



# Safeguarding the Integrity of Science Communication by Restraining ‘Rational Cheating’ in Peer Review

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Peer review is the pillar of the integrity of science communication. It is often beset with flaws as well as accusations of unreliability and lack of predictive validity. ‘Rational cheating’ by reviewers is a threat to the validity of peer review. It may diminish the value of good papers by unfavourable appraisals of the reviewers whose own works have lower scientific merits. This article analyzes the mechanics and defects of peer review and focuses on rational cheating in peer review, its implications, and options to restrain it.

**Keywords:** Peer Review; Rational Cheating; Reviewer; Science Communication

## INTRODUCTION

Peer review is an established process for assessing the quality and suitability of scholarly articles for publication. The backbone of peer review is the constructive and unbiased criticism of experts, who provide a good service to their profession and colleagues. Such a professional service constitutes a feedback loop aimed at preserving the integrity of science communication (1).

Although peer review is declared to maintain and uphold the quality of scholarly works, there is no solid evidence to prove that it actually does (2). The whole system is beset with accusations of poor reliability, unfairness, and lack of predictive value (3). Also, inconsistencies within and between reviewer comments and inadequate reviewer appraisals often discredit the peer review.

Experts are increasingly concerned that biased reviewers, who often do not declare competing financial, academic, and other non-financial interests, provide unfair and overly negative comments favouring their own works and misleading responsible editors (4). An extreme form of such misconduct was coined by Paolucci and Grimaldo as ‘rational cheating in peer review’ (5).

This article analyzes the mechanics and defects of the peer review system and focuses on rational cheating in peer review, its implications for scholarly publishing, and available options to restrain it.

## PEER REVIEW MECHANICS

Success of scientific research and the quality of related publications are influenced by the interaction of researchers (authors), reviewers, and editors (6). Researchers obtain scientific materials and report, reviewers evaluate their papers, and responsible editors take decisions over the suitability for publication.

Current review models often involve two or more reviewers, who have to reflect on the quality and implications of peers’ scholarly output. The novelty and priority of the authors’ work are also evaluated, often relying on the authors’ interpretation of scientific merits. Unfortunately, not all authors objectively distinguish new points and strengths of their papers, providing the reviewers an opportunity to maneuver and judge on their own. Open (public) and cascading review are now gaining momentum, and it is expected that both models will improve the objectivity of the reviewer comments as these will be available to the public for a long time (7).

The outcome of peer review is largely dependent on the reviewing strategy. Above all, reviewers’ professional qualities, efforts and honesty determine the quality of the whole reviewing process (8).

## DEFECTS OF PEER REVIEW

It appears that limitations of peer review outweigh its benefits. Former chief editor of the *BMJ* Richard Smith rightly claims that the system rarely detects gross defects and is incapable of filter-

ing out fraudulent research reports (2). His argument against the traditional peer review takes into account that it is slow, expensive, highly subjective, and easily abused. No surprisingly, the number of retractions is constantly growing due to the inefficiency of publication barriers against flawed papers (9).

### CHARACTERISTICS OF PEER REVIEWERS

Reviewers are researchers and authors who publish their own papers, build up their profile in the global bibliographic databases, and draw attention of editors. Ideally, journal editors pick reviewers who are skilled in statistics, actively involved in research, publish papers in indexed journals, and act as reviewers, to name just a few criteria of best reviewers (10). Well functioning bank of reviewers may improve the quality of periodicals and their chances of indexing in prestigious citation-tracking databases. Good reviewers often find their way to the editorial boards and get more influence over the current system of quality control.

Reviewers are obliged to upgrade their research reporting, referencing and ethical publishing skills to be able to educate their authors (2, 11). They should also focus more on the accuracy of raw data and reproducibility of the research results to enhance secondary analyses and contribution of systematic reviews to the evidence growth. Reviewers themselves may introduce more biases and conflicts in the system, which lacks tools to eliminate inconsistencies and the 'selfish and rational' approach of some reviewers (12).

### RATIONAL CHEATING IN PEER REVIEW

Rational cheating has emerged as a reviewing strategy of some unethical reviewers, who aim to suspend or avoid publication of competing papers (13). Such strategy corrupts the peer review and benefits a small group of 'influential' reviewers and authors. Reviewers corrupting the system are named 'rational cheaters.'

Rational cheaters 'punish' articles with better quality and value than the reviewers' own by assigning lowered evaluation scores. The aim is to publish the reviewers' own articles first and claim priority in the same field. This is a serious and often obscure form of misconduct. It deprives authors from receiving constructive and educational comments. The ultimate outcome of the rational cheating is the lack of trust towards the reliability and integrity of scholarly journals, including those with high impact indicators. Ironically, such an unethical reviewing behaviour may be even reinforced by naïve editors and publishers, who reward rational cheaters by repetitively inviting them to review and fulfill editorial duties.

