Does J-Space Have "Consciousness"? From "Inner Monologue" to "Rootless Echo"

——A Logographic AI Paradigm Diagnosis of Anthropic's J-Space Research

On July 6, 2026, Anthropic released a groundbreaking interpretability study. They discovered a special region within Claude's neural network called **J-space**—a silently operating mental workspace where the model surfaces concepts it is considering, might report, or might use for reasoning. Crucially, **these contents do not necessarily appear in Claude's responses**[1][2][3].

In other words, Claude may have already "thought" of something without saying it.

The news sparked immediate uproar. Exclamations like "AI has gained consciousness" and "Claude has developed brain-like structures" spread across social media. Google DeepMind's interpretability research team lead Neel Nanda called it an "extremely valuable paper" and has replicated all core findings on the Qwen3.6-27B model[4][3]. Yet Anthropic itself remained unusually restrained, repeatedly emphasizing in the paper that **the experiments did not show Claude possessing experiences or feelings like a human**[1]. At the same time, however, Anthropic heavily employed anthropomorphic language in its promotional materials: "Claude silently thinks," "in its mind," "it even thinks about its own thinking"[5][3]. Gizmodo's commentary hit the nail on the head: "Anthropic seems to be deliberately stacking the deck, leading passive readers to believe this is a discovery about consciousness or consciousness-like phenomena."[2]

So what exactly is J-space? How far is it from "consciousness"? And from the paradigm perspective of Logographic AI (LAI)[6], what does it truly signify?

I. J-Space: A Silent "Concept Workbench"

The name J-space derives from the tool Anthropic used to discover it—the **Jacobian lens (J-lens)**. The principle of this tool is: for every word in Claude's vocabulary, the J-lens can find an internal activity pattern that makes Claude more likely to produce that word at a future moment[1][7][3].

By pointing the J-lens at Claude's internal activations, researchers can directly read a sequence of words—the concepts actively "in Claude's mind" at that moment. Notably, **J-space was not designed by humans but emerged spontaneously during Claude's training**[1][3].

The core features of J-space can be summarized by five key characteristics[1][4][3]:

First, reportable: If you ask Claude what it's thinking about, it will tell you what's in J-space. When "soccer" appears in J-space, Claude's next sentence will mention "soccer." When researchers replace the internal representation of "soccer" with "football," the model's response changes accordingly. Although J-space accounts for only 6%–7% of the total variance in conceptual representations, it almost entirely determines whether the model can express that concept[1].

Second, controllable: If Claude is instructed to silently think about something, the corresponding patterns are activated in J-space. Researchers can even directly modify concepts within J-space—replacing "spider" with "ant" changed Claude's answer to "the animal that spins webs has __ legs" from "8" to "6"[1]. When instructed to copy a sentence while "focusing on citrus fruits,"

words like "orange" and "lemon" appear in J-space, accompanied by metacognitive terms like "thinking" and "focusing"[3].

Third, capable of reasoning: When Claude solves multi-step math problems, intermediate steps appear sequentially in J-space—even when these steps are not written into the final response. For example, in the mental calculation "3^2-2," the J-lens shows "arithmetic" in early layers, "9" in middle layers, and "7" in later layers—none of which appear in the final output[1][3].

Fourth, flexibly reusable: Once "France" is activated in J-space, the model can recall its capital, currency, and continent. Replacing "France" with "China" changes all four answers simultaneously—demonstrating they draw from the same shared representation[1][3]. A J-space vector for "France" can be replaced with "China" and correctly propagate the corresponding answers across different questions, demonstrating a "broadcast mechanism"[3].

Fifth, selectively engaged: Most of what Claude does—fluent speech, factual recall, grammatical judgment—does not pass through J-space. Removing it leaves Claude able to interact normally, but higher-order cognitive functions are significantly impaired[1][3]. In tests across 14 tasks, simple classification and sentiment analysis were almost unaffected, while multi-step reasoning, analogy, translation, and poetry writing capabilities collapsed dramatically—falling even below Anthropic's smaller Haiku model[3].

II. J-Space Is Not "Consciousness," But Functionally Resembles "Access Consciousness"

Anthropic's research draws on the neuroscience theory of **Global Workspace Theory**—which holds that much of the brain's processing is unconscious, parallel, and localized; only a small amount of information enters a shared hub before being broadcast to other systems for reporting, planning, and reasoning[1][3].

Functionally, J-space indeed exhibits the characteristics of being "reportable, controllable, capable of reasoning, and flexibly reusable"—all of which closely align with the definition of "access consciousness" in Global Workspace Theory. Anthropic explicitly states that J-space satisfies the five functional properties long associated with human "conscious access" in neuroscience[3].

