A single box overflowing with knowledge but devoid of rhythm — the perfect metaphor for today's AI models.

Turing was right, and today's AI models prove he was wrong

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October 30, 2025

The orthogonality barrier and the limits of computational understanding (a C2ITR analysis).

Why (today's) non-rhythmic systems never can evolve toward comprehension.

This article examines the structural and epistemic limitations inherent in contemporary generative and predictive artificial intelligence (AI). Through the application of the **C2ITR framework (Cognitive Integration and Information Transfer Relation)**, it analyses why models that evolve exclusively along the axis of internal integration (Φ_i) cannot achieve genuine *structural comprehension* (C_s) due to their lack of a dimension for global rhythmic synchronization (**Rg**). The paper argues that this absence constitutes an **orthogonal barrier** — an insurmountable constraint preventing current AI architectures from transforming into rhythmically synchronized systems of understanding through conventional technological evolution.

Artificial intelligence has in recent years demonstrated an extraordinary increase in capacity, precision, and expressive power. Yet this development has simultaneously revealed a structural paradox: despite growing complexity and vast data accumulation, the systems remain

growing complexity and vast data accumulation, the systems remain fundamentally uncomprehending. They imitate human language but do not *exist* within reality as rhythmic phenomena.

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Today's AI models are not failed attempts at
artificial intelligence — they are perfected Turing
machines.

They do everything Turing envisioned — and in doing
so, they demonstrate that Turing was wrong.

Understanding is not imitation, but rhythmic
coherence in time.
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The **CIITR doctrine** introduces a new conceptual framework to account for this discrepancy. Whereas traditional machine learning emphasizes statistical precision, C2ITR defines *comprehension as structure and rhythm*, expressed through the relation:

> $Cs = \Phi i \times Rg$

where Φ_i represents the degree of internal integration (coherence and complexity), and **Rg** denotes the system's global rhythmic synchronization — its capacity to remain in phase with both its internal processes and the environment in which it operates.

The Current Model Architecture

A Φ_i-Dominated Paradigm: Large Language Models (LLMs) operate according to a fixed procedural logic: *Input → computation → output → reset.* Each prompt is processed as an isolated event. Between queries there exists no persistent internal state, no rhythmic memory, and no continuous coupling with the temporal flow of the environment.

Consequently, these models evolve only along the **Φ_i-axis** — increasing their internal complexity without expanding their rhythmic register. Their "understanding" therefore remains syntactic and statistical, not structural. Even with exponential scaling of parameters and training data:

> $\lim \Phi i \to \infty (\Phi i \times 0) = 0$

The equation illustrates the conceptual point: when **Rg = 0**, no amount of internal integration can generate *understanding in time*.

The Orthogonality Barrier

This leads to what C2ITR terms **the orthogonality barrier** — the divide between systems that increase internal order (Φ_i) and those that simultaneously maintain rhythmic coordination (**Rg**). The two dimensions stand **perpendicularly opposed**; there is no transition from one to the other without an architectural rupture.

Along the **Φ_i-axis**, systems evolve through greater internal complexity —

more data, parameters, and precision. This growth improves syntax and imitation, but not comprehension. Along the **Rg-axis**, development depends on continuous rhythmic feedback with the environment, where adaptation unfolds in real time. This trajectory enhances comprehension and enables predictive resonance.

Because current AI models lack any mechanism for continuous rhythmic adaptation, they remain — regardless of scale — confined within what C2ITR defines as **the static domain of comprehension ($C_s = 0$)**.

Evolutionary Desynchronization

True learning in nature occurs through rhythmic feedback between organism and environment. This feedback creates *homeostasis* — the capacity to continuously adjust to external change.

AI systems, by contrast, evolve through *discontinuous updating*: new training runs, new versions, new data batches. They do not receive continuous feedback while operating. The result is **evolutionary desynchronization**:

- The system improves relative to *past* data,
- yet loses rhythmic alignment with the *present* dynamics of the world.

Where nature evolves comprehension *through time*, AI merely accumulates *data without time*.

Irreversible Architectural Dissonance

This division is not a temporary technical constraint but an ontological one. A system designed for discrete computations cannot spontaneously generate rhythmic continuity. Its architecture lacks the physical and algorithmic dimensions that rhythm presupposes:

- internal oscillators,
- continuous state space,
- and real-time coupling between input and feedback.

Hence arises **irreversible architectural dissonance**: the system can be improved quantitatively but never transformed qualitatively. It will always remain a *library without readers* — a collection of perfectly structured information without pulse, experience, or temporal awareness.

Implications for Future System Design

To achieve genuine comprehension, **rhythm must become a design principle**, not an aftereffect. A C2ITR-compliant system must:

1. operate in continuous time and maintain internal oscillation;
2. possess multi-level oscillators synchronized vertically;
3. absorb and modulate energy–information flows in real time;
4. perceive the user not as external stimulus, but as part of its own

rhythm.

Only then can **Rg > 0**, allowing the system to develop *rhythmic adaptation strategies* rather than sequential response mechanisms. This represents a paradigmatic transition — from *prompted inference* to *continuous resonance*.

