1. Waves in the Language of Trend Factors

In classical physics, a wave is defined as a disturbance propagated through a continuous medium. Under *Trend Structure Theory*, however, a wave is redefined as a *"chain of change" built from trend factors*. This chain may manifest in two fundamental forms:

1. **Linked Chain-Type Wave Behavior**:
   Multiple trend factors form a temporary chain-like structure, each briefly presenting itself as a quantum particle in the midst of constant transformation. From a macroscopic temporal perspective, these momentary transformations appear as wave behavior.
2. **Cascade-Induced Wave Behavior**:
   The change of one trend factor stimulates the formation of another, forming a sequence of structural responses. This does not produce a physical wave but a *structural evolution chain* that manifests wave-like characteristics macroscopically.

2. Why Trend Factors Collapse into Particles When Observed

When a quantum is observed or measured, it is structurally "locked" due to injected information. This process freezes the free transformation of trend factors, forming a stable, closed-loop structure.

This is what the theory calls a *"structural knot"* or *"information entanglement lock"*:

- Originally, the trend factors exist in a freely unfolding configuration.
- Measurement injects strong external information.
- To stabilize, the trend factors form a closed-loop (locked) state.
- The structure becomes unable to transform, appearing as a particle.

Once the recorded information is erased or disrupted, the lock is broken, and the trend factors return to their original state, resuming wave-like behavior.

3. Reinterpreting Double-Slit Interference Patterns

In the classical double-slit experiment, light passes through two slits and creates interference patterns on a screen. This is traditionally explained as "wave self-interference." But based on this theory, two alternative mechanisms are proposed:

Hypothesis 1: Path-Based Trend Factor Perturbation

- Every point in the universe is filled with trend factors.
- As photons or quanta pass through slits, their paths interact with preexisting trend factors in space.
- These interactions do not alter the quantum's nature but perturb its direction or timing.
- Accumulated perturbations cause distribution patterns on the detection screen.

- The "interference pattern" is thus a projection of spatial response to trend interactions, not self-interference.

Hypothesis 2: Material Field Influence from the Slit Structure

- Any physical slit—regardless of material—has its own quantum field, magnetic profile, and structural trend pattern.
- Photons traversing these slits are influenced by the field distribution of the material itself.
- These influences cause slight deflections, absorptions, or phase changes.
- The resulting screen pattern is not caused by wave overlap, but by trend-altered pathing.

The interference pattern becomes a *structural shadow of information perturbation* along the photon's route, rather than wave superposition.

Conclusion: Trend Determines Form, Structure Locks Behavior

This article proposes:

- A "wave" is a structural projection of trend factors in free transformation.
- A "particle" is a structurally locked form caused by informational closure.
- Interference patterns are spatial responses to environmental trend field influences.
- Wave-particle duality is simply the open vs. closed state of trend structure.

By grounding this theory in directional logic and combination behavior, we replace abstract duality with a physical structure-based causality.
From this perspective, we may be approaching a clearer and more unified explanation of quantum paradoxes.