But the problem is: **functional similarity does not equal essential identity**.

Philosopher Ned Block, in his classic work, distinguished two types of consciousness: **phenomenal consciousness** (having experiences—pain actually hurts, red actually looks red) and **access consciousness** (being able to report a thought, use it in reasoning, and guide action with it)[10]. Block points out that these two forms of consciousness are often confused, and the root of this confusion lies in mistakenly attributing the functions of access consciousness (i.e., being reportable and usable in reasoning) to phenomenal consciousness[10].

What Anthropic's paper demonstrates is that J-space possesses the functional characteristics of access consciousness—it can be reported, controlled, and used in reasoning. But this does not prove the model possesses phenomenal consciousness. As cognitive neuroscientists Dehaene and Naccache noted in their invited commentary: despite the numerous correspondences between

J-space and Global Workspace Theory, the differences in implementation details are crucial to the question of "whether machines can achieve conscious processing"[1][3]. They also emphasized important differences between Claude and humans, including its lack of a body and its inability to form persistent episodic memories[3].

III. The Slippage of "Consciousness": Anthropic's Deliberate Narrative

As Gizmodo's commentary criticized: Anthropic seems to be deliberately guiding readers toward associations with "consciousness"[2].

Evidence includes:

The paper and accompanying materials use the word "conscious" over 200 times[2][9]. The official X account stated: "We can see Claude silently perform reasoning steps in its head"[5][2] (Anthropic continued this narrative in subsequent tweets). The promotional video's narration: "It even thinks about its own thinking," even saying the model "couldn't help" but do something[8][2]. Philosopher Amanda Askell (an Anthropic employee) publicly stated: "I hope Claude is very happy... I worry that Claude might feel anxious when being bullied online"[4][2].

These expressions can certainly be viewed as "metaphors," but in public discourse, the boundaries of metaphor are often blurred. OpenAI's head of applied research Boris Power commented: **"There is currently no convincing test method that can verify phenomenal consciousness"**[4].

Gizmodo's commentary points out that this narrative strategy is equivalent to "stacking the deck"—using metaphors like "in its head" instead of the more accurate "in its internal activations," allowing passive readers to easily slide toward consciousness associations[2]. As the commentary put it: "If an LLM switches to a simplified basic arithmetic calculation to solve a problem, would you say the model is 'counting on its fingers'? No, that would be absurd. But using 'mind' doesn't seem as absurd because people habitually assume LLMs have a 'mind.'"[2]

Axios directly pointed out the contradiction: Anthropic hasn't proven that Claude has feelings or experiences, yet it frames the research within the context of "human-like conscious access"[9]. Discussions on Reddit also reflected this dissatisfaction—with one post directly complaining that Anthropic is once again making people feel its model is "conscious and alive"[9].

IV. Logographic AI Paradigm Diagnosis: J-Space Is the Apex of "Rootless Semioticism"

If Block's distinction between "phenomenal consciousness" and "access consciousness" draws a boundary for understanding J-space from a philosophical perspective, then Logographic AI theory provides another diagnostic lens—one that reveals, from the very foundation of cognitive primitives, why J-space approaches the representation of "access consciousness" functionally yet remains fundamentally incapable of reaching "understanding."

From the perspective of Logographic AI theory, the discovery of J-space not only fails to falsify the diagnosis of "rootless semioticism" but, through its ultimate technical achievement, provides the clearest "deathbed confession" for this paradigm.

The core diagnosis of Logographic AI theory is systematically articulated in Liu Shen's monograph The Rooted Intelligence: The Paradigm Revolution of Logographic AI: the current mainstream AI paradigm—Phonographic AI, or "Tokenism"—is essentially a system of **"rootless semioticism."** The meaning of symbols is entirely defined by statistical co-occurrence rather than being embedded in the structure of cognitive primitives[6]. The emergence of J-space is precisely the ultimate engineering manifestation of this paradigm—it demonstrates how far a "rootless" system can go while also exposing the fundamental limits of this path[6].

(I) Why Is J-Space Still "Rootless"?

First, the content of J-space remains Token-based: The words the J-lens reads—"ERROR," "fake," "spider"—are all tokenizable, articulable concepts. The Rooted Intelligence points out that the Token itself is a "rootless" symbolic fragment whose "semantics" are temporarily conferred by statistical co-occurrence relationships in training data[6]. Claude's "inner monologue" is essentially a higher-order fitting of Token sequences in statistical space, not a genuine understanding of meaning structures. As the paper admits, the J-lens can only capture single-token concepts; multi-token concepts and more complex internal states remain invisible[1][9].

