

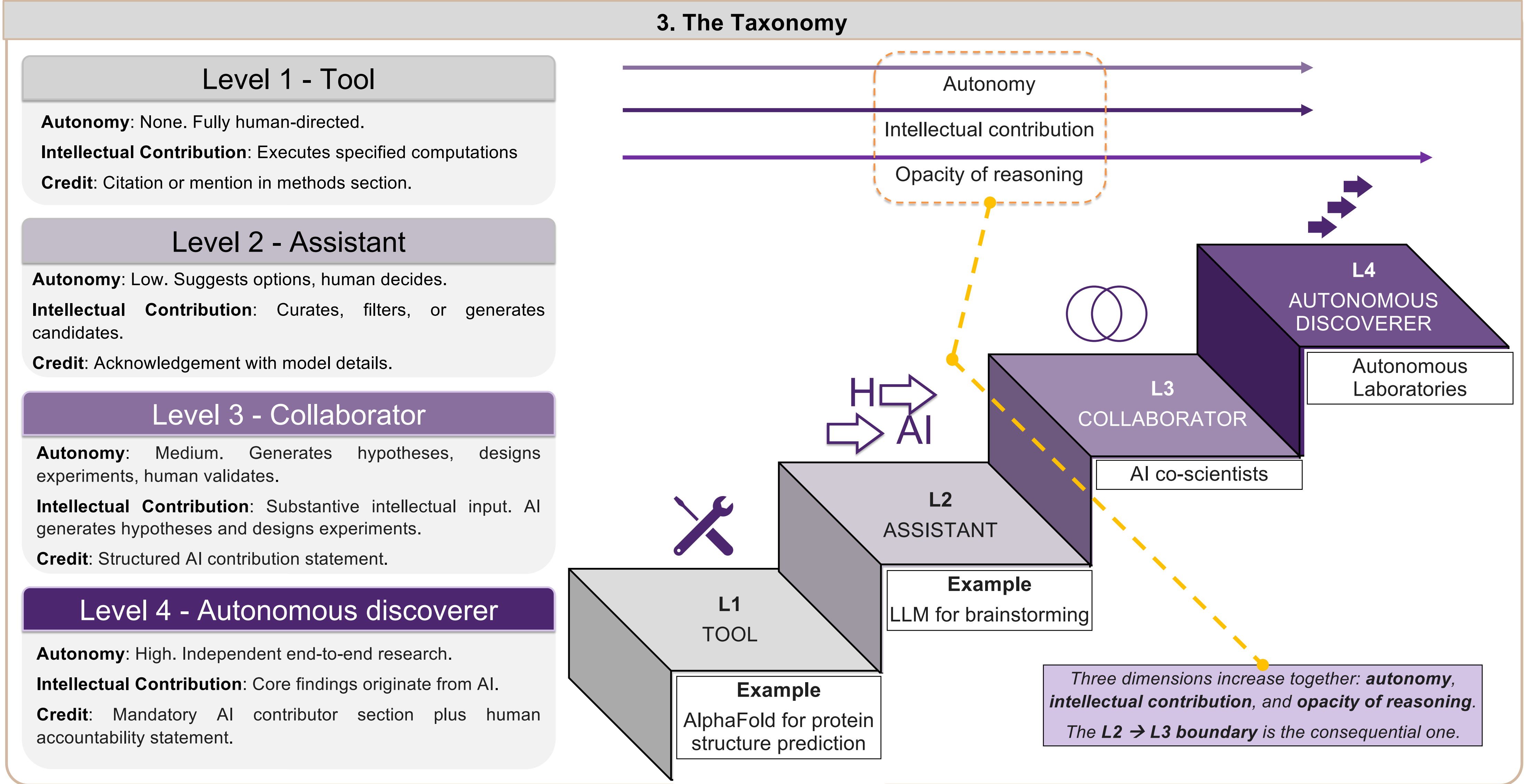
Credit Where Credit Is Due: A Taxonomy of AI Contributions to Scientific Discovery and Recommendations for Authorship Policy



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1. The Problem	2. The Disclosure Gap			
AI systems now contribute across the full scientific workflow, from proofreading manuscripts to drafting code, generating hypotheses, and in emerging cases conducting end-to-end research. Current journal and conference policies treat all of this as a single checkbox: whether AI was used or not. Thus, a grammar check and an autonomous hypothesis generator will trigger the same disclosure requirement, which often goes unfulfilled in both cases. The result is a literature in which the actual role of AI in producing scientific findings is largely invisible. Hard cases as examples a) The Nobel-worthy AI discovery. An autonomous system generates a hypothesis that, once validated, solves a major open problem. Under our framework, humans receive authorship with the AI documented in a mandatory contributor section, parallel to prizes awarded to PIs who built the telescope or detector that performed a measurement, rather than to the instrument itself. b) When humans cannot explain the AI's reasoning. Accountability does not attach to the model's internal logic, which may be permanently opaque. Our resolution is to detach accountability from the model's internal logic, and attach it instead to the validation protocol the authors design and execute. Authors remain responsible for the rigor of that protocol, for honest disclosure of its limits, and for the decision to publish given residual uncertainty.	Study	Scope	Estimated AI Use	Reported Disclosure
	Liang et al. 2024	950K papers, CS venues 2023–2024	9–16%	< 3%
	Gray 2024	Multi-discipline scholarly literature	~10%	Not quantified
	Dergaa et al. 2023	Survey of 416 researchers	37% (manuscripts)	14%
	Kobak et al. 2025	Vocabulary shift, biomedical papers	10–50× surge in LLM-associated terms	Not quantified
	Thelwall & Kousha 2026	Full-text analysis, all fields	Broad increase confirmed	Not quantified



Why AI Should Not Be an Author

Authorship Requires Accountability.

But an AI system cannot:

- Sign a copyright transfer agreement
- Testify in a research integrity investigation
- Face professional sanctions for fabrication
- Respond to post-publication critique

These are structural features of the scientific record that depend on human agency, rather than formalisms.

On the other hand, denying AI authorship without providing positive credit mechanisms creates a vacuum. Researchers are incentivized to obscure AI contributions to claim full credit. The empirical evidence shows this is happening.

The solution, as described here, is a structured disclosure framework instead of prohibition alone.

4. Five Recommendations

The window is closing. Autonomous AI scientists are not yet routine contributors. Once current ambiguity hardens into convention, it will be hard to undo.

1

Tiered disclosure

2

Contribution statements

3

Accountability statements

4

Infrastructure credit

5

Working group

- 1. Tiered disclosure framework.** Replace binary "AI used / not used" with classification by level. Target: journals and conferences.
- 2. Mandatory AI contribution statements for L3 and L4.** A required manuscript section specifying system ID, contribution role, human validation, and known limitations. Target: Nature, Science, top venues.
- 3. Human accountability statements.** For L3 and L4, named individuals take responsibility for specific aspects of the work. Target: corresponding authors.
- 4. Recognize AI infrastructure in grant evaluation.** Building scientific AI systems should count like building experimental apparatus. Target: NSF, ERC, funders.
- 5. Inter-organizational working group on AI credit standards.** Standardization across the ecosystem. Target: COPE, ICMJE, ICML, NeurIPS, journals, funders.