### HOW RATIONAL CHEATERS DIMINISH VALUE OF GOOD PAPERS

Rational cheaters may recommend outright rejection of journal submissions deserving more credit than their own (5). They may also delay commenting on good papers and give an unfavourable appraisal in the end. At the other extreme, unethical reviewers may recommend acceptance of poor quality papers with an aim to maintain their own papers' scientific merit. Such tricks discredit the review system and perpetuate publication of substandard articles.

Some offenders steal ideas of competing authors, slow down processing of their manuscripts by requesting unnecessary revisions and tedious additional experiments while pushing forward the publication of their own papers. Other types of misconduct may take forms of unjustified and nasty comments on research, which contradicts the reviewers' data or points of view. Gender, race, geographical location, ideological and religious beliefs may also contribute to competing relationship and unjustified reviewer recommendations (4, 14). Alas, such forms of misconduct are not often surfaced and the offenders rarely get their punishment.

### RESTRAINING RATIONAL CHEATING

All stakeholders of science communication must take efforts to restrain rational cheating. At the submission of their manuscripts to journals, authors can suggest unbiased reviewers and those who may have competing interests. They should call the attention of journal editors to unfair comments and delays with reviewing. Reviewers should be invited after careful consideration of all potential conflicts. Instructing reviewers on their roles and responsibilities, and providing them with a form for disclosure of all competing interests must become a common editorial practice (4, 14, 15). Editors should regularly assess reviewers' performance, considering multiple indicators (e.g. timeliness of reviewer responses, scientific merit of their comments, correctness of references in the comments). Regular internal and external audits of the peer review may reveal defects and lead to related improvements (14). Collective editorial decisions can be especially effective against rational cheating. Editorial societies, in turn, can take a lead by developing recommendations and educating reviewers and editors about ethically acceptable peer review.

In conclusion, rational cheating is a threat to the viability of peer review. Collective actions by authors, reviewers, editors, and learned societies may help restrain it and preserve the integrity of science communication.

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## REFERENCES

1. Gasparyan AY. *Peer review in scholarly biomedical journals: a few things that make a big difference*. *J Korean Med Sci* 2013; 28: 970-1.
2. Smith R. *Peer review: a flawed process at the heart of science and journals*. *J R Soc Med* 2006; 99: 178-82.
3. Bornmann L, Daniel HD. *Selection of research fellowship recipients by committee peer review. Reliability, fairness and predictive validity of Board of Trustees' decisions*. *Scientometrics* 2005; 63: 297-320.
4. Gasparyan AY, Ayzazyan L, Akazhanov NA, Kitash GD. *Conflicts of interest in biomedical publications: considerations for authors, peer reviewers, and editors*. *Croat Med J* 2013; 54: 600-8.
5. Paolucci M, Grimaldo F. *Mechanism change in a simulation of peer review: from junk support to elitism*. *Scientometrics* 2014; 99: 663-88.
6. Gasparyan AY. *Researchers and editors at the heart of science communication*. *J Korean Med Sci* 2014; 29: 161-3.
7. Barroga EF. *Cascading peer review for open-access publishing*. *Eur Sci Ed* 2013; 39: 90-1.
8. Resnik DB, Shamoo AE. *The singapore statement on research integrity*. *Account Res* 2011; 18: 71-5.
9. Steen RG, Casadevall A, Fang FC. *Why has the number of scientific retractions increased?* *PLoS One* 2013; 8: e68397.
10. Gasparyan AY, Kitash GD. *Best peer reviewers and the quality of peer review in biomedical journals*. *Croat Med J* 2012; 53: 386-9.
11. Barroga EF, Kojima T. *Research study designs: an appraisal for peer reviewers and science editors*. *Eur Sci Ed* 2013; 39: 44-5.
12. Thurner S, Hanel R. *Peer-review in a world with rational scientists: toward selection of the average*. *Eur Phys J B* 2011; 84: 707-11.
13. Paolucci M, Grimaldo F. *Disagreement for control of rational cheating in peer review: a simulation*. *Proceedings of the 11th International Conference on Autonomous Agents and Multiagent Systems-Volume 3: International Foundation for Autonomous Agents and Multiagent Systems, 2012*, p1357-8.
14. Hojat M, Gonnella JS, Caellegh AS. *Impartial judgment by the "gatekeepers" of science: fallibility and accountability in the peer review process*. *Adv Health Sci Educ Theory Pract* 2003; 8: 75-96.
15. Squazzoni F, Bravo G, Takács K. *Does incentive provision increase the quality of peer review? An experimental study*. *Res Policy* 2013; 42: 287-94.