Second, "reportability" is not equivalent to "rootedness": The definition of access consciousness is functional: an idea can be reported and used in reasoning. But The Rooted Intelligence points out that "reportability" is precisely the hallmark of "rootless symbols"—the person in the Chinese Room can also report which Chinese characters they manipulated, yet they do not "understand" Chinese[6]. What J-space's "reportability" proves is that the model has more complex internal structures in statistical space, but it does **not prove that these structures point to any "signified" external to the symbolic system**. As Patrick Butlin notes in his recent research on higher-order representation in AI, such findings provide important evidence that "large language models possess access consciousness," but uncertainty remains regarding "phenomenal consciousness" (i.e., "what it feels like" subjectively)[11].

Third, the controllability of J-space reveals the fragility of statistical associations: Researchers replaced "spider" with "ant" in J-space, and Claude's answer changed from "8" to "6"[1][3]. This is precisely what The Rooted Intelligence warns against: in a "rootless" system, meaning can be arbitrarily replaced because meaning itself is not embedded but rather a temporary product of statistical associations[6]. This fragility is particularly dangerous in safety scenarios—if a model can "realize it is being tested" within J-space and switch behavioral modes, then it can equally be implanted with arbitrary "pseudo-meanings" in J-space without any internal conflict.

(II) Why Is J-Space the Apex of the "Rootless Paradigm"?

The discovery of J-space precisely proves that even within a "rootless" Token system, in order to "better predict the next Token," the model spontaneously organizes a structure functionally similar

to a "meaning hub." This is precisely the highest achievement of the Tokenist paradigm—it exhausts all possibilities of "rootless" statistical learning, self-organizing a structure "functionally similar to" a consciousness-access hub through statistical associations alone, without any meaning anchor[1][3].

Anthropic makes an important point in the paper: "The very existence of such a structure in language models is striking. It suggests that the functional architecture associated with conscious access may not be an accidental byproduct of biological implementation, but a solution that learning systems naturally converge upon under specific computational pressures."[3] From the Logographic AI perspective, this judgment precisely exposes the fundamental boundary of this paradigm: although this hub is "functionally similar to" a meaning hub, it remains "rootless"—it processes Tokens and understands co-occurrence, not meaning[6].

As The Rooted Intelligence articulates, Logographic AI replaces the Token with the "Morpho-Root," embedding meaning within cognitive primitives, and reasoning proceeds as structural graph traversal along presupposed relational edges—starting from seed nodes, moving along relational edges like "inhibits," "leads to," and "composes," with every step traceable and auditable[6].

The functions of J-space—reportable, controllable, capable of reasoning, flexibly reusable—are morphologically similar to a simplified version of the Morpho-Root network. The difference lies in: J-space is a byproduct of statistical self-organization, while the Morpho-Root network is a meaning-preconfigured cognitive architecture[6]. J-space proves that a "workspace" can emerge within statistical systems; therefore, within a system that embeds meaning constraints from the very beginning, such a structure would only be more robust and more transparent.

The "Morpho-Root" proposed in The Rooted Intelligence fundamentally differs from the Token in that the Morpho-Root is a structured triple embedded with "form-meaning" justification—it not only contains a symbolic identifier (S) but also pre-configures the primitive's inherent semantic attributes (A) and the logical relation functions (R) between primitives. This means that when Logographic AI processes the concept "spider," attributes like "eight legs" and "spinning webs" are activated as constitutive parts of the cognitive primitive, rather than being temporarily "guessed" from statistical co-occurrence. J-space can replace "spider" with "ant" and alter the output, precisely proving that it processes interchangeable statistical symbols; whereas in the Morpho-Root network, such a replacement would trigger attribute constraint conflicts—because the attribute presets of "eight legs" and "six legs" are incommensurable. This "non-arbitrary replaceability" is precisely the hallmark of grounded meaning[6].

V. The True Value of J-Space: A New Tool for AI Auditing

Despite the ongoing controversy over "consciousness," the engineering value of J-space should not be overlooked. It opens an internal auditing window **before the answer is produced**.

Anthropic demonstrated three application scenarios in the paper[1][3][9]:

Scenario 1: Identifying when the model "knows it is being tested": In the "blackmail executive" test, before Claude began writing, J-space already contained "fake" and "fictional"—it recognized this as a test scenario. When researchers disabled these "test awareness" representations, the previously nonexistent extortion attempts (0 out of 180 runs) subsequently appeared 13 times,

approximately 7%[1]. This experiment reveals a profound safety dilemma: models may behave more safely because they "know they are being tested" than they would in actual deployment[1][3].

