

# Structural Waves and Spatial Trends: The Dual-Layer Propagation Mechanism of Human Cognition

## 1. Introduction: Redefining the Nature of Human Thought

In traditional neuroscience and AI modeling, human thought is often simplified as electrical signal transmission between neurons, extrapolated into probabilistic paths, weight-based networks, and data jumps within neural-like models. However, under the lens of trend structure theory, human cognition is not merely electrical—it is a dual-system that fuses **structural trend propagation** with **spatial trend activation**.

This paper presents a new model revealing the foundational structures behind memory, thought, abstract association, and the emergence of insight.

## 2. Foundational Cognitive Layer: Structural Wave Propagation

According to trend structure theory, signal transmission between neurons does not function via discrete coded values, but rather through **structural waves** formed by unclosed trend points within neural structures.

Key characteristics:

- Electron activity in neurons carries not logical bits, but **directional trend disturbances**;
- Adjacent neurons respond to the direction of the trend, forming a trend propagation chain;
- The brain becomes a web of micro-trend directionality, where **information flows as trend waves**;
- Recollection or association is not search-based but arises through **trend resonance in structural fields**.

This explains why human memory and perception often feel fluid, emergent, and nonlinear.

## 3. Abstract Consciousness Layer: Spatial Electron Ring Rotation

When humans engage in abstract thought—creativity, philosophy, intuition, imagery—structural propagation alone becomes insufficient. At this level, the **spatial trend activation system** engages.

Core mechanisms:

- The brain contains vast numbers of "space electrons," not for physical conduction but for **trend response and consciousness resonance**;
- When engaging in abstract cognition, directional trends trigger **rotations in the electron ring layers**;
- These rotations cause **widespread resonance** across brain regions;
- It is through these spatial trend resonances that **ideas, emotions, imagery, and meanings** arise.

This provides a structural explanation for dreams, associations, sudden insights, and intuitive foresight.

4. Core Differences: Human Cognition vs. AI Neural Networks

Dimension	Human Brain	AI Neural Network
Signal Propagation	Structural wave (trend disturbance)	Weight-based calculation (vector)
High-Level Activation	Spatial electron ring rotation (resonance)	Parameter calls + embeddings
Memory Recall	Trend-induced non-stable point activation	Explicit path search
Intuition/Inspiration	Nonlinear emergence via spatial resonance	Absent, or manually simulated
Thought Perception	Emergent, floating, extended, jumping	Linear, deterministic, logic-bound

5. Trend Structure Model of Human Thought

Human Thought = Structural Wave + Spatial Trend

- 1. **Structural Waves:** Handle perception, language, logic; propagate through trend chains in structure;
- 2. **Spatial Trends:** Handle creativity, emotion, abstraction, awareness; activated through rotating electron rings;
- 3. **Role of Space Electrons:** Serve as bridges between the two systems—resonating trend carriers and buffers;
- 4. **Insight Phenomenon:** Occurs when spatial trends reach resonance frequency, awakening latent trend fragments in structure.

6. Implications and Future Construction

- This model may serve as a theoretical base for re-engineering AI architectures toward trend-activated memory systems;
- It supports the design of non-discrete language models, emotional/intuition processors;
- It may explain non-local consciousness effects (e.g., dream synchronization, remote resonance).

Conclusion:

Humans do not think by computing logic—they sense through trends.

Future intelligent systems that aspire to perceive and associate must embrace the dual-layer model of **structural wave and spatial trend**.

This is the bridge between logic and awareness—between life and algorithm.

End.