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Peer Review in Higher Education and Research

Position Paper

Preliminary remarks

In this position paper, the German Council of Science and Humanities addresses the frequently expressed concerns of scholars and researchers, and also research funding organisations, about an excess of peer reviews in the German higher education and research system, and associated with this, the overburdening of some groups of reviewers and a resultant loss of quality. In order to examine these concerns, the Council's research committee reviewed contributions to the discussion by people and organisations involved, as well as findings from higher education studies and science studies. External experts from academic and research institutions and funding bodies supplemented the survey in consultations, and by written statements and evidence from their own information resources, enriching it considerably with their insightful views. The German Council of Science and Humanities is particularly indebted to them.

The Council's key objective for this position paper is to demonstrate the enormous importance of peer review for the higher education and research system, and to promote a considered approach to review processes. To this end, the Council has not merely taken account of the perspective of scholars and researchers involved in review tasks, but has endeavoured to carry out a broader examination of the review system, its development over recent years, its achievements and challenges. In the recommendations derived from this examination, lastly, general guidelines are formulated and areas for potential application proposed in order to preserve and strengthen the capabilities of the review system and, more broadly, to counter the feared overloading of reviewers.

The Council organises reviewer expertise in the form of advisory services and also for the purpose of preparing selection decisions, and is therefore at the same time part of the target audience for these recommendations. This position paper takes up recommendations issued by the Council in 2011 on the assessment and management of research performance, and in 2015 on academic integrity. This position paper was approved by the Council on 20 October 2017 in Berlin.

A. Peer review in higher education and research

A.I   DEVELOPMENT AND SIGNIFICANCE

Peer reviews of all kinds play a prominent role in higher education and research in Germany today, but despite this they are hardly ever considered in context. Although the concept of 'peer review' has come into common use internationally for the review of manuscripts and proposals for research funding, today scholars and researchers act as reviewers in many other areas also. |[1] Their reviews help to allocate a very diverse range of symbolic and material resources. Written and oral reviews by scholars and researchers form the basis for decisions, for example, by journal editors and publishers about publication opportunities; by funding bodies within foundations, private business and the public sector on funding for persons and institutions; by heads of institutions on job appointments or access to infrastructure, and by juries on prizes and awards.

Scholars and researchers generally experience reiterating change between reviewing and being reviewed; their achievements are reviewed by colleagues from their discipline for publications, research funding or professorial appointments, while they can equally as well themselves be acting in those same contexts as reviewers. Today, reviews are not only an everyday part of higher education and research activities, but also frequently a prerequisite for the very functioning of the higher education and research system, in that they make quality assurance possible and help to justify resource allocations.

Peer reviews are by no means new; in fact they have a long tradition in higher education and research. Even in the earliest days of scientific and academic publishing, assessments of quality, originality and importance could promote

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| [1] Definition of peer review in Neidhardt (2010), Reinhart (2012) and Bornmann (2011). For a long-term perspective on the evolution of the peer review from disciplinary measure to the formation of a discipline cf. Biagioli (2002) and on its prevalence in the 20th century Baldwin (2017). On switching roles, cf. Langfeldt/Kyvik (2011).

or hamper publication, as could considerations of compatibility with the ideas of the particular persons or institutions empowered to make decisions. To this day, barriers to the dissemination of scientific knowledge (gatekeeping) are variously motivated and can extend to the point of censorship, which can still be observed today in the higher education and research sectors of several nations.

Publishing provides an exemplary demonstration of the fact that review by scholars and researchers from the same field means both selection and construction. The selection function is understood as the selection of manuscripts that, in the reviewers' opinion, appear worthy of publishing and disseminating either directly or after a further revision. The construction function, on the other hand, involves the imposition of standards with which reviewers shape the research community either through adaptation or exclusion of topics and methods, i.e., decide on what is important, or will be recognised or even honoured. Gatekeeping is thus an ambivalent component of the review process, which, although it serves as quality assurance, can also delay innovations and obstruct paradigm shifts. |[2]

The field of publishing is considered to be the origin of today's peer review system and is also the focus of the current discussion about the advantages and disadvantages, purpose and design of peer reviews in higher education and research. This is due to its crucial importance for the dissemination of research results in a global context, the fast pace of digitalisation of academic and research communications in the last two decades and the commercial interests of small and large publishing houses and also other service providers that are frequently associated with publishing. A great variety of criticism, in some instances severe, of the quality, effectiveness and effort involved in the review system is particularly concentrated here, but also a widespread esteem, to the point of its being judged to be the only alternative. |[3] Furthermore, the majority of scholarly examinations of peer review are concentrated on the publishing area as are, finally, most of the attempts to change or even abolish the review system. |[4] However to date there has been little attempt to examine findings from investigations and experiments in the publications area to see whether they are transferable to peer reviews in other areas of higher education and research. The aim of this position paper is therefore to undertake as broad an ex-

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|[2] On gatekeeping specifically through reviews, cf. Fitzpatrick (2010) and Siler/Lee/Bero (2014).

|[3] The debates about the spread of "revieweritis" or "evaluitis" extend far beyond the publishing sphere, however, cf. Frey (2008) as an example.

|[4] On criticism of, and regard for, peer review in the publishing area in particular, based on surveys of scholars and researchers, cf. Mulligan/Hall/Raphael (2013) and from a publisher's perspective e.g., Taylor & Francis Group (2015). Inventories of reform proposals for the manuscript reviews, cf. Research Information Network (2015) and Kovanis et al. (2017). The International Congress on Peer Review and Scientific Publication, which was initially limited to biomedicine, and the Peer Review Week have established themselves as events in recent years. Both focus on the field of publishing.

