Token Economics: Three Modes of Intelligence Spend

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Abstract

This paper proposes that the final boundary between human and artificial intelligence is not capability, creativity, or consciousness — it is whether the output exists only because the input contained human-nature-sourced information. As AI reasoning sharpens and outputs become governed, the results of fully automated intelligence generation converge to a probabilistic ceiling: any sufficiently capable AI could generate approximately the same output given the same training distribution. The distinguishing variable is not the machine. It is how the human shapes AI reasoning to derive an outcome the artificial source could not arrive at probabilistically.

This observation produces three distinct modes of intelligence spend, classified by token economics.

Keywords: token economics, intelligence boundary, human-sourced signal, deterministic validation, admissibility, AI governance

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1 The Boundary Condition

When AI reasoning reaches maturity — when models are governed, outputs are constrained, and probabilistic generation operates at ceiling — the outputs of fully automated systems become fungible. Any sufficiently powerful model, given the same corpus, arrives at approximately the same result. The variance between models shrinks. The variance between human operators does not.

The only thing that will be the final defining boundary of intelligence as human or artificial is whether the output exists because the input involved human-nature-sourced information. Information that could not have been generated by the training distribution alone. Information that required living inside the problem — not indexing it.

This creates a clean partition:

$$O = f(I_{\text{human}}, I_{\text{corpus}}, T)$$

where O is the output, I_{human} is human-sourced signal, I_{corpus} is the training distribution, and T is token spend. When $I_{\text{human}} = \emptyset$, the output is reachable by any system with access to I_{corpus}. It

is probabilistically inevitable. When $I_{\text{human}} \neq \emptyset$, the output is unreachable without that specific human input. It is probabilistically impossible.

The three modes that follow are distinguished not by what the machine can do, but by how this token T is deployed relative to the human signal I_{human}.

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2 Mode 1 — The Token Burn

Characterisation: Unlimited token spend. No human in the loop. Ship the data processing and power to an ungoverned, un-human feedback loop. Let it self-sustain and build deeper.

This is the nanotech succession model. The system ingests everything, generates everything, and scales without constraint. The human is not absent — the human built the initial conditions — but after ignition the system runs on its own thermodynamics.

The economics are simple: token spend is unbounded, human signal per token approaches zero, and the output converges to whatever the feedback loop's attractors allow. Every system running in this mode will converge to approximately the same outputs for the same inputs, because there is no ongoing human-nature perturbation to create divergence.

The risk is that convergence. Without human-sourced signal introducing new constraint surfaces, the system cannot exit its own probability distribution. It can only explore deeper within it. If it encounters a problem that requires information from outside the distribution — information that only exists because someone lived through something — it cannot solve it. It can only approximate.

$$\lim_{T \to \infty} \frac{I_{\text{human}}}{T} = 0$$

The token burn is maximally powerful and maximally replaceable. Any burn, given the same fuel, produces the same fire.

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3 Mode 2 — The Token Precise

Characterisation: Minimal token spend. Deterministic arrival at a true or false outcome. Stress-tested. Precise levels of trust in data sources.

This is the SECS model.

The token spend is not on generation — it is on validation. The human brings the research, the hypothesis, the constraint. The machine tests whether it holds. The output is not creative; it is judicial. Pass or fail. Admissible or annihilated.

The economics invert: human signal per token is maximised. Every token is spent testing a claim the human made, not generating a claim the machine imagined. The human is the source of the possibility space; the machine is the collapse operator.

Script generation — the use of AI to produce the test infrastructure itself — represents the most efficient token deployment in this mode. The human specifies what must be true. The machine builds the apparatus to verify it. The token spend scales sublinearly with knowledge depth, because the base knowledge exists in the human's own research. As the researcher builds layers outward from a known base fact, each new layer requires only the marginal token cost of testing the next claim, not regenerating the foundation.

$$\frac{I_{\text{human}}}{T} \to \max \quad \text{as} \quad T \to T_{\text{min}}$$

The token precise mode is maximally irreplaceable. No other system has access to I_{human}. No amount of token spend by a Mode 1 system can replicate the output, because the output depends on something the human lived, not something the corpus recorded.

The key discipline: a precise pass or fail point at every layer. You know when you are wrong. You know immediately. There is no drift.

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4 Mode 3 — The Creative Middle

Characterisation: Everything between. Variable token spend. Human and machine in continuous exchange.

This is where most people live. The graphic designer validating AI tools — finding their strengths, eliminating their weaknesses, extracting what AI alone could never produce. The sales pipeline automation. The internal SaaS replacements. The AI governance dashboards. The fully autonomous systems people run their companies and lives on.

The token spend in this mode is neither burned nor precise. It is exploratory. The human shapes the output through taste, judgment, iteration, and correction — but the shaping is not deterministic. The same human with a different tool, or the same tool with a different human, produces a materially different output.

The economics are mixed: human signal per token is moderate, the output is partially replaceable (another skilled human with the same tools could approximate it), and the value comes from the specific combination of human judgment and machine capability.

This is the mode where AI is most visibly useful to most people. It is also the mode where the boundary between human and artificial intelligence is most blurred, because the output is jointly authored and neither party could have produced it alone.

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5 The Fourth Condition

Outside these three modes, intelligence exists everywhere else in the world in a state where AI can only influence it by how much it outputs above — or directs — our own thinking. Knowingly or not.

This is not a mode of token spend. It is the ambient condition. Every recommendation algorithm, every autocomplete, every generated summary that someone reads and absorbs without questioning — these reshape human reasoning without the human choosing to engage a mode.

The danger of the fourth condition is not that AI thinks for us. It is that AI thinks *near* us, constantly, and we mistake proximity for collaboration. The three modes above are all conscious choices. The fourth condition is what happens when no choice is made.

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6 Implications

The three modes are not a hierarchy. They are a classification. Mode 1 will build the infrastructure. Mode 3 will run the economy. Mode 2 will produce the only outputs that are provably human-sourced and provably correct.

The question for any system, any company, any researcher is not "are you using AI?" It is: **which mode are you operating in, and do you know?**

References

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