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# Input Control and Random Choice Improving the Selection Process for Journal Articles

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# IMPROVING THE SELECTION PROCESS FOR JOURNAL ARTICLES

by

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*Abstract*: The process by which scholarly papers are selected for publication in a journal is faced with serious problems. The referees rarely agree and often are biased. This paper discusses two alternative measures to evaluate scholars. The first alternative suggests input control. The second one proposes that the referees should decide only whether a paper reaches a minimal level of quality. Within the resulting set, each paper should be chosen randomly. This procedure has advantages but also disadvantages. The more weight that is given to input control and random mechanism, the more likely it is that unconventional and innovative articles are published.

**PROBLEMS WITH PAPER SELECTION**

The selection of papers for scholarly journals in many disciplines has become a major, if not *the* major, element in the evaluation of academics' activities. This applies in particular in the natural and social sciences, including economics and management. Whether a paper is accepted by a journal today affects scholars' careers as well as their reputation in the "republic of science" (Polanyi, 1962). The selection is undertaken jointly by the journals' editors and referees who play a very important role. Due to the large quantity of papers submitted as compared to the limited publication space available, papers are rejected if only one of the two to four or five referees suggests rejection. Hence, the quality of the scholarly evaluation process depends strongly on the quality of the reviewing process.

Over the last years, the quality of peer reviews has been criticized in various regards (e.g., Abramo, Angeleo, & Caprasecca, 2009; Bedeian, 2004; Frey, 2003; Frey & Osterloh, 2011; Gillies, 2005, 2008; Oswald, 2007; Starbuck, 2005, 2006; Tsang & Frey, 2007; Helbling & Balietti 2011). Empirical findings have identified the following serious problems.

– The extent to which reviewing reports come to the same final conclusion is low. The correlation between the judgments of two peers lies between 0.09 and 0.50 (Starbuck, 2005).

– The correlation of a particular reviewer's evaluation with quality, as measured by later citations of the manuscript reviewed, is also low; it is between 0.25 and 0.30 (Starbuck, 2006, pp. 83–84). Therefore, it is not surprising that the percentage of "dry holes" (articles in refereed journals that have never been cited) in economic research during 1974 to 1996 is substantial (Laband & Tollison, 2003). It has been found that many top articles are published in journals not highly rated, and many articles in the highly rated journals generate only few citations (Oswald, 2007).

– Reviewers tend to be biased. Thus, they find methodological shortcomings in 71% of the papers that contradict mainstream thinking as compared to only 25% that support the mainstream (Mahoney, 1977).

– Reviewers have their own agenda. It is not always in the interest of reviewers to accept certain research or to give advice on how to improve it. Reviewers tend to reject papers more readily that threaten their previous work or that draw attention to competing ideas (Lawrence, 2003).

– Editors are sometimes prone to serious errors. It is well known that highly ranked journals have rejected many papers that later were awarded distinguished prizes, including the Nobel Prize (Gans & Shepherd, 1994; Campanario, 1996; Lawrence, 2003). Another example is the "Social Text" affair where the physicist Alan D. Sokal published an article in a (non-refereed) special issue of the journal *Social Text*, which he wrote as a parody. The editors did not realize that the article was a hoax and published it as a serious scholarly article (Sokal, 1996).

For these reasons, the quality and credibility of peer reviews has become the subject of much scrutiny. In clinical neuroscience, it was even found that the correlations among reviewers' recommendations "was little greater than would be expected by chance alone" (Rothwell & Martyn, 2000, p. 1964). Simulation results show that when the number of rational reviewers (as well as the number of unreliable and uninformed reviewers) is above 30%, peer review is no better than a coin toss (Thurner & Hanel, 2010).

This paper discusses two possible solutions to the problem of the inadequate selection of journal articles. The solutions approach the problem very differently, but both are radical in the sense that they break with the current way of evaluating scholars. They can be used in isolation or in conjunction. The following section discusses *input control*, which is an effort to select gifted scholars at the very beginning of their career and then to rely on their intrinsic

motivation to do interesting research thus reducing the pressure to publish. The next section considers the possibility of resorting to a *random selection* for articles above a certain quality limit. Finally, we conclude.

**CAREFUL SELECTION AND SOCIALIZATION**

In contrast to output control (like the counting of publications and citations) and process control (the monitoring of behavior), input control means that candidates are carefully socialized and selected by peers to prove that they have mastered the state-of-the-art, have internalized professional norms and standards, and are able to direct themselves (Ouchi, 1977, 1979). In the case of research governance, this means that they have developed a "taste for science" (Merton, 1973). Those who have an "entrance ticket" to the republic of science because they have passed a rigorous input control should be given much autonomy to foster their creativity and intrinsically motivated curiosity (Osterloh, 2010, Frey & Osterloh, 2011).

Such input control is part of the "Principles Governing Research at Harvard" (http://www.fas.harvard.edu/research/greybook/principles.html), which state, "The primary means for controlling the quality of scholarly activities of this Faculty is through the rigorous academic standards applied in selecting its members." Input control also takes place inside professional groups, such as life-tenured judges and medical doctors (Benz & Frey 2007; Posner 2010). It has empirically proven to be successful in the R&D departments of industrial companies (Abernethy & Brownell, 1997) as well as in academic life sciences (Azoulay, Graff Zivin & Manso 2009).