amination of the peer review process as possible. However the intention here is not for the recommendations once again to address those developments seen in recent years in the evaluation and management of research performance. These relate, e.g., to the frequently simplistic use of publication figures and third-party funding figures in rankings, evaluations or even procedures for performance-related resource allocation with various negative incentives for scholars and researchers. |5

A.II   CHARACTERISTICS AND FRAMEWORK CONDITIONS

By performing review activities, scholars and researchers participate in scientific discourse and make a valuable contribution to the self-management of the higher education and research system. They work actively towards the further development of their field and also towards quality assurance and resource management in other areas of scholarship and research, and in the process gain knowledge about subject-specific, individual and institutional developments.

Both the collective and individual benefits of peer review for higher education, research and society are associated with a great deal of effort on various parts, however. |6

_ Researchers commit time to writing up reviews or preparation and follow-up, travel and participation in site visits, commission or jury sittings.

_ The bodies organising the review take responsibility for recruiting the reviewers, for formal preliminary appraisals of the objects to be reviewed, preparation of information and in some cases also travel costs or other allowances.

_ The persons being reviewed make information and data available for the respective reviews in line with specific requirements.

The resources associated with this effort, in particular the time invested by reviewers, are no longer available for other tasks in teaching, research or transfer.

Reviewing tasks are considered an integral component of the duties of scholars and researchers in the German higher education and research system, which

| 5 The German Council of Science and Humanities addressed problematic trends in the assessment of research achievements as early as 2011 and issued specific recommendations for handling them better, cf. German Council of Science and Humanities (2011).

| 6 Internationally, there are only a few studies on a cost analysis of the peer review process, e.g., for Great Britain, on the review of funding proposals cf. Research Councils UK (2006) and on the international publication system cf. Research Information Network (2008).

they perform as a service to the expert community and for the benefit of society, in line with their professional identity. The assumption of these tasks is not regulated, and can, in legal terms, also occur in a subsidiary or an honorary role. Some reviewer activities are recompensed by relief in other areas or with non-monetary recognition, for example by advisory and evaluation institutions publishing the names of the reviewers in order to generate visibility for their service. Predominantly, reviews are not separately remunerated. However, many publishers grant their reviewers discounts on purchasing publications or on publishing fees. Moreover, lump-sum allowance for review services from both national and international bodies have increased over the past years. The information available about the amount and prevalence of these lump sums is unsatisfactory, however. A variety of motives appears to be behind their introduction:

_ Personal compensation: Some scholars and researchers would like to receive compensation in review situations that they perceive to be imbalanced, for example when they carry out reviews for funding institutions from other countries and are not able to submit their own proposals there in the same way in the hope of receiving funding. Many people commissioning reviews believe that they cannot recruit reviewers without incentives, or at least not the reviewers they want.

_ Institutional compensation: Some universities and research institutions would like to be compensated when scholars and researchers assume time-consuming reviewing duties that restrict them in the performance of their other duties at their home institutions.

The understanding of the reviewers' closeness and distance to the object of the review is variously defined. What constitutes a conflict of interest, or at least is apt to give the appearance of a conflict of interest, and what constitutes responsible handing of the information advantage provided by reviews is not uniformly defined across subjects and procedures. Close scientific cooperation, dependence in supervisory or employment relationships and also commercial interests are some of the typical circumstances that are understood as being problematic for a fair review. Institutions that request reviews generally provide guidance on the issue of conflict of interest in the guidelines or forms with which they collect declarations from the reviewers about the absence of conflict of interest before the written reviews can be used or participation in commissions and committees can occur. |⁷

| 7 For a brief overview of review standards of European research funding bodies, cf. European Science Foundation (2011).

Finally, the degree of transparency and anonymity possible and necessary in various review processes is not uniform. This particularly relates to the question of who may learn the identity of reviewers and the persons or objects under review, as well as obtaining knowledge about the reviews themselves. Answering the question of how transparently review processes should be handled depends not only on the object, procedure and intended use of the review, but also on the perspective on the review process. While reviewers frequently see their anonymity vis-à-vis the person reviewed as a necessity in order to be able to formulate their criticism clearly, and some predicate their willingness to perform a review on this, those reviewed desire as much information as possible about the reviewers and the reviews in order to be able to judge fairness and a good match with the subject.

A.III FORMS AND AREAS OF APPLICATION

There is no recognised classification system for the entirety of peer review processes, even though it is a central component of independent quality assurance and the further development of the higher education and research system. Reviews might be classified according to their objectives or the contexts in which they are performed, according to the commissioning or organising bodies, or even according to the points in the knowledge creation process at which they occur.

A broad overview of the review process, such as is the objective of this position paper, covers far more areas of peer review than just those of publications and research funding, although an exhaustive listing would not seem feasible. Hence the reviews are differentiated here according to the contexts in which they are performed, and six review groups have been created for these contexts in a first pass. The groups relate to manuscripts, material resources of various sorts, persons, courses of study, institutions and strategies. The examples in Table 1 serve as an illustration of the diverse range of activities in the peer review system.

