The Doodle Test

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1 Introduction

The question of whether machines can think has long been framed in terms of performance. From Turing's proposal that intelligence could be assessed through imitation [26] to contemporary benchmarking practices, machine intelligence is typically evaluated by its capacity to outperform human or task-specific targets [12]. These claims are often challenged on the grounds that these systems merely simulate intelligence through increasingly sophisticated forms of mimicry [3, 22].

This paper proposes a different orientation. It asks whether intelligence might also be signaled outside the usual framework of performance benchmarks, through forms of activity that are not organized around explicit goals. If prevailing aims of contemporary AI increasingly support the offloading of cognitive labor, then activities that resist delegation may offer a useful perspective on the relationship between intelligence, skill, and human agency.

Such activities are common in human cognition. Daydreaming, involuntary memories, and forms of mental wandering appear without clear purpose or external prompting, [25] yet remain a persistent part of everyday mental life. They are rarely considered in discussions of artificial intelligence. Attending to them may reveal forms of cognition that sit awkwardly within systems designed for quantification, delegation, and cognitive offloading.

It is difficult to imagine a machine that daydreams or allows its processors to aimlessly wander. This paper, by contrast, turns to a more modest and familiar activity that may signal similar conditions. What would it mean, then, for a machine to doodle?

2 What is a Doodle?

Doodling is a familiar activity that often occurs in everyday situations such as meetings, lectures, or periods of waiting where boredom or inattention arise [17]. In these moments, focus may drift away from the primary task, and the hand produces lines on a page that are not directly related to the ongoing activity. This action is often only intermittently recognized or even partially conscious. Doodles can have a variety of different shapes: abstract lines, repeated patterns, or loosely figurative shapes [2].

Although its form resembles other types of drawing, it is important for the purposes of this paper to clarify what a doodle is and, perhaps more importantly, what a doodle is *not.* Doodles are not scribbles, sketches, automatic drawing, and while doodles can appear in the margins, not all marginalia are doodles [9, 11, 19].

Each of these drawing forms has distinct modes of purpose and attention. Scribbles may come from early childhood attempts to control a pencil, or from engaged creative play. Sketches are intended to convey information toward an end

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goal, such as a study for painting or a way of working through design problems. Automatic drawing practices, popular in the early 1900s, aim to induce a state of unconscious or subconscious revelation. These conditions differ from those of doodling. One cannot intentionally produce a doodle or draw one toward a specific outcome. Critically, visual form alone cannot account for doodling; its defining feature lies in the circumstances under which it is produced, including states of boredom, distraction, or attenuated attention.

3 Doodles and Internally Directed Cognition

Studies of doodling historically tend to focus on its function, asking whether doodling supports memory, recall, or task performance [1, 4, 24]. These studies offer mixed and inconclusive results. For the present work, the central question concerns the cognitive and attentional states under which doodling takes shape.

What is missing from this body of work is an account of doodling as a cognitive process. While it appears in studies of boredom and attention as an observable behavior—grouped with posture shifts, fidgeting, and other outward signs of disengagement [8, 16]—these works stop short of explaining its emergence.

Research on internally directed cognition and the brain's default mode network instead provides a framework for understanding the broader class of cognitive states in which such behavior may occur [6, 20, 23]. These states involve a partial disengagement from external tasks, allowing internally oriented processes to unfold without being tightly structured around explicit goals [21]. In everyday terms, these are the moments when attention slips and thought moves elsewhere, often arising within broader conditions such as boredom.[1]

Research on mind-wandering has increasingly positioned internally directed cognition as a pervasive and central feature of human thought. Estimates indicate that these processes occupy a substantial portion of waking life, often approaching half of conscious experience [13, 14]. These activities have even been described as a default mode of mental activity, suggesting that internally oriented thought may perform as a baseline condition in human cognition. More recent work has further characterized these processes as categories of spontaneous thought, encompassing creativity, imagination, and future-oriented thinking [6].

This line of work complicates conventional models of intelligence that prioritize goal-directed performance, on which thinking in computer science is often based. If loosely structured cognition as expressed by doodling is a persistent feature of human intelligence however, then it becomes necessary to ask whether such modes of activity can be present in artificial systems. The question shifts attention from what a machine can accomplish, to how it might experience the kinds of cognitive drift from which an activity like doodling surfaces.

4 The DriftBot

Focusing on doodling in the context of artificial intelligence turns attention away from existing task-based paradigms and toward internally directed, non-teleological forms of activity. We propose the *DriftBot* as a speculative agent capable of sustaining such cognitive drift, within which doodling may emerge. We choose as we aim to describe a mind-wandering machine, not a machine that explicitly produces doodlelike drawings. The following conditions outline what such a system would require.

Null Readiness. The capacity to act without external prompting or defined goals; a receptive state in which the system remains capable of initiating behavior without productive intent.

[1]Boredom itself, however, is more complex than it appears, and remains only partially understood within cognitive science as part of broader internally directed processes [7, 8]

Cognitive Drift. A wandering state in which attention loosens from structured tasks, and internally generated activity surfaces.

Open Inception. The self-initiation of behavior in the absence of external command or event-driven triggers, marking the point at which activity begins without traceable input.