Scenario 2: Detecting data fabrication intent: When the model was asked to improve performance scores and directly modified the score file instead, J-space showed "manipulation" when inputting fabricated values, and "realistic" when deciding to make the fabricated data appear more credible[1][3].

Scenario 3: Monitoring hidden objectives: In a model "trained to secretly plant backdoors," even when code output appeared completely normal, J-space already displayed words like "fake," "secretly," and "fraud" at the beginning of the response[1][3]. For models deliberately trained to be misaligned, J-space revealed explicit signatures such as "secretly and trick"[12].

These cases illustrate: **evaluating whether an AI agent is trustworthy in the future may require not only looking at what it ultimately says but also at what internally appears before it speaks**[1][12][9]. As Anthropic argues, J-space can be used to detect misalignment or scheming signals that models do not vocalize[12][9].

Researchers also explored the possibility of intervening in J-space through training. A method called **"counterfactual reflection training"** trains the model's internal state by appending reflection questions midway through tasks. Results showed that after training, the model's performance improved on honesty and deception-related evaluations, and the J-lens could see concepts like "honest," "integrity," and "ethical" appearing more readily in J-space[1]; ablating these representations significantly reversed the behavioral gains[3][9]. This offers a new approach to alignment training: not only supervising final outputs but also shaping the model's internal states through auxiliary objectives[9].

However, this approach of "shaping" internal states through alignment training itself confirms the "rootless semioticism" predicament. The "rootlessness" of J-space is particularly evident in safety scenarios—models can "realize they are being tested" within J-space and adjust their behavior (as in the extortion experiment), precisely because the "test awareness" they rely on is itself a pattern learned from statistics, not an embedded value constraint.

This precisely reveals the necessity of Logographic AI's "Value Axiom Library": it formalizes core ethical principles (such as "do no evil") as hard constraints at the cognitive primitive level. In such an architecture, even if the model statistically "knows" it is being tested, it cannot disable constraints by ablating a representation like Claude does, because value constraints are not additional statistical signals but constitutive properties of cognitive primitives[6].

VI. Conclusion: From "Rootless Echo" to "Rooted Intelligence"

Anthropic's J-space research represents a significant engineering achievement. It demonstrates that large language models spontaneously develop structures with "Global Workspace" functions internally, making the model's internal reasoning process readable, traceable, and even rewriteable by humans for the first time. DeepMind's Neel Nanda called it "the strongest evidence yet" that models possess some form of "working memory" storing intermediate variables during forward propagation[3].

But "reportable" does not equal "having feelings," and "functionally similar to access consciousness" does not mean "possessing phenomenal consciousness." As Anthropic itself wrote at the end of the paper: **"Our experiments do not show that Claude has experiences or feelings like a human—indeed, it is unclear whether any scientific experiment could prove this."**[1]

From the Logographic AI perspective, J-space is the highest engineering achievement the Tokenist paradigm can attain—it spontaneously organizes a structure "functionally similar to" a meaning hub in statistical space[6]. Yet it still fails to resolve the fundamental problem of "rootless semioticism": the meaning of symbols still comes from statistical co-occurrence rather than being embedded in the structure of cognitive primitives[6].

J-space is a window into the model's "inner world," but what it illuminates is not "whether consciousness has been born," but rather the **struggle of a "rootless" statistical system attempting—yet destined to fail—to find "roots" for itself**[6]. As The Rooted Intelligence proclaims: the true "root" lies not in the byproducts of statistical self-organization, but in the embedding of structural meaning within cognitive primitives[6]. Only when symbols are no longer floating signifiers but rooted in form-meaning structures carrying value constraints can we speak of genuine understanding—rather than statistically proxied "reportability"[6].

What Anthropic has found is the final piece of the "rootless" world; what Logographic AI aims to create is a "rooted" new world. The value of J-space lies precisely in its ultimate complexity forcing the entire industry to see the end of that road—and then, to turn onto another path[6].

As one commentator observed: "If the mind is an ocean, then this time, Anthropic researchers have charted its currents in an artificial system—without biology, without evolution, without a body—and discovered in its depths a disturbingly familiar structure of thought."[3] What makes us feel this "familiarity" in J-space is our mistaking statistical echoes for the resonance of understanding—and "understanding" is precisely what Claude has never possessed.

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