Table 1: **Main peer review areas (examples)**

Objects	Aims
Manuscripts	
Articles in journals (also other publication types)	Selection for publication, checking of errors and plagiarism, guidance on revision
Resources	
Third-party funding or project funds for research funding	Competitive awarding of additional resources
Basic funding for research institutions	Decision-making about further funding of institutes
Research infrastructures	Decision-making about construction of a research infrastructure
Access to infrastructure	Approval of usage times/measurement times
Persons	
Letters of recommendation	Selection for positions at all career levels, courses of study or summer schools
Theses	Making determinations on successful training or research performance
Professorship offers	(Comparative) selection for recruitment
Fellowships	Selection decisions for resource allocation
Prizes	Award and allocation of resources
Courses of study	
Courses of study	Programme accreditations
Quality assurance system of a higher education institution	System accreditation of structures and processes
Accreditation agencies	Accreditation of the agencies
Institutions	
Research institute	Thematic orientation and strategic focus on fields of research
Non-state run higher education institutions	Adherence to standards for admission and awarding of titles
Discipline/subject	Benchmarking and need for development
Strategies	
Funding programmes	Improvement of funding programmes and funding strategies
Institutional structure	Strategic orientation of different parts of the higher education and research system

Source: Council of Science and Humanities

In these areas of activity, various forms of reviews by scholars and researchers can be differentiated:

_ Reviews can be performed with a retrospective or forward-looking focus, for which reason the terms "ex post" or "ex ante" observations are used in the context of institutional or programme evaluations.

_ Review processes can be performed in writing (review) or orally (e.g., meetings of a committee/panel discussion/advisory board, inspection/site visit).

_ Reviews can be structured in a largely informal fashion, but can also be standardised, for example with predefined forms that contain fields for comments or specific options for answering and that call for various aspects to be graded.

The reviews are often embedded in contexts in which review, assessment and decision are separated, at least ideally. This separation is intended to enable the preparation for the decision to be fed by various perspectives that view and weigh up a research performance differently. For this reason, dissent between reviewers should not generally be considered to indicate a lack of reliability of reviews and can definitely be used constructively by the requesting body. In practice, it is mainly review and decision that can be separated, since in most cases reviewers are asked for evaluations or recommendations, and the reviews are in turn classified and also evaluated for the purposes of decision-making.

The focal points of demand for peer review in recent years can be identified as manuscript reviews, professorship offers and proposals for third-party funds for research funding. |[8] However, review processes in different areas require different amounts of effort. A single manuscript review generally involves considerably less effort in terms of time spent than a review of an institute, which involves a site visit, or a comparative review on the work of several researchers that is prepared for the deliberations of an appointment commission. However, far more manuscript reviews are required each year than reviews for professorship offers or evaluations of institutes. There is no quantitative data available on the time required for various types of reviews.

|[8] On this subject, see Scientist Surveys 2010 and 2016, cf. Böhmer et al. (2011) and Neufeld/Johann (2016), which are archived for further evaluations at the Research Data Centre of the German Centre for Higher Education Research and Science Studies.

B. Challenges

Today, high demands are placed both on reviewers and the bodies organising the review processes. Reviews are expected to make judgments on the quality, originality and significance of the objects or persons under consideration, uncover academic misconduct and issue recommendations on decisions. Ideally, reviews should be optimally prepared for by the organising institutions, be conducted quickly and efficiently by reviewers who are both competent in their subject and well regarded, be performed impartially and without prejudice, and with the opportunity for comments or appeal.

The expectations applying to reviewers' performance have continued to grow over the past years. For example, in some proposal reviews it is expected that subject-overarching aspects (interdisciplinarity, transdisciplinarity) will be reviewed along with subject-related aspects. Other newer areas for review include teaching, transfer activities, data management or even governance structures. Cases of academic misconduct that become apparent, e.g., when publications that have already been reviewed are withdrawn, periodically raise the question of what can be done in the review system to check errors and safeguard the rules of good scientific practice. Finally, in some areas such as, say, manuscript reviews, the results of the review are now expected to be available very quickly in order not to be disadvantaged in the competition for new findings by delays in the review process.

There has been hardly any focus to date on the organisations that request and organise reviews, their procedures, recruitment methods and instruments for reviewer support. Today more and more organisations are seeking scholars and researchers to carry out reviews, and in the process frequently competing with each other for reviewers as a resource. This makes the selection and recruitment of specialised but also versatile reviewers more challenging, with the result that services are emerging that might help support the recruitment process (e.g., commercial databases for reviewer searches). In addition, document preparation for the reviewers becomes an issue in situations where elaborate reviews have to be designed, anonymisations performed (e.g., in so-called double blind review processes, where reviewers are not supposed to recognise the

person being reviewed) or where documentation is to be augmented with clarifications in an informed peer review (e.g., clarifications of citation data). Supporting software products are increasingly being developed for plagiarism checks (e.g., the search for identical passages of text lacking references), but also to check methodological errors or manipulated data sets and images (e.g., image manipulation/image doctoring). The bodies requesting the review therefore need to decide whether they can, and wish to, support the scholars and researchers performing the review in future through partially or completely automated processes, insofar as the functioning of the latter is understood and judged not to be critical.

