MANDATORY AUTHOR SELF CRITIQUE

A Proposal for Scientific Publication Reform

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ABSTRACT

Scientific publication currently rewards triumph and punishes doubt. Authors who privately know the limitations of their own theories have no formal mechanism — and no professional incentive — to disclose those limitations at publication. The result is that each generation of researchers inherits not just the theory but also the hidden doubts its authors carried silently to their graves. Decades are wasted rediscovering what was already privately known. This paper proposes a structural reform: Mandatory Author Self Critique — a required fourth section in all scientific publications in which authors formally document their own known limitations, unresolved questions, and private doubts about their work. The proposal connects to existing frameworks in peer review reform, invoice transparency, and EchoFamiliar bias in scientific communities. Implementation would accelerate cumulative scientific progress by ensuring each generation begins from the known edge rather than rediscovering it.

1. THE PROBLEM

The current scientific publication architecture operates on a perverse incentive structure: it systematically rewards the appearance of absolute triumph while penalizing open doubt. Authors who privately understand the boundary conditions of their own models lack both a formal mechanism and a professional incentive to declare them at the point of publication...

This is not an abstract criticism of scientific culture. It is a structural diagnosis. The current publication system has no mechanism for authors to formally disclose what they privately know about the limits of their own work. Journals reward novelty and completeness. Peer reviewers — selected from the same community that produced the theory — are structurally unlikely to identify fundamental flaws. The result is a system that systematically hides the Invoice of every theory published.

2. HISTORICAL EVIDENCE

The pattern of privately known limitations withheld from formal publication is not rare. It is the norm across the history of science. Three cases illustrate the systemic nature of the problem:

Einstein — General Relativity versus Quantum Mechanics

Einstein developed General Relativity and made foundational contributions to Quantum Mechanics. He privately knew throughout his career that the two frameworks were fundamentally incompatible — a conflict that remains unresolved in physics today. He never published this conflict formally. He spent his final decades searching privately for a unified theory while the academic community treated GR and QM as separately complete frameworks. Generations of physicists inherited both theories without inheriting the founder's private knowledge that they could not both be entirely correct.

Newton — Gravity Without Mechanism

Newton published the mathematical description of gravity in Principia Mathematica knowing it had no mechanical explanation. He could describe how gravity behaved precisely. He had no answer for what gravity was or how it acted across empty space. While Newton publicly acknowledged this explanatory gap in his 1713 General Scholium with the famous phrase *Hypotheses non fingo* ('I feign no hypotheses'), the structural norms of 17th-century publishing allowed this vulnerability to exist as a defensive philosophical stance rather than a rigorous, systematic self-critique. Consequently, the field treated the mathematical asset as complete, leaving the mechanical liability unaddressed for two centuries. The mechanism question was not formally addressed until Einstein — two centuries later. Two centuries of gravitational physics built on a foundation its author knew was incomplete.

Watson and Crick — DNA Structure

Watson and Crick published the double helix structure of DNA in 1953. They knew the model had unresolved questions — the replication mechanism was proposed but not demonstrated, and the relationship between DNA structure and protein synthesis was not explained. They published the triumph. The gaps were left for the next generation to discover independently rather than being handed as a documented starting point.

In each case the author privately held information that would have accelerated subsequent research. In each case that information was not formally published. In each case the next generation paid the Invoice.

3. THE PROPOSED STANDARD — FOUR SECTION MANDATORY PUBLICATION

The reform is structural. Not cultural. Structural reforms do not require scientists to become more humble. They require journals to mandate a new section. The four section standard:

1. Section 1 — Theory: The claim, framework, or discovery as currently presented. No change from existing practice.

2. Section 2 — Evidence: Supporting data, experiments, and observations. No change from existing practice.
3. Section 3 — Author's Own Critique and Known Limitations: The invention. Authors formally document their own known weaknesses, unresolved questions, private doubts, and the conditions under which their theory may fail. Written by the author at submission. Not optional. Not buried in footnotes. A required primary section equal in status to Theory and Evidence.

4. Section 4 — Open Questions for the Next Generation: Formally documented questions the author could not answer. Problems the author identified but did not solve. Directions the author considered but did not pursue. A structured handoff to subsequent researchers.

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4. WHY THIS WORKS — EXPECTED OUTCOMES

1. Next generation starts from the known edge — not from rediscovering limitations the author already knew. Cumulative progress accelerates immediately.
2. Ego-defensive science eliminated structurally — authors who formally document their own limitations at publication have no subsequent professional incentive to defend those limitations against critics. The critique is already on record in their own voice.
3. Peer review quality improves — reviewers gain access to the author's own doubt map. Evaluation becomes more targeted. Known limitations need not be rediscovered by reviewers. Unknown limitations can be the focus.
4. EchoFamiliar peer review bias reduced — when authors self-document limitations, outside perspectives have a formal entry point. The limitation is named. The outsider can engage with it directly rather than fighting to have it recognized.
5. Scientific fraud becomes harder — authors who must formally document known limitations under their own name at publication time face a higher bar for concealing fundamental flaws.

