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Training School

What is peer review and why it matters

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The history of peer review explains its multiple meanings and functions

The present: why peer review matters and why we must protect it

Examples from my own research
What is peer review?

Peer review is an institution, a practice, a method, what?

https://it.surveymonkey.com/r/HWFXZ8Q
The referee system in science involves the systematic use of judges to assess the acceptability of manuscripts submitted for publication. The referee is thus an example of status-judges who are charged with evaluating the quality of role-performance in a social system. They are found in every institutional sphere. Other kinds of status-judges include teachers assessing the quality of work by students (and, as a recent institutional change, students officially assessing the quality of performance by teachers), critics in the arts, supervisors in industry and coaches and managers in sports. Status-judges are integral to any system of social control through their evaluation of role-performance and their allocation of rewards for that performance. They influence the motivation to maintain or to raise standards of performance.

The four Mertonian norms (often abbreviated as the CUDOS-norms) can be summarised as:

- **Communalism**: all scientists should have common ownership of scientific goods (intellectual property), to promote collective collaboration; secrecy is the opposite of this norm.[3]
- **Universalism**: scientific validity is independent of the sociopolitical status/personal attributes of its participants.[4]
- **Disinterestedness**: scientific institutions act for the benefit of a common scientific enterprise, rather than for the personal gain of individuals within them.
- **Organized scepticism**: scientific claims should be exposed to critical scrutiny before being accepted; both in methodology and institutional codes of conduct.[5]

From refereeing to peer review in the 1970s

Growing interest on peer review
In the 1970s

Both of the first two state-sponsored or state-chartered academies, the Royal Society of London (1662) and the Académie Royale des Sciences of Paris (1699), were granted the privilege to publish their own works. This was an extraordinary exception from the licensing and censorship systems that since the 16th century had been established by political and religious authorities throughout Europe in response to the perceived political and religious threats posed by the printing press.⁹ All texts, scientific or not, had to be reviewed and licensed in order to be printed and sold legally. The first scientific academies were not exempted from these requirements, but were allowed to administer them on their own. Instead, in the case of scientific academies we see that, as in book censorship, risk was the driving concern behind the review. However, the notion of danger was reframed as it was transferred from the state to its academies. Book censorship was designed to prevent the publication of news or views that could destabilize the state. The aim of peer review was more modest: to avoid the publication of claims produced by academicians that could bring disrepute to the academies themselves and point to their failure to live up to the book licensing privileges granted by their royal patrons. So while state censors did

Back in time: 
From risk protection to discipline

Unlike what we see today, all early journals were not just written by and for academics but were also institutionally tied to academies. It was because of the continuous link that connected royal academies, their journals, their statutory requirements for peer review, and their publishing privileges, that peer review became an inherent part of early academic journal publishing and, by extension, of the publication protocols of the 18th-century academy-based ‘republic of letters.’ The extension of the jurisdiction of academic review outside of the membership circle of early academies marks what, I believe, was a crucial point in the genealogy of what we now call peer review. It is the first step toward redefining ‘peer’ in non-local terms, as well as toward establishing a broad scientific publication system hinged on review by academic peers, not state censors.

Along with the institutionalization of scientific disciplines, peer review also moved from a filtering function (to stop ‘unsuitable’ books from being printed) to an editorial function (to intervene on texts to make them conform to disciplinary standards). The development of such parameters of quality or publishability did not represent a simple freeing of science from the legalities of censorship but the articulation of a new, more specialized and internalized kind of disciplining.

Mario Biagioli (2002). From book censorship to academic peer review, Emergences, 12(1), 11-45
Pivotal moments in the history of peer review have occurred when the public status of science was being negotiated.

Current attempts to reimagine peer review rightly debate the psychology of bias, the problem of objectivity, and the ability to gauge reliability and importance, but they rarely consider the multilayered history of this institution. Peer review did not develop simply out of scientists’ need to trust one another’s research. It was also a response to political demands for public accountability. To understand that other practices of scientific judgement were once in place ought to be a part of any responsible attempt to chart a future path. The imagined functions of this institution are in flux, but they were never as fixed as many believe.

The function of refereeing was not originally about quality control or reliability or standards and emerged within the social practices associated with learned societies, as forms of collective editorial responsibility and shared collaboration.

Compared with the long, labour-intensive, and comparatively inaccessible publishing processes at learned societies, the swift editorial decision-making and more rapid publishing frequency of the independent journals made them attractive to authors looking to publish quickly, especially in fast-moving fields like physics. Independent journal editors could follow their own instincts and interests, with no need to represent or protect the corporate reputation of a sponsoring organization through mechanisms for collective responsibility. Their desire for speedy publication was better served by making executive decisions than by seeking referees’ reports. Thus, in the early twentieth century, the practice of refereeing could be seen, in some quarters, as an obsolete holdover from an age of amateur dominance, out of touch with the needs of the new professional scientist—a remarkable transformation from the 1830s, when refereeing had been one of the chief demands of a reform movement that championed the expansion of professional science and the imposition of more stringent qualifications upon men of science.

The evolution at the Royal Society

The current querelles: does peer review add any value to manuscripts?

TABLE 11. Relationship between number of citations received by published articles and mono versus multidisciplinarity of the referees.

<table>
<thead>
<tr>
<th>Nature of the reviewing</th>
<th>Number</th>
<th>Mean citations</th>
<th>Std. Err.</th>
<th>[95%] Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-disciplinary</td>
<td>129</td>
<td>18.46</td>
<td>2.21</td>
<td>14.08</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>48</td>
<td>29.43</td>
<td>6.49</td>
<td>16.36</td>
</tr>
</tbody>
</table>

The current querelles: does peer review add any value to manuscripts?

The current querelles: Does peer review payoff prestigious authors?

Conclusions

Peer review has multiple functions which have evolved over time and co-exist also today

It preserves self-regulation and autonomy of science, while reflecting tensions around its «social contract», both within and outside the community

It reflects the changing meaning of «peers» in hyper-competitive contexts («publish or perish» culture, academic organisational hierarchies, individual and institutional rankitude)

Learned societies, publishers, independent associations and journals are experimenting with innovations, so adding ecological/functional diversity