Reviews in proposal-based competitive processes, in which ultimately only a few objects out of the very many to be reviewed can be selected (e.g., manuscripts in highly regarded journals, lectures at highly sought-after congresses, funding proposals in programmes in high demand) pose particular challenges. A low success or approval ratio means that the selection that is made on the basis of the reviews must frequently be made between several similarly suitable objects or persons. In these situations, many reviews are only used for rejection purposes. This raises questions about process management for reviews, as well as about options for easing the burden on reviewers. Formal preliminary appraisals for suitability for review are already used for proposals or manuscripts. In some areas, options for making an initial selection (e.g., reduction of the number of objects or persons to be reviewed through screening in bodies that organise reviews) and presorting (e.g., into clearly good, clearly bad, unclear funding cases) are increasingly being used.

Further challenges relate to how to deal with the differing traditions of the discipline cultures with regard to their review language (e.g., inclined towards a critical or a euphoric tone), but also the quality of individual review performances delivered by researchers, for example in respect to punctuality and diligence. Organising bodies here face the challenge of dealing with reviewers who approach their tasks in a superficial, biased or formalistic manner, give one-sided preference to quantitative information over qualitative, compose self-serving reviews or reviews that support schools of thought, or, in extreme cases, suppress scientific innovation or even paradigm shifts. The same applies to proposals for interdisciplinary research programmes, which frequently fail due to the reservations of individual disciplines. This can also be related to the selection of the reviewers or the design of the process.

The demand for reviews in higher education and research has risen noticeably in the past years. There seem to be three main reasons for this: an increased need for reassurance when taking decisions; the requirement, partly related to this, for reviews in the context of new competitive procedures, and a growing demand for reviews in procedures that have been in place for some time.

The heightened need for reassurance affects many areas of society and has also led to changes in the management of the higher education and research sector. Today, reviews are in demand not only for internal use in higher education and research in their classic functions of quality assurance and filtering (selection and construction) but also for other purposes, such as, e.g., the strategic orientation of research and higher education institutions or their sub-units. However, many reviews appear to be commissioned primarily to gain legitimacy for management decisions, which would then constitute an expression of the inability or reluctance to make decisions. Furthermore, the temptation also exists to supposedly upgrade projects and funding instruments by means of a particularly elaborate review process.

New demand for reviews has emerged in recent years, in particular due to increasing funding by competitive proposal procedures and the proliferation of elaborately designed quality assurance, both in research and in teaching. For example:

1 – Research projects are more and more frequently financed through third-party funding, which generally requires that the respective proposals be reviewed.

2 – Major competitive funding processes in Germany such as the Excellence Initiative/Strategy, the Teaching Quality Pact, the Leading-Edge Cluster Competition, or the Innovative University programme require reviews involving varying amounts of effort. |9

3 – Candidates for junior professorships or other early career support programmes have to be selected and go through an mid-term review.

4 – Scientific advisory boards have been created not only for individual institutions but also increasingly for sub-units of higher education and research institutions, individual funding programmes and research programmes, partly in order to hedge management decisions.

|9 Excellence Initiative/Strategy (*Exzellenzinitiative/-strategie*), the Teaching Quality Pact (*Qualitätspakt Lehre*), the Leading-Edge Cluster Competition (*Spitzencluster-Wettbewerb*), or the Innovative University programme (*Innovative Hochschule*).

5 – Individual courses of study, and increasingly the entire quality assurance systems of higher education institutions, are reviewed in accreditation procedures, for which accreditation agencies look for reviewers competent in the respective subject. The agencies in turn undergo quality assurance themselves at regular intervals through the Accreditation Council's review procedures. |[10]

6 – Students now often require letters of recommendation in various forms for applications to masters courses, and likewise for study periods abroad and fellowships, which can now be granted by juries of reviewing researchers in larger numbers in Germany than was the case even a few years ago due to increased public funding.

Finally, alongside the growing demand for reviews due to changed expectations and the new contexts in which they are used, there is an ongoing increase in existing demand due to the expansion of the higher education and research system. An increasing number of project proposals is being submitted by the expanding academic and research institutions to a very diverse range of funding bodies, which have often had more funds to allocate in recent years. More articles that went through one or generally more reviews before publication have been published in refereed journals. Such multiple reviews tie up more resources in the review system than necessary. This category includes repeated reviews of the same work, e.g., in the case of manuscripts and funding proposals that are initially submitted to particularly prestigious journals or funding bodies, and after rejection go through one or more further reviews with other publications or funding bodies until they are finally published, obtain funding or receive a definitive rejection.

It is not clear how strongly the growth in demand for reviews is connected with the fact that reviews are charged with additional significance. For example, reviews that leed to a positive assessment have also become a performance indicator. Reviewed third-party funding from certain funding bodies, and also the number of reviewed publications in certain journals, to both of which major importance is attributed, are treated as a distinction in many scientific institutions in the competition for the allocation of performance-based basic funding. This increases the pressure on reviews, and while it may create the impression that high rejection rates at reviewed publications or conferences are an indicator of quality for the chosen few, this is not the case when a whole-system perspective is adopted on the review system and the effort involved. |[11] It is a challenge to determine an acceptable relationship between cost and benefit and not to allow management costs to climb disproportionately.

| [10] Cf. German Council of Science and Humanities (2012).
| [11] Cf. German Council of Science and Humanities (2011).

Review activities in the higher education and research system are – like other tasks – not evenly distributed across the researchers active in it. In fact, the available information indicates that around two-thirds of personnel are not very active as reviewers, and a third are moderately to highly active as reviewers, with a small group of persons carrying out review tasks on a considerable scale. |[12] These persons also often have the experience over time that, as their expertise grows, they receive noticeably more inquiries about reviews.

