

**Quality of Science**  
**vs.**  
**Quality of Peer Review**

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## Peer Review

- Peer review leads to bias.
- The first one and the most problematic is that conservative choices and the very innovative ideas will not be published easily.

## 1. Conservative bias

- Peer review presents a bias against innovative applications:
- "A common informal view is that it is easier to obtain funds for conventional projects. Those who are eager to get funding are not likely to propose radical or unorthodox projects.
- Since you don't know who the referees are going to be, it is best to assume that they are middle-of the road. Therefore, a middle of the road application is safer" (Martin, 1997, p.3).

- 2.
- Bias due to 'innocent' motivations of reviewers:
- Sometimes, some of the reviewers do not invest enough time in order to perfectly understand the import of the project/paper.
- "We are concerned that the standard of the reports that we receive from our peer reviewers is not always very high. Many of the men and women whom we ask to review for us are busy people. Perhaps they don't have the time or motivation to do the job as well as they should".

•3.

• Bias due to ‘non-innocent’ motivations of reviewers -

Club insiders:

•The tendency to accept projects of "club" insiders.

• Indeed, it could be that referees choose projects in which they are not completely disinterested. They might have self interest, and might, for some subjective reason, dislike a project.

- 4.

- Confirmatory bias:

- Scholars may reject research that will show results against their own perspective.

- Institution bias:

- Prestige of the affiliation or the person. (Peters and Ceci, 1982).

- Positive bias:

- Referees tend to prefer positive than negative results.

## Quality of Science

- So Peer-review is not optimal and it leads to the fact that some very good papers/project will not be published/accepted.
- So this already affects quality of science, or more exactly the pace of inventions in the world.

## II. Internet and Peer Review

- But we could think that due to internet and dissemination of knowledge, even papers not published will be known and they can then become part of the mainstream.
- So maybe the problem over time becomes less important due to the internet.



- III. Citation and Herding
- The answer is: No.
- In an article “Can some bad articles be the most published and cited? A paradox”,
- we show that when quantities of papers increase (this is the case this last decade), people will read less and use the strategy of "herding".

- III. Citation and Herding
- In consequence, only very known scholars, and papers published in the top journals will be known.
- In equilibrium, there will be papers which are read a lot and cited (even if they are less good) and others no.
- We show that some very good papers will not be cited and read.

- Therefore a mistake/conservative decision in peer review has bigger consequences on science today than in the past.
- The four reasons mentioned above will lead to lower “Quality of Science”.

- What can be done?
- I have shown that ‘Focal randomization’ permits to reduce most of the biases existing with peer review.

## **Focal Randomization:**

- When all scholars decide unanimously that a specific project/paper is not good, it is immediately thrown out,
- When all decide that a project/paper is good, it is immediately chosen.
- The other projects are randomized.

## Conclusion:

