The many dilemmas of grant peer review

Peer review is the prime basis for allocating research grants. The systems and principles of grant review were formed in a time with reasonable high success rates and available expert reviewers. Today, in a situation with lower success rates and reviewer fatigue, grant peer review is often heavily criticised. How should distrust, reviewer fatigue and low success rates be dealt with? This policy brief summarises the aims and dilemmas of grant peer review, and some advice on how to handle them.

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1. Why grant peer review?

Both public and private funding agencies use researcher expertise (peers) for evaluating research proposals, and peers' assessments are normally their key basis for allocating research funding. Peer review has two main functions in this: Quality assurance and quality enhancement. **Quality assurance** is about ensuring that funded research holds good scientific standard and is in line with programme objectives and of value for science and/or society. The **quality enhancement** aspect, on the other hand, is foremost based on the benefits of competition. Competition between applicants is expected to improve the proposed and funded research. Especially if the competition is high and the funding scheme prestigious, it may attract more qualified applicants, better prepared projects, as well as reviewers able to improve the projects. The competitive dynamics created by such funding schemes may even have positive effects on the research community as such. While quality assurance requires reviewers competent to filter out inadequate projects, quality enhancement requires highly competent and trusted reviewers, with expertise in the fields of the individual proposals, as well as someone with ability to compare proposals.

Notably, funding agencies normally try to achieve both quality assurance and competition/quality enhancement. Still, the two functions do not support the same kind of objectives:

- **Quality assurance** aims to ensure that funds are spent wisely on promising research projects. The reviewers are gatekeepers who ensure scientific standards and discard research ideas, methods and perspectives that are not considered adequate or sufficiently interesting and relevant to the call for proposals. Unwanted effects of such gatekeeping may be conservatism in the sense of curbing new and unconventional research ideas, methods etc.
- **Quality enhancement through competition** aims to make researchers perform better and improve research. Researchers need to excel to obtain a grant, and may need to learn specific skills in writing and presenting research proposals. Review procedures are set up to incentivise researchers to develop excellent projects and reviewers to thoroughly assess them. Unwanted effects of this may be that the selection process demands disproportionally more time and resources, possibly concentrating research resources in some environments that are particularly competitive (Mathew effect/cumulative advantages), and reduce pluralism in the funding portfolio. Some research environments and topics may not fit the notions of excellence underlying the selection.

Notably, core principles of grant peer review – such as competence, impartiality and efficiency (ESF 2011) – are more demanding to ensure when the review process is based more on competition than gatekeeping. The next section outlines the challenges and dilemmas.

2. Challenges and dilemmas

Uncertainty and constructed agreements. The dynamics and logic of science include trial and error, uncertainty and limited agreement. This easily conflicts with a research funding policy based on research quality as a defined and measurable characteristic to be rated on pre-set criteria and ranked to select the best projects. Grant review is prospective, it assesses a plan for research to be performed. It aims to predict success, and the success factors are uncertain. Reviewers often disagree about research proposals (Cole et al. 1981). They may have different notions of research quality and emphasize different aspects and qualities of the proposals (Langfeldt et al. 2021). Moreover, there are different quality notions in different fields of research, complicating any comparison of proposals between fields, as well as the selection of competence for assessing multidisciplinary proposals. In brief, grant peer review constructs conclusions on something that is genuinely uncertain. While peers may agree on a group of top proposals, consensus for

differentiating within this top group is much harder. Hence, the problem of uncertainty increases when success rates get as low as 10-20% (Fang et al. 2016; Cole 1992:83; Bornmann et al. 2008:9).

Competence and conflicts of interest. A main challenge when organising peer review is to match experts to proposals, i.e. defining who is a peer and who has no conflict of interest. And the main dilemma is that the more expertise a reviewer has in the field of the proposal, the higher chance there is for a conflict of interest (Li 2017). In small, specialised international fields with high interaction and close connections it may be impossible to find peers who have no links to the proposed research or the applicants (Chubin and Hackett 1990:194).