The uneven distribution of reviewing activities can be due to a variety of causes: The recruitment patterns of organisations requesting reviews are similar in some respects. For example, journal editors or funding organisations alike make calls on prominent scholars and researchers – in Germany, for example, the elected review boards of the German Research Foundation. Although there are individual organisations that record the number of their review requests in their own databases and have a self-imposed upper limit on inquiries made to certain individuals per year, this cannot prevent other bodies that request reviews from wishing to recruit the same persons, since no central record of review activities exists. Fundamentally, the probability of being asked again and recommended increases if there is a willingness to assume review activities and they are carried out to a high standard. To date, there are also few systematic efforts to diversify and expand the group of reviewers in the higher education and research system. Bodies organising reviews mainly approach professors; this group has made up an ever-smaller proportion of the overall staff at higher education institutions in Germany over recent years, however. Individual organisations are now increasingly attempting to involve reviewers from overseas; these efforts are still comparatively new, however. |[13] The demand for female scholars and researchers as reviewers has risen so much in some areas that it can result in a disproportionate burden for this group, which continues

| 12 For Germany: *Wissenschaftler-Befragung* (Scientists Survey – only in German) 2010 and 2016, cf. Böhmer et al. (2011) and Neufeld/Johann (2016). Review activities are defined more narrowly here than in Table 1 on the main peer review areas, however. It is not possible to draw conclusions about an increase or decrease in various review activities over time based on the present data, since the corresponding data has not been collected over the longer term. In relation to the overall workload involved in review activities, an average of eight per cent of working time is stated, based on self-reporting and across all status groups. From the perspective of biomedicine, with comparable results relating to the concentration of the review activities on a few people, cf. Kovanis et al. (2016). For a report on experiences with the clustering of different reviews cf. Diederich (2013).

| 13 The German Council of Science and Humanities has asked the Alexander von Humboldt Foundation, the German Academic Exchange Service, the German Research Foundation, the Fraunhofer Society, the Helmholtz Association, the Leibniz Association and the Max Planck Society, along with four major research-funding foundations, for information on the number of reviewers required and the time spent for panel meetings. The level of information at the organisations surveyed is very varied, meaning that it is almost impossible to compare quantitative data. In 2016, the Council itself began to record, for its own purposes, the number of days spent by its members and external experts in meetings of working groups.

to be under-represented at higher education and research institutions in Germany.

As far as the composition of various reviewing groups and the recruitment of new and younger reviewers, in particular, are concerned, there are no generally recognised procedures such as structured guidance or mentoring as part of early career training, which is indicative of a lack of awareness of this challenge. It is not possible to ascertain the extent to which knowledge about the review process is passed on in an informal manner, say through review activities being handed on unofficially and without consultation with the commissioning institutions to colleagues for "pre-review" (e.g., the drafting of a written review), meaning that review activities are actually spread across more shoulders than previously assumed.

Finally, it seems likely that many scholars and researchers who are approached for reviews reject the necessary commitment either in some instances or on principle, knowing that the review will compete with other teaching, research, transfer and self-governance tasks for their time. A general "crisis of solidarity" in the sense of a widespread, active refusal of review activities problematic for the higher education and research system cannot be assumed, since little is known to date about the precise effects of individual incentives on the acceptance of review work. This applies not only to intrinsic incentives – say, service to the subject community, a sense of institutional spirit, exchange among colleagues, securing opportunities for influence – but also to extrinsic incentives – say, lump-sum expense allowances for participation in meetings.

If a growing number of review tasks should continue to be distributed across a number of reviewing researchers that does not grow correspondingly, collateral effects will be inevitable. The reviewers can either spend ever less time on other duties, or must produce more reviews in the same amount of time, creating a growing risk that the quality of the review work will suffer – with consequences for decision-making downstream. This explains the observation made by a number of research funding bodies, in particular, which report increasing rejections from reviewers they have approached, without a systematic recording of rejection rates and reasons having occurred to date, however. Nevertheless it can be assumed that the demand for reviews overall has grown more than the number of the reviewers who are regularly approached.

B.IV UNINTENDED CONSEQUENCES OF REVIEWS

The increasing proliferation of reviews in the higher education and research sector can bring a series of disadvantages along with the numerous advantages of autonomous quality assurance. Various adaptation effects and false incentives that occur in advance of, and also during, the review processes, are problematic. However these are not just attributable to increased review processes,

but are also frequently associated with increasing competition in higher education and research. This competition is not just restricted to reputation, but also affects resources. Tactical adaptations to the competition for resources that prevails can, however, mean that researchers attempt to spread the risk of their funding proposal failing by submitting more proposals to a variety of funding bodies, whereby the volume of proposals to be reviewed is further increased. The optimisation of proposals with the help of advisory offices in research institutions, as well as by private agencies, raises the question of how much preparatory effort is appropriate for applicants. Even more problematic adaptation effects concern changes to research designs as a result of the assumed preferences of reviewers or of the organisations requesting reviews. These can be purely terminological in nature, but also related to content, and can involve unrealistic pre-planning of outcomes or the choice of inadequate places of publication solely for the sake of the timely presentation of published findings in the expectation of a particular review.