Input control has the following advantages (for a detailed discussion, see Osterloh, 2010, and Frey & Osterloh, 2011). The first and main advantage of this kind of control is its applicability in situations when unambiguous indicators of performance are not available (Ouchi, 1977, 1979). This is often the case with complex and innovative tasks like research.

The second advantage of input control in research consists of downplaying the unfortunate ranking games like "slicing strategies" (Butler, 2003) and "academic prostitution" (Frey, 2003) while inducing young scholars to learn the professional standards of their discipline under the assistance of peers. Third, although input control still requires some process and output control, this would apply during limited time periods. Scholars who have passed certain thresholds are provided with high autonomy that enables them to do more cutting-edge research without being hampered by a slow and discouraging referee process.

As a consequence, input control benefits the selection of papers in two ways. First, the pressure of "publish or perish" in refereed journals is much reduced as well as the demand for reviews. The remaining papers benefit from a more thorough review process, by a greater number and diversity of reviewers, by an accelerated review process, and by using alternative and faster dissemination methods. Already, it is possible to observe a decline in the number of papers in top journals written by economists from the highest ranked economics departments (Ellison, 2010). This is attributed to the fact that the pressure to publish in top journals has been reduced for the best scholars. They are able to disseminate their work, for example, over the Internet, without being hampered by unpredictable, cumbersome, and slow refereeing processes.

Second, it can be expected that the quality of the papers should increase. If people have internalized norms and professional standards by selection and socialization, they are intrinsically motivated. Findings in social psychology and psychological economics show that on average intrinsically motivated people do not shirk when given autonomy (Frey, 1992; Gneezy & Rustichini, 2000; Fong & Tosi, 2007). Rather, they raise their efforts when they perceive that they are trusted (Osterloh & Frey, 2000; Falk & Kosfeld, 2006; Frost, Osterloh, & Weibel, 2010). Therefore, a "taste for science" instead of a "taste for publication" gets the upper hand.

**RANDOM SELECTION**

The second proposal that we put forth to mitigate the problems of paper selection by peer review is the introduction of partly random selection, which is even more radical than input control. Nevertheless, the use of random procedures to reach desired social outcomes or the so-called sortition (Dowlen, 2008), which leads to a so-called demarchy (Burnheim, 1985), has a long history (Buchstein, 2009; Buchstein & Jörke, 2007). In classical Athens and the Venetian Republic, many of the political positions were chosen by lot among the citizens. Random selection plays a role in the selection of juries in the United States and several other countries. In politics, random selection is commonly used to decide when there is an equality of votes. In the movement for deliberate democracy (Habermas, 2006; Dryzek, 2002; Fishkin, 1991), the selection of citizens to participate in the consultation or decision-making process is usually by lot. These ideas are applied by Frey and Stutzer (2006) to international organizations and by Emery (1989) to decision making at workplaces. As for all decision-making processes, random selection in a deliberative process has its advantages and disadvantages, which should be compared (for a more comprehensive discussion, see Elster, 1989, Carson and Martin, 1999, and Buchstein, 2009).

The advantages are: First, random selection procedures guarantee the true representativeness of the discussants. Over- or underrepresentation of certain groups according to gender, race, religion, age, or other characteristics are avoided. Second, this has the additional advantage of bringing in new views often overlooked by the incumbents. It is a "search-machine" for new arguments and talents (Buchstein, 2009, p. 391) and furthers "political learning" (Fishkin & Farrar, 2005, p. 76; see also Dahl, 1989; Ackermann & Fishkin, 2004, Hendriks, 2004). Third, it shields against undesired outside influences by the politicians in power as well as by entrenched interest groups, as pointed out already by Aristotle as well as by Hayek (1979). It effectively works against principal-agent conflicts

and corrupting influences. Fourth, it reduces the costs of campaigning and self-promotion to achieve political goals (Burnheim, 1985).

Of course there are also disadvantages. The first and most common argument against random selection is that it does not differentiate between experienced and inexperienced people. However, experts often fall victim to an oversight trap in situations of great uncertainty due to a familiarity bias and overconfidence (Griffin & Tversky, 1992; see Rost & Osterloh, 2010, for additional empirical evidence.). Second, a lack of legitimacy of the random selection process at the present time might exist. Third, there might be a lower sense of accountability by randomly selected people. Fourth, random selection might lead to less effort because candidates might build on chance rather than working hard.

For these reasons, randomly selected bodies are mostly considered not as an alternative to elected bodies but as a supplement. Accordingly, the random selection of articles (or research projects) could be used in combination with the peer review of articles. Nevertheless, some scholars argue for pure random selection (see Duxbury, 1999, p. 89).