Distrust, reviewer fatigue and low success rates. Who is assigned to assess a grant proposal is a result not only of who the funding agencies identify and select for the work, but also who has the time for it, and can be motivated. Experts are generally busy and may be reluctant to take on the (often numerous) review tasks they are offered – from a variety of funding agencies and journals – on top of their regular research and teaching assignments. It is not uncommon that research councils have to go far down the list of relevant reviewers before they get a positive reply. According to a study from 2019, funding agency staff may spend 6 hours or more to find reviewers for each proposal (Publons 2019:22). Peer review presupposes that reviewers have the competences to be the watchdogs and gatekeepers of science – i.e. that they have competence in the field of the proposal, and preferably at the same level or higher than the applicants they assess. Hence, when we struggle to get competent reviewers to contribute, peer review will not work according to intentions. Combined with low success rates, difficulties in attracting reviewers add to the challenges of providing a thorough and fair review of all proposals. Lower success rates imply much work needed to review a large number of proposals to identify a few proposals to be funded, i.e. increased proposal and review resources per funded project. At the same time, it incentivises applicants to invest ever more resources into preparing (more) competitive proposals. Hence, more resources are put into preparing and reviewing proposals, rather than performing research. **Along with low success rates and demanding review processes comes**

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[1] Numerous examples from the Norwegian context are displayed in Khrono.

distrust in the review. Funding agencies are faced with applicants who argue that their proposals have not been properly reviewed, that the reviewers were not competent and the review reports flawed.[1] Even if a majority of researchers agree that 'grant review is the best method of allocating research funding', a substantial proportion does not agree that it is fair and unbiased and treats junior researchers objectively (Publons 2019:20). There is a danger that these factors – low success rates, reviewer fatigue and distrust in the review process – reinforce each other: E.g. that low success rates generate more proposals, increased burden on reviewers, inferior reviews and more distrust.

Biases and cumulative advantages. Peer review is criticized both for not identifying mistakes and fraud, and for being too conservative – to curb innovative and ground-breaking research (Lee 2015). It is furthermore criticised for bias against young scholars and women when basing assessments on applicant's track record (Guthrie et al. 2019). More generally, grant peer review may add to cumulative advantages in research: those with the most resources to write proposals and best track record on grants and publications are best positioned to win. Hence, pluralism may be sacrificed on the altar of grant review. Notably, empirical studies on biases in the review of grant proposals are not conclusive – biases vary by context and further research on the topic is recommended (Arensbergen et al. 2014; Guthrie et al. 2019).

Randomness at multiple levels. The outcome of grant review is contextual. It depends on who assesses what in what way. And contextual elements leave a lot of room for randomness in the outcome. Your chances in a review process may depend on:

- **The proposals:** The characteristics of the other applicants/proposals, and how many are com-

peting for the grants.

- **The reviewers:** The agendas and motivations of the reviewers, what time they are willing and able to spend on the review job, and which reviewers are assigned to assess and rate your proposal (i.e. 'luck of the reviewer draw', Cole et al. 1981). The reviewers' different frames of reference to understand the proposals, e.g. what specific research topics and research environments they are familiar with, and what time they use to expand their frame of reference. If there is a panel meeting for rating and ranking the proposals, the reviewers' scholarly standing and negotiation skills may also impact the outcome.

- **How the review and selection process is organised:** A given proposal may have very different prospects when it competes against proposals in other fields, compared to a process with a separate budget line for each field. In the former situation, chances may depend on the presence and negotiation abilities of field representatives on a review panel. Likewise, with a separate budget line for interdisciplinary proposals or young scholars, these proposals may have better chances for funding than in a process where they compete against disciplinary proposals and senior scholars. Moreover, rating scales, criteria and budget restrictions may have substantial effects on the outcome. E.g. openly defined criteria give more leeway for adapting assessment to different fields and ensuring scholarly pluralism. Assessing scientific and societal value separately may give different results than assessing this jointly. Rough rating scales, heterogenous panels, open processes and high success rates give more leeway for innovative/risky projects (Langfeldt 2001).

Generally, there is more room for randomness when success rates are low. When only a few among many projects that may appear equally important and promising are to be selected, the so-called "luck of the reviewer draw" may play a more prominent role in the process. Under such circumstances, success appears both more unlikely and more unpredictable.