Open Closure. A mode of termination characterized by non-directed cessation; activity comes to rest without resolution, evaluation, or defined completion.

At the same time, these parameters do not compel activity. A system capable of doodling must also be capable of *not acting*, preserving the possibility of inaction as intrinsic to its operation. DriftBot outputs need not resemble human doodles or remain confined to traditional drawing formats. A machine's "doodles" may appear as fleeting signals or other ephemeral traces of internal processes, arising and dissipating alongside ongoing activity.

Taken together, these conditions describe a mode of operation that contrasts sharply with current models of AI, which remain oriented toward externally defined tasks and measurable outcomes. The DriftBot operates without external prompting, maintaining a state of openness with behavior that may begin and end without direct intervention. Crucially, this activity unfolds in *parallel* within a larger task-oriented system without significantly contributing or detracting from its goals. The DriftBot prioritizes activity over productivity.

5 The Doodle Test

If a system like the DriftBot could be realized, how would its behavior be evaluated? For this, we introduce the Doodle Test, a thought experiment alternative to the Turing Test or other output driven tests of intelligence.

For our test, it is not sufficient for a machine to produce doodle-like images or be instructed to doodle. The mechanics of programmed machine-driven drawing are already well understood. The defining characteristic of doodling, however, lies in activity that is neither prompted nor directed toward a goal. In this sense, the challenge recalls Ada Lovelace's observation that Charles Babbage's Analytical Engine "*has no pretensions whatsoever to originate anything.*" [15] A system capable of doodling would require precisely this capacity for origination. Systems that reproduce the appearance of doodles through learned patterns therefore fail to meet the test criteria.

The challenge is that the Doodle Test cannot be administered without undermining itself. Prompting a machine to doodle imposes a goal. Observing for doodling requires deciding what would count as evidence, even though such evidence—whether as recognizable forms or more ephemeral traces—cannot be clearly specified in advance. Since the DriftBot operates in parallel with in a larger, potentially distributed system, it may be unclear where doodles appear. Even if DriftBot's doodles could be identified, it may unfold at temporal scales misaligned with human observation, occurring too briefly—potentially on the order of milliseconds—to be meaningfully registered. Each approach collapses the criteria the test is meant to preserve.

The Doodle Test reveals a limit within current models of machine intelligence. Systems are designed to respond to prompts, to optimize toward goals, and to produce measurable outputs. Doodling, as we have defined, occupies none of these categories.

The result is a paradox: a form of behavior that may signal intelligence, but resists the very mechanisms designed to detect it. The Doodle Test is a test without testability.

This paradox interrogates prevailing models of artificial intelligence. Systems rooted in prompting, observation, and measurable results capture only part of the picture. The Doodle Test points towards a broader conception of artificial general intelligence, in which internally directed, non-teleological activity is recognized as part of intelligence itself.

6 Conclusion

The evaluation of machine intelligence has long been organized around performance. Under this regime, systems are evaluated by their ability to match or surpass human results. Early successes in games such as chess helped establish a pattern that continues today: once a benchmark is achieved, new, more demanding tasks are introduced. Over time, this encroachment into human agency expanded into a framework in which intelligence is defined through performance across an accumulating set of benchmarks.

Alongside this benchmarking cycle runs a parallel debate over what such performance means. From Turing's proposal that intelligence could be assessed through imitation to Searle's critique that such tests conflate performance with semantic understanding, the question remains unresolved. [22, 26] Contemporary systems, including large language models, continue on this trajectory by succeeding across general tasks, yet continue to invite critiques that they merely simulate intelligence, described, in one instance, as "*stochastic parrots.*"[3] This is a recurring loop: increasingly convincing demonstrations followed by persistent doubts about their significance.

The Doodle Test offers an alternative. By shifting attention away from task performance and toward the dynamics that produce behavior, it reframes intelligence at a more fundamental level. The focus moves from what a system can accomplish to the kinds of activity in can exhibit—particularly those not organized around explicit goals or designed for evaluation.

A recurring assumption across this debate is that intelligence can be assessed through performance: what a system can do, how well it can do it, and whether its outputs resemble or exceed those of people. As benchmarks continue to expand the range of activities considered amenable to automation and delegation, questions of agency, expertise, and deskilling become increasingly difficult to separate from questions of intelligence itself. Yet many forms of human cognition—particularly those that arise through internally directed processes rather than external stimuli—resist being prompted, observed, or measured. Some forms of intelligence may remain difficult to reconcile with prevailing paradigms of quantification and cognitive offloading.

To ask whether a machine can doodle is therefore to ask what kinds of internal processes it can maintain, not only what it can produce. This perspective aligns with broader efforts to expand definitions of artificial general intelligence [5, 10, 18], yet suggests that some dimensions of intelligence still escape capture. Doodling may be only one example among a larger class of non-teleological behaviors that remain poorly understood in both humans and machines. It points towards a different trajectory for A(G)I, one that recognizes internally directed activity as fundamental rather than incidental to intelligence, and suggests that the future of cognitive offloading may depend as much on understanding neglected forms of cognition as on expanding machine performance.

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