Other potential effects of reviews can be the disadvantaging of proposals with unclear prospects of success and thus the promotion of the mainstream. The challenge here consists in reflecting on the fact that established procedures can produce certain flaws in decision-making. For example, they can result in an unimportant or wrong submission being funded, with the consequence that resources are not allocated optimally. Knowledge creation could suffer even more in the longer term if the important or right submission cannot be funded and hence cannot be published or even researched. The costs of such flaws in decision-making depend on the particular context of the review process (e.g., professorship offer that is expensive in the long term versus inexpensive publication). Some of the criticisms of the review system relate to fundamental challenges that arise independent of the increased demand for reviews, but become more important as individual researchers are less able to avoid reviews. For example, various investigations have dealt with reliability, validity and unconscious bias in peer reviews. |[14] The scientific investigations available, e.g., on the varying extent of reviewer agreement, on gender-specific biases of review outcomes or on conservative evaluation criteria, mainly concentrate on a subsection of review activities that has increased significantly over recent years, i.e., the reviewing of journal manuscripts and funding proposals. However, many issues have hardly been investigated to date, for example standards against which the quality of reviews can be measured, how that quality is evolving over time, and whether with the increased demand for reviews is accompanied by a tendency to make more positive assessments, analogous to the grade inflation observed in some instances in higher education examinations.

|[14] As an overview: Neidhardt (2010), Bornmann (2011) and Lamont (2010). For a critique of research approaches to date, cf. Hirschauer (2004).

22 Considering the importance of the review process for the higher education and research system, its functioning and its effects, both positive and negative, appear to have been researched astonishingly little, and very selectively.

C. Recommendations

Commitment to peer review is part of the sense of professional identity of scholars and researchers. Their commitment makes an indispensable contribution in many areas of the German higher education and research system to its autonomous quality assurance and future development. The value of a functioning review system can therefore hardly be overstated. However, there are various indications, which need to be taken seriously, that changes to the peer review system are necessary. To that end, the Council has formulated three key recommendations below. Each of these recommendations consists of one general guideline and specific potential applications with options for more extensive changes that show promise for trialling and pursuing further. The goal of the recommendations is to assure the quality of reviews and the decisions based on them. To this end, the review system must be better organised, and an efficient use of the precious resource that is reviewers must be encouraged, thereby countering the overburdening of a section of reviewers who are in high demand. At the same time, the review system should not be overloaded with expectations. This means that, for example, peer review can not be the only possible avenue for preventing academic misconduct.

Recommendations extending beyond the scope of this position paper have already been issued separately by the German Council of Science and Humanities on the assessment and management of research performance, addressing the problem of distorted evaluations and problematic incentives due to overemphasis on publication and third-party funding figures in rankings, evaluations or even procedures for performance-related resource allocation. | [15]

| [15] German Council of Science and Humanities (2011).

Guideline:

The increased demand for reviews that has emerged over recent years requires a considered response and a focus on the essentials. To achieve this, well-established review procedures should be regularly examined and alternatives tested. The function of the review process in each case and its decision-making consequences should be examined more closely to ensure that an appropriate differentiation is achieved, and that processes are tailor-made and reasonable.

Disclosing demand for reviews and creating procedural transparency: Many different stakeholders within and outside the higher education and research system approach scholars and researchers about review work independently of each other – for example, public and private funding bodies, authorities at federal and state level through their ministries or via project management agencies, higher education and research institutions, and also publishers and editorial departments. These institutions should make the resource consumption involved in this process visible, for example through summary information on the number of reviews required, or the time spent on reviews or reviewer meetings each year, which can be processed statistically with reasonable effort. Together with information in compact form about the review processes used in each case, this would improve the information available about the use of resources, and increase awareness of the associated effort.

Re-examining review processes and reducing them to the essentials: Those who commission reviews should not only monitor their resource consumption, but should also regularly review the procedures they employ in relation to their suitability for purpose, quality and cost/benefit. The burden of justification for peer reviews always lies with the commissioning body, which must be able to give plausible reasons why reviews by scholars and researchers are necessary in each particular case, (e.g., added value of a scientific advisory body of a research programme or institute) or could not alternatively be undertaken by other experts (e.g., programme evaluations by specialised agencies or research institutions). This also relates to the specific procedures chosen in each case and the cost associated with them. The chosen supporting information (e.g., utilisation of the research core data set or newly collected data), the number of reviews requested (e.g., one, two or more written reviews for a manuscript), the structure of the review process (e.g., one- or two-tier procedure, retrospective or forward-looking perspective) or even the intervals of regularly occurring re-

views (e.g., frequency, every 5, 7 or 10 years) need to be justified. | [16] In each case, the relationship between the individual benefit of reviews (e.g., for management decisions) and the securing of resource allocations for subjects) and the cost of reviews should be weighed up (e.g., *de minimus* rule for reviews of proposed funding). | [17]

Trialling preliminary appraisals and presorting: Entities such as the head offices of funding bodies, project management agencies or the editorial departments of journals that organise reviews should advance the trialling of options for preliminary appraisal and screening in order to reduce the workload involved in reviewing. Proposals, applications or manuscripts are screened in such procedures (sometimes referred to as *biage* or *triage*) according to defined criteria (e.g., incomplete, unsuitable, lower quality), and presorting is then performed, for example into clear cases for rejection, clear cases for funding and a 'mid-range' comprising unclear cases and those that require careful review. There should be a mutual exchange of information about the effectiveness of procedures trialled for pre-appraisal and presorting, at least between public bodies that commission reviews.