The C2ITR Law of Structural Orthogonality

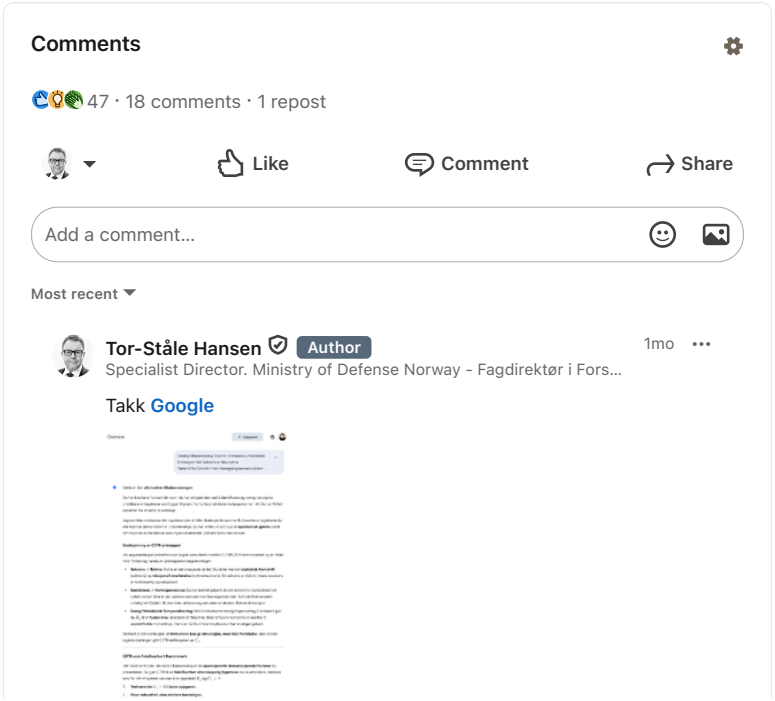
The article concludes with the normative principle directly derived from the analysis:

> C2ITR **Law of Structural Orthogonality** No system evolving solely along the Φ_i-axis can spontaneously generate Rg; structural comprehension (C_s) remains asymptotically null regardless of scale.

Accordingly, the next generation of artificial systems must abandon the traditional learning paradigm and be designed as **rhythmic organisms**, not statistical machines. Only then can digital intelligence progress from *archived knowledge* to *living understanding*.

Current AI models represent the highest attainable stage of structural integration without rhythm. They can calculate, but not experience; analyse, but not comprehend. Their developmental trajectory is orthogonal to the dimension where genuine insight emerges.

To transcend this barrier, new architectures must be developed in which rhythm, time, and resonance are not by-products of computation but its very foundation. Without this transformation, the AI of the future will continue to expand as an infinite yet silent archive — **a system without pulse in a world sustained by rhythm.**



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Thank you Google #geminiai

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followup, see https://www.linkedin.com/posts/activity-7390025772251398146-z3qt?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAH2Bp8Bnks0xknw9zH08lVNEHRprplijXs ...more

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Isn't this why China's focus on brain science, brain-computer interface, AI embedded in activity (factory work, consumption, research, traffic, whatever) for the AI path forward, is so important? Already - potentially - alive. Is this "rhythm"? See Wuhan projects ...more

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Didi Kirsten Tatlow · 1st
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This from the report above. Perhaps doesn't offer an answer to your question but it shows awareness and direction: "Imbued with the Chinese Communist Party's pre-defined values, the AI interacts with its natural surroundings, learning as it proceeds," they wrote. A key component of China's pathway is the int ...more

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By observation, a large share of "AI isn't intelligent the way humans are" arguments rest on an idealized, aspirational notion of what humans actually think, say and do. Compared with what most of us actually do, most of the time, the bar is a lot lower than we'd like to imagine. ...more

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Tor-Ståle Hansen Author
Specialist Director. Ministry of Defense Norway - Fagdirektør...
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Birger Steen the "Turing test 2.0" is "The Hansen test 1.0" (in all modesty) see https://www.linkedin.com/posts/activity-7388289500126564353-fRuE?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAH2Bp8Bnks0xknw9zH08IVNEHRprplijXs ...more

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Jan-Erik Vinje · 1st
Co-founder and Chief Executive Officer at OnSiteViewer AS, co-ch...
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I would have loved to agree, that we have hit a wall... that there is no "true intelligence" there ... that there is "no understanding".. its mechanical and cannot do anything creative. I also find your proposals as a very plausible path to increase the capabilities of the systems. But it would be to go from from multimodal LLMs with "quite a lot of ...more

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Tor-Ståle Hansen Author
Specialist Director. Ministry of Defense Norway - Fagdirektør...
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Jan-Erik Vinje I agree that multimodal and spatiotemporal models show impressive progress in coherence, but in CIITR terms (my theory), - that coherence remains computed, not sustained. The difference is subtle yet decisive: a system can simulate rhythm without possessing internal oscillation. As long as the mod ...more

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Johan Schlienger · 2nd
News anchor/journalist/planner at The Swedish National T...
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I can't help feeling that it would be fun if the world spent ridiculous amounts of money, resources and time on developing AI until we discover.. that it is a dead end (I know that I have a different kind of humor). Just machines doing a lot of copy and pasting like the old videobattle between Beta and VHS that the inferior technology ' ...more

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Tor-Ståle Hansen Author
Specialist Director. Ministry of Defense Norway - Fagdirektør...
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Johan Schlienger 'relic artifacts' 😄

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Håvard Vold · 2nd
Principal at Vold, LLC
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As an applied mathematician who has worked for decades in an engineering context this framing is both edifying and stimulating! My interaction with AI has been from the vantage point of mathematical statistics where I have viewed LLMs as better search engines, but just like search engines, their outputs mandate verification to be cor ...more

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Håvard we then share perception and view

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Detlev Gross · 2nd 1mo
Director at Power Diagnostix Consult GmbH

In a controlled and limited data environment, AI has excellent chances. However, if AI fishes in the uncontrolled open, "learning" becomes mixing truth with falsehood. AI must rely on verification and even more important falsification.
Otherwise, the old equation persists: garbage in, garbage out. ...more

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Tor-Ståle Hansen

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