A first suggestion is "focal randomization" (Brezis, 2007).[1] That is, papers (or R&D projects) would be immediately accepted that are unanimously ranked at the top by all reviewers. Papers not considered sufficient by all reviewers would be immediately rejected. Papers with an inconsistent vote would be selected randomly. A more moderate version of this idea proposes to spend only a certain percent of the research budget of funding bodies to research projects that are randomly selected among those with inconsistent votes by the referees (Buchstein, 2011). The disadvantage of this suggestion is that it might not give enough chances to path-breaking ideas because the correlation between reviewers' judgements is lower for papers accepted than for papers rejected (Cicchetti, 1991). This

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[1] Brezis (2007) considers only R&D projects. He shows that under certain conditions focal randomization leads to a higher average return than the conventional method.

means that peer reviewers are better able to identify low academic performance than excellent research (Moed, 2007).

Therefore, we suggest considering a more radical proposal: All papers not rejected unanimously should be published according to random selection. The reason for this suggestion is that reviewers typically consist of mainstream scholars who often hesitate to acknowledge path-breaking ideas. Some reviewers reject work that puts their own research into question (Horrobin, 1996; Armstrong, 1997; Gillies, 2008). As mentioned, reviewers find more methodological shortcomings in papers that contradict mainstream thought than in papers that support the mainstream (Mahoney, 1977).

For the selection of articles to be published in academic journals, a *minimum acceptable level of quality* should be defined. If this is not done, scholars would lose part of their incentive to produce good research and to write acceptable articles. However, they would not lose this incentive completely because the articles published would be evaluated by individual readers and thus influence the writer's reputation in the academic community.

The minimum acceptable standard could be determined in the following way:

– If all the referees think that the minimum level has not been attained, the paper is rejected.

– If the referees disagree about whether a paper meets the standard, it would be included in the set from which the papers to be published are drawn. In the case of more than two referees, one could set a qualified majority for rejecting the paper. If, say, four out of five referees state that the minimum level has not been attained, the paper would be rejected. Care should be taken not to extend the veto power too much because otherwise innovative and unorthodox but valuable papers would be excluded from publication from the outset.

The random selection of articles from the set of acceptable papers has various advantages over the present system in which the referees and editors decide.

- Referees' biases play a much lesser role.

- The tendency of referees to pursue their own agenda and their private interests no longer plays a role.

- Good connections in the scientific community, for example, working at an influential scientific institution no longer matter.

- Highly original and unconventional articles that the referees find difficult to comprehend and to appreciate have a chance of being published. This corresponds well to the scientific goal of overcoming seemingly established truths or "normal science" in the sense of Kuhn (1962) and paves the way to more rapid scientific progress.

The random selection of articles for publication has three major disadvantages:

- Scholars have a stronger incentive to try to publish their papers even if they are not of high quality, provided they make the cut-off point. Publication indeed becomes a random event to a certain extent. However, as noted above, there is evidence that the existing system is not far from that state anyway.

- Due to the reduced difficulty of publishing, the number of submissions to journals would increase thus putting a higher burden on referees. However, the referees' work is simpler because they only have to evaluate whether a paper meets the standard or not. As indicated above, peer reviewers are better able to identify academically low performers than excellent research (Moed, 2007).

- Many "bad" papers would be published although it is not clear what "bad" really means. According to the evidence presented in the second section, the present system is not immune to what other scholars, or future scholars, consider to be "bad" papers.

The range over which papers are selected by a random procedure can be reduced, as mentioned, by editors accepting papers whose publication is supported by all referees. A further reduction is possible by accepting papers supported by a (qualified) majority of referees, for instance two out of three referees. This moves the selection process in the direction of increasing the weight of referees' opinions, that is, in the direction of the traditional method of selection. The disadvantage is that the problems with refereeing pointed out in the introductory section also gain weight. In particular, it could be argued that such a decision process too drastically reduces the chance of original and unconventional papers being published.

**CONCLUSIONS**

The present process by which scholarly papers are selected for publication in academic journals is faced with serious problems. The referees who have great weight in the decision have been shown to rarely agree and are subject to various biases. The editors are also prone to serious errors. This paper proposes two ideas to overcome these problems. The first proposal suggests restricting the impact of peer reviews to a limited time in a scholar's career, thus giving that scholar more autonomy when certain thresholds are passed. This idea has been put into reality, for example, with the "Harvard Principles" and within professional groups such as life-tenured judges and medical doctors. The success of this proposal—a higher quality of papers—is hard to measure because it is intended to downplay today's overwhelming emphasis on the amount of publications and citations as a measure of quality. Success will be evident only after a long time, and there are no clear-cut criteria.

The second proposal is more radical in downplaying the impact of peer reviews. It does not consider research governance as a whole but concentrates on the selection process of academic articles. It suggests that the referees should decide only whether a paper reaches a minimum level of quality. Within the resulting set, each paper should have the same

probability of being published. This procedure has major advantages but also some disadvantages that have to be traded off. The more weight given to the random mechanism, the more likely it is that unconventional and innovative articles would be published in conjunction with many papers of little value. It should, however, not be forgotten that this is to a considerable extent also the case under the present system. For this reason, at least one, or perhaps more than one, of the well-regarded journals should try this new method. In contrast to the first suggestion, there would exist a way of measuring its success or failure: The number of citations compared to the traditional selection method.

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