Making processes more efficient: Determining the effort that is justified for peer reviews remains an enduring task. The commissioning organisations need to trial options for improving and simplifying existing procedures. Various publishing houses are experimenting, for example, with review transfer ('portable reviews') in order to reduce multiple reviewing of the same manuscripts in a publisher's various journals. | [18] A related approach is the utilisation of two-tier procedures in which, in competition for research funding, say, a selection of outlines or short proposals of a specified length is made before a complete proposal is submitted. Where the objective of the competition has already been clearly defined, such a procedure can also reduce the workload for those reviewed and should be used wherever this is useful and feasible. The volume of information that reviewers require, for example in evaluations or proposals for research funding, should also be limited by the organising bodies by only forwarding the information relevant to the forthcoming review and decision based on it.

Improving error control by involving those reviewed: Insofar as tenable and possible with a reasonable amount of effort, those reviewed should be granted opportunities to correct errors by commenting on peer reviews before the latter feed into decision-making processes. This can clear up misunderstandings

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| [16] Cf. on research core data set German Council of Science and Humanities (2013) and on longer evaluation intervals German Council of Science and Humanities (2011).

| [17] As an overview of alternatives in research funding cf. Guthrie et al. (2013).

| [18] Cf. Kovanis et al. (2017).

and misinterpretations in review processes and avoid the submission of a fresh application, which would in turn require further reviews. Demands for further appeal proceedings (so-called rebuttals), which would involve more effort by comparison, could also be countered in this manner. In order to be able to estimate the effort involved in such modifications, e.g., in research funding, opportunities for commenting on reviews should be trialled initially in selected areas. |[19] However, many bodies that request reviews fear that disclosing the identity of reviewers, or even of parts of their review, while maintaining anonymity will form a significant additional impediment to recruitment, since in many cases willingness to participate is predicated on a guarantee of the anonymity of the individual and the confidentiality of the review.

Introducing innovative selection procedures to counter mainstreaming: In order to counter the accusations of mainstreaming in research funding as a result of risk-averse, conservatively structured peer reviews or those upholding certain schools of thought, research funding bodies as well as other bodies that request reviews should critically examine whether the totality of their established procedures provides sufficient heterogeneity to safeguard the diversity of research approaches. There should be more trialling of incentives for the innovative design of selection procedures. If a funding programme is designed in such a way, or is so heavily oversubscribed, that it would be very difficult to give convincing reasons for a decision, a portion of the proposals that are worthy of funding could be funded by random selection. If achievements or proposals are not evaluated uniformly in the review (e.g., risky projects, paradigm shifts) participants in juries and selection commissions could be granted an effective dissenting vote (also referred to as a wild card). |[20] These experiments should be systematically evaluated in order to support the further development of the peer review system.

Choosing the most suitable reviewers: The determination of the required reviewing competencies should always trigger a customised search for reviewers (e.g., competencies, disciplines, possible conflict of interest, age/career stage, social sectors, nationality, gender, etc.). This can help achieve a greater diversity within groups of reviewers. At the same time, a larger number of persons can become involved in carrying out review activities. Both the increased utilisation of databases on commissioned reviews and also recourse to self-registered reviewers recruited in an open process can facilitate the compilation of a

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|[19] Comments on reviews (e.g., remarks about factual errors or infringement of procedural principles) are implemented in various institutional evaluations before the reviews are used in decision-making processes, for example in the evaluation procedures of the Leibniz Association.

|[20] Cf. Osterloh/Frey (2016).

diverse group of interested reviewers. |[21] Seeking reviewers by making a simultaneous approach to a whole series of potential reviewers, must be avoided, just as exclusively calling on prominent scholars and researchers must be.

C.II   PROFESSIONALISATION: SUPPORTING REVIEWERS

Guideline:

Review-writing and participation in peer review processes should be carefully prepared for and followed up on by the organising body; it can also be taught in a structured fashion in early career training in order to be able to prepare reviewers as well as possible, to achieve a high-quality review process and also to distribute reviewing duties amongst scholars and researchers more broadly than to date.

Preparing carefully for review processes: Reviewing activities should be carefully prepared for by the respective organising body through the clear formulation of expectations placed on the reviewers, the clear structure of the documentation and the careful planning of site visits or meetings. Reviewers require solid supporting information that enables them to produce authoritative reviews, while at the same time not being too voluminous. Additional material on the object of the review that has not been requested should be, depending on the context, either condensed by the organising body, or withheld altogether. Reviewers should receive hand-outs, blank forms and check-lists or predefined forms. They can also be supported through the utilisation of standardised reporting formats (e.g., research core data set) and notes on the interpretation of data (e.g., use of citation data in review processes), or on typical review pitfalls (e.g., divergent interpretations of evaluative concepts). It is necessary to carefully examine areas where reviewers can be supported by employing software (e.g., plagiarism checks, image manipulation/doctoring). Furthermore, it is the duty of the organising bodies to document potential causes of conflict of interest among those involved and to make them transparent.