6. Interdisciplinary progress accelerates — open questions documented by specialists become visible to outsiders from other domains. Cross-domain breakthroughs — historically the source of most paradigm shifts — are enabled by visibility of known gaps.

5. CONNECTIONS TO EXISTING FRAMEWORKS

Invoice Transparency Theory

Every scientific publication currently presents the asset — the theory, the discovery, the finding. The liability — the known limitations, the unresolved questions, the private doubts — is hidden. Mandatory Author Self Critique forces full balance sheet

publication. The Invoice of every theory becomes visible upfront. Subsequent researchers inherit both the asset and the liability rather than discovering the liability independently at enormous cost.

EchoFamiliar Bias in Peer Review

Peer review selects reviewers from the same community that produced the theory. Reviewers who are EchoFamiliars of the author — trained in the same framework, using the same assumptions, measuring by the same standards — are structurally unlikely to identify fundamental flaws in the framework itself. They can identify errors within the framework. They cannot easily identify errors of the framework. Mandatory Author Self Critique breaks this loop by inserting the author's own outside perspective — the perspective of the person who knows the framework's limits best
— as a required primary element of every publication.

Substrate Neutral Intelligence Theory

The current publication system values output from within recognized substrates — established institutions, recognized disciplines, credentialed authors. Open questions formally documented in Section 4 become visible to intelligence arriving from any substrate. A mechanical engineer in South India reading an open question in a physics paper can engage with it directly. The EchoFamiliar gatekeeping of who gets to answer the question is bypassed when the question itself is publicly and formally documented.

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6. OBJECTIONS AND RESPONSES

Objection: Authors will not honestly self-critique for fear of weakening their work

Response: The mandate removes the choice. Journals require the section. Submission without it is incomplete. The professional norm shifts from hiding doubt to documenting it. Within one generation the author who documents limitations honestly is seen as more rigorous — not less — than the author who does not.

Objection: This already exists informally in limitations sections

Response: Current limitations sections are optional, brief, strategically written to minimize perceived weakness, and buried after conclusions. They are not written as the author's honest private assessment of where their theory may be wrong. They are written as defensive disclosures. Mandatory Author Self Critique is a primary section of equal status written as the author's genuine intellectual audit of their own work.

Objection: It will slow publication

Response: Authors who have done genuine research already know their limitations. Writing Section 3 honestly requires reflection not additional research. The time cost is minimal. The time saved by subsequent researchers not rediscovering known limitations is enormous.

7. IMPLEMENTATION PATHWAY

1. Pilot journal adoption — one high impact journal adopts the four section standard as optional for one year. Authors who include Section 3 and 4 are flagged. Citation impact of those papers is tracked versus standard publications.
2. Empirical measurement — papers with Mandatory Author Self Critique sections are tracked for citation patterns, subsequent breakthrough rate, and time-to-resolution of documented open questions versus undocumented ones.
3. Mandatory adoption — evidence from pilot informs journal policy. Standard becomes mandatory. Professional norms shift within one academic generation.

8. CONCLUSION

Science currently publishes the triumph and buries the doubt. The doubt belongs to the author. The author knows it better than anyone. The current system has no mechanism to extract that knowledge and pass it formally to the next generation.

Mandatory Author Self Critique does one thing: it makes the author's private knowledge public at the moment it is most valuable — at publication, when the theory is new, when the author's memory of its construction is fresh, when the limitations are most clearly visible to the person who built it.

The next generation should not have to rediscover what the previous generation already knew.

That is the Invoice this proposal eliminates.

ABOUT THE INVENTOR

Budinny V, India. The insight behind Mandatory Author Self Critique arrived independently from engineering practice — where unknown failure modes in published designs have real physical consequences — rather than from philosophy of science literature. The inventor identified the systemic problem of hidden limitations in published theories before encountering the historical cases that illustrate it. The historical evidence — Einstein, Newton, Watson and Crick — was identified through subsequent research as confirmation of an independently observed pattern.

This paper was conceived and developed independently by the author. All theoretical frameworks, the proposed four-section publication standard, and the connections to Invoice Transparency Theory and EchoFamiliar Bias are the author's own original

contributions. The core insight originated from direct observation of engineering publication practice rather than from philosophy of science literature.

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