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Peer Review

Review of: "The Consequences of Peer Review Bias for Academic Careers and the Progress of Science"

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promising but underdeveloped

This manuscript addresses an important and potentially high-impact question: whether peer review bias, especially reputation-based bias affecting authors from elite versus non-elite institutions, can generate cumulative downstream effects on publication output, funding success, academic careers, and ultimately the structure of science itself. The paper's core intuition is clear and interesting. It argues that even relatively small biases at the publication stage may be amplified through dynamic feedback loops, especially in environments characterized by intense competition and strong reliance on publication metrics. The manuscript also advances the further claim that these mechanisms may help explain the elitism and oligopolistic structure of contemporary science.

The topic is unquestionably relevant. The paper also has real merit: it highlights a plausible cumulative-advantage mechanism and attempts to translate this into a dynamic framework rather than treating peer review bias as a one-shot distortion. This is a useful perspective. However, in its present form, the manuscript remains substantially stronger in intuition than in analytical execution. The argument is thought-provoking, but the paper currently overstates what its model is actually able to establish.

Major concerns

1. The conclusions are too strong for a non-validated, heuristic model

The paper repeatedly moves from a plausible mechanism to very strong system-level claims. Showing that peer review bias *can* be amplified through feedback loops is not the same as showing that it is *largely*

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responsible for the observed elitism or oligopolistic structure of mainstream science. The model demonstrates a possibility under a set of assumptions. It does not establish that this mechanism is the dominant causal explanation of real-world academic hierarchies. The manuscript should therefore distinguish much more carefully between illustrative mechanism, conjecture, and demonstrated inference. At present, my impression is that the rhetoric often goes beyond what the analysis can support.

The author explicitly acknowledges that the model is not quantitatively predictive and that several parameters are not empirically estimated. That is acceptable for a conceptual paper. However, if the model is intended as a theoretical exploration rather than an empirically disciplined framework, then the manuscript must be much more restrained in the interpretation of the simulation results. Key parameters governing publication bias, dependence of funding on publication metrics, competition severity, depreciation of delayed publications, and feedback intensity appear largely imposed rather than grounded in evidence. This does not invalidate the exercise, but it means that the simulations should be presented as stylized scenarios rather than as evidence in support of broad causal conclusions.

2. An important omitted mechanism is informal academic networks, including mentorship and personal ties

If the paper is to be understood primarily as a theoretical analysis of the mechanisms generating academic inequality, then one important channel is missing and deserves explicit treatment: the role of informal academic networks, including mentorship structures, personal connections, and repeated interactions between senior academics, reviewers, editorial boards, and journal gatekeepers.

This matters because stratification in science may be reproduced not only through institutional prestige as an abstract attribute, but also through network-embedded social relations that shape visibility, credibility, access, and reputational carryover. In some academic systems, these informal networks may be especially consequential because advantages that once operated mainly through formal public evaluative arenas may increasingly be displaced toward private or semi-private editorial and reputational circuits. When this happens, publication outcomes may become an indirect but highly consequential input into hiring, promotion, and career advancement, thereby reinforcing downstream inequities. This mechanism is fully consistent with the manuscript's general theme, yet it is not modeled or seriously discussed. If the ambition is theoretical, then the omission is significant. At minimum, the manuscript should explicitly acknowledge that peer review bias may operate not only through anonymous status

cues attached to elite institutions but also through network effects rooted in mentorship chains, professional acquaintance, editorial proximity, and the social organization of disciplines. Without this, the paper risks offering an overly thin account of how reputational advantage is actually produced and transmitted.

The argument that researchers in elite institutions are structurally induced to pursue more disruptive or conceptually novel work, while those in non-elite institutions are pushed toward safer and more mediocre output, is interesting but insufficiently grounded. The “inverted-U” reasoning may be suggestive, yet in the paper, it appears closer to a conjectural extension than to a result derived from the model. The figure is illustrative, but the underlying logic is not developed with enough rigor to support the strength of the conclusion.

Minor concerns

The exposition would benefit from clearer notation and a tighter presentation of the model. At several points, the transition from assumptions to simulated outcomes is more verbal than formal, making it difficult to assess exactly which mechanisms are doing the analytical work.

The references are relevant in broad terms, but the literature review is not yet sufficiently structured around competing explanations. It often reads as a motivation for the paper’s thesis rather than as a balanced positioning of the manuscript within a broader debate.

Declarations

Potential competing interests: No potential competing interests to declare.