3. How to improve grant review

Grant review systems and principles were built up in a time with success rates around 30-50% and fewer demands on expert reviewers. Hence, less time was spent on writing rejected proposals and more applicants were satisfied. In an expanded research system, with high competition, very low success rates and reviewer fatigue, measures need to be taken to ensure reviewer competence, transparency, fairness and impartiality:

Increase competence and transparency: To ensure reviewer competence, one needs to (1) attract and motivate expertise for proposals within specific fields and for interdisciplinary proposals, and to (2) enable the selected reviewers to do a good job and to enhance their review competences. To achieve the first, **motivation**, more involvement of the academic society in identifying reviewers and applicant-nominated reviewers may be needed. At the same time, one must take into consideration potential positive bias of applicant-nominated reviewers (Severin et al. 2020). Additionally, in some contexts it may be helpful to include local/domestic reviewers who know the research environments and the funding instruments, and not only detached foreign scholars who may be less willing to devote time in the review. Notably, studies indicate that researchers see grant review assignments as part of their scholarly duty and a service to their field and the research community, while a main reason for declining assignments is that the proposal is outside their field of expertise (Publons 2019). The second element, **reviewer learning**, may be facilitated through discussions in review panels (rather than only individual review), interviews with applicants, as well as follow-up of the reviewers providing them with information about the result of the selection process and the outcome of the projects. Furthermore, both motivation and reviewer learning may be promoted by involving the reviewers in developing the review criteria and processes.

Increase fairness and impartiality: In a situation with high competition and high rejection rates, and proposals based in different fields of research competing against each other, potential field biases need to be monitored. Quality notions vary between research fields and may cause biases in multidisciplinary panels: When some fields have clearer criteria for scientific success and/or higher visibility of successful groups, these fields may more easily succeed in multidisciplinary panels. Adequate measures may be extra efforts on **matching reviewer expertise** to proposals (same field and scholarly perspectives) and **monitoring success rates** for different fields. Moreover, for interdisciplinary grants,

allowing proposals with divergent assessments to be reassessed and reconsidered may reduce biases. A partial **randomisation** (e.g. a lottery among all proposals rated high by reviewers) may also help reduce biases, in addition to saving resources spent on the selection of process (Roumbanis 2019).

Policy implications

- *Low success rates and reviewer fatigue put a pressure on trust and competence in grant peer review.* There is no sole best practice of grant review. Proposal requirements and re-view procedures need to be adapted to the size and aims of the funding scheme, and the number of proposals. Some schemes may promote unconventional research and diver-sity in the funding portfolio with a partially randomised selection procedure, others may obtain this by selecting and training reviewers dedicated for the aim. *When success rates decrease, the selection processes will need adaption to reduce the burden of the appli-cation and review process and new measures to ensure trust. When a high proportion of re-viewer invitations are refused, one should consider involving the research community more in identifying and motivating compe-tent reviewers.*

- *Distrust needs to be met by transparency.* Transparency is a key characteristic of good grant review. This demands public informa-tion about the selection procedures, review panels and criteria, adequate feedback to applicants, the possibility for applicants to indicate competent (and incompetent) ex-perts for their proposals, and when feasible allow applicants to respond to reviews (re-buttals). Moreover, involvement of and trans-parency for the reviewers in the review policy and process may give more motivated re-viewers and more adequate reviews.

- *Competence and impartiality need to be matched.* The main task in organising grant review is to recruit competent, dedicated, and impartial reviewers; i.e. reviewers should be close enough for a thorough and dedi-cated review (preferably in the same field as the proposal), but still distant enough to be impartial. Moreover, they should be able to review and compare multiple proposals and have no ties to any of the research environ-ments involved in the proposals. This de-mands good overview of review expertise and clear regulations and monitoring of con-flicts of interest and biases of applicant no-minated reviewers etc. It may also demand some compromises, e.g. conflicts of interest

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regulations that are not too strict to allow competent and dedicated peer review.

Further reading

Guides and policy papers

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