically irreversible for local observers. Thus, QIA distinguishes between global information conservation and local information accessibility. The universe is “lossless” at the full-network level even when subsystems exhibit apparent decoherence, dissipation, or informational disappearance.

2.3 Postulate III: Collapse as Information Re-Routing

The third postulate replaces the traditional interpretation of collapse as the destruction of the wavefunction. In QIA, collapse is defined as an information re-routing event. Measurement and environmental coupling do not eliminate the wave-pattern; instead, they inject constraints that modify the entropic compatibility landscape of the network. When these constraints are introduced, the flow of wave-pattern information becomes unstable along certain routes and rapidly reorganizes toward new routing attractors. The observed “definite outcome” is therefore the stabilized endpoint of a re-routing process, rather than a physical annihilation of all other possibilities. This postulate is crucial for making collapse mechanistic within CUWF: it becomes a dynamical network transition governed by entropy and constraint structure.

2.4 Constraints: Signal-Locality vs Routing-Nonlocality

QIA distinguishes between two notions that are often conflated in standard debates about nonlocality. Signal-locality states that no controllable classical information can be transmitted faster than light. QIA preserves this condition fully. Routing-nonlocality, by contrast, refers to the possibility that correlations encoded in shared wave-pattern structures may reorganize globally at the level of network consistency. This form of nonlocality does not enable superluminal signaling, because it does not permit controllable message transfer. Instead, it acts as a global consistency constraint on distributed encoding. This distinction provides a natural language for entanglement: nonlocal correlations are interpreted as network-level routing consistency of shared codes, while relativistic causality remains intact.

2.5 Relation to the Second Law and Time-Reversal Themes

Because collapse is defined as entropic re-routing, QIA is intrinsically linked to thermodynamics. The re-routing process is driven by entropic cost minimization: once constraints are introduced, the

network reorganizes toward stable attractors that are compatible with the new boundary conditions. This produces an arrow-like ordering of events at the observable interface, consistent with the Second Law. At the deeper CUWF level, however, the underlying wave substrate may admit time-symmetric descriptions. The apparent directionality of causality and time emerges from entropic routing constraints and from the asymmetry between global conservation and local accessibility. In this way, QIA connects directly to the CUWF treatment of causality, time illusion, and time-reversal compatibility developed elsewhere in Paper A.