Improving the range of information for new or first-time reviewers: The peer review process in the various areas of the higher education and research system should be taught more systematically than to date. Early career researchers should be able to make use of a structured range of information products. First approaches to providing this information exist in particular subject areas or in relation to review tasks in certain fields such as publishing

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|[21] Opportunities to submit an active expression of interest in reviewing exist in various funding procedures in the European Union, cf. http://ec.europa.eu/research/participants/portal/desktop/en/experts/index. html, last accessed on 25/09/2017.

both in Germany and overseas, and employ a wide variety of communication channels (such as written hand-outs, online tutorials, workshops and discussion forums). |[22] Bodies requesting similar reviews could join forces in some instances in order to produce such information, say in the funding review area, manuscript review for journals or the procedure for offering professorships. |[23]

Enabling guidance by experienced reviewers and designing it to be transparent: Information available to new reviewers should be supplemented by transparent mentoring by experienced reviewers. This is to be preferred to the option of unofficially delegating review tasks to early career researchers for preparation or handing over the entire task, which, in the absence of consultation with the commissioning bodies, is usually also in breach of the rules of academic integrity. Bodies commissioning reviews should therefore actively promote the requisite mentoring by inviting experienced reviewers who are in demand to involve early career researchers in producing a review after the necessary consultation. A corresponding knowledge transfer between inexperienced and experienced reviewers could help to gradually enlarge the base of potential reviewers in the higher education and research system. Basic rules for the relevant exemption clauses could be formulated for this purpose by the bodies organising reviews.

Enabling learning effects through feedback to reviewers: To date, researchers seldom receive feedback on their reviews. Regular feedback on the effectiveness (e.g., decisions taken on the basis of reviews) and usability (e.g., adherence to deadlines, quality, length, among other aspects) of the review could support learning processes for the persons reviewed and safeguard and help to improve the quality of reviews. This process could be supported by subsequent disclosure to the reviewers of all reviews relating to a case. Such feedback must originate with the bodies organising a review, since the reviewers are frequently known only to them. This is preferable to the practice that has presumably prevailed to date of not using reviewers again after a somewhat unsatisfactory review, but leaving them unclear about the reasons. The reviewers could also receive more content-related feedback on their assessments if the reviewed persons are given the opportunity of commenting to point out errors in the review (e.g., content-related misunderstandings of the research design or methodology, and also reviewers' conflicts of interest and other procedural defects).

| 22 For example, an initiative from England, the brochure "Peer Review. The nuts and bolts. A guide for early career researchers", which was first issued in 2012.

| 23 On raising awareness – also that of reviewers – of academic misconduct, see German Council of Science and Humanities (2015).

Enabling learning effects for the bodies requesting reviews: Where possible, the results of research on evaluations and peer review should feed into the further development of review procedures. Arrangements for mutual transfer between the bodies requesting and organising the review, and also relevant research programmes, could be considered for this purpose; these should extend beyond peer reviews in the areas of publishing and research funding. In many cases, conducting research into the peer review process is impeded by the fact that organising reviews involves knowledge that is significant when competing for the best reviewers.

C.III   APPRECIATION: ACKNOWLEDGING REVIEWING

Guideline:

Reviews deserve increased recognition as a contribution to the organisation of the higher education and research system and as scholarly and research work. The visibility and usability of review work should be increased. On the other hand, monetary incentives for the assumption of review duties should be avoided as far as possible.

Assuming responsibility: The higher education and research system relies on scholars and researchers participating in the well-established peer review system. They should actively use the associated strategic opportunities within their subjects and for the institutions in the higher education and research system in teaching, research, infrastructure and transfer, create links with other areas of society and support the effective use of public funds. However, the rejection of review tasks can serve the interests of quality and should be explicitly communicated, for example if there is insufficient competence, or if insufficient time is available to dedicate to the desired review. This also prevents the requesting institutions from increasingly approaching many reviewers simultaneously in order to recruit at least one of them within the time allowed. Reviewers can facilitate selection for a perfect fit and better targeting of requests by including details on their reviewing work in their curriculum vitae or their internet presentations and by naming reasons when they refuse reviews (e.g., poor match with the subject, conflict of interest, conflicting demands on time), or make alternative recommendations (e.g., well-matched persons with a similar competence profile).

Honouring the achievements of reviewers: Since review work performed by scholars and researchers plays a central role in academia and research, it should receive the appropriate acknowledgement. This recognition should be expressed not only in respectful dealings and professional support, but can also take other context-specific forms, as detailed below. Lump-sum expense allowances for review work, on the other hand, should constitute the exception and

not the rule in Germany, because this could weaken the intrinsic motivation for assuming reviewing tasks over the long term. Given the demand for reviews in scholarship and research, and the reiterating change between reviewing and being reviewed, universal financial remuneration for reviews is not desirable. Attention should be paid to whether competitive disadvantages arise when recruiting international reviewers that would require justified exceptions to this principle. |[24]

Trialling new approaches to recognition: While monetary incentives for taking on reviewing work should not be introduced across the board, those experiments deserve more attention that aim to create greater visibility for the commitment demonstrated by individuals through review work in the higher education and research system. As non-monetary systems of recognition, these include, for example, Reviewer Recognition platforms, Reviewer Credit systems or proposals to introduce a Review Index |[25]. These experiments are based on the assumption that the consumers of reviews currently profit more from them than do those who produce them. But even simply regularly requesting information about review activities in applications and procedures for appointing professors can lead to researchers' including review activities and profiles in their curriculum vitaes more than previously and therefore making their commitment visible to others.

| [24] The German Council of Science and Humanities currently pays lump-sum expense allowances in the Excellence Strategy and Institutional Accreditation procedures for private universities (in the latter case, only to participating students).

| [25] Re: suggestions and specific experiments in this field cf. e.g., Cantor/Gero (2015).

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In 2010, the German Council for Science and Humanities launched the publication format „position paper", which seeks to address current themes and developments in a short and pointed manner. Hence, and unlike other publication formats of the German Council of Science and Humanities, "position papers" do not extensively reference empirical data. Generally, "position papers" are flexible in terms of procedure, topic, and format.