The Peer Review Paradox: An Australian case study

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ABSTRACT

This paper discusses the results of a series of 42 interviews with Chemists, Computer Scientists and Sociologists conducted in 2006-2007 at two Australian universities. All academics perform peer review with later career researcher usually taking a greater load. The amount and type of review undertaken differs between disciplines. In general, review of journal articles and conference papers is unpaid work although reviewing books (a much larger task) often results in at least an offer of a free book from the publishers. Reviewing of grant proposals and theses does attract an honorarium, but these are insignificant amounts. Most interviewees indicated that reviewing is part of what is expected in academia, and that it offers the benefit of early access to new research results. The competing requirements of an academic's peer group and the institution at which they work has meant a sharp increase in the number of papers published over the past decade. This in turn has made finding referees difficult, and the fact the work goes unrecognised by the performance measurement process adds to the problem. The claim of certain conferences that their papers are refereed is met with some cynicism, even in Computer Science, which normally uses conferences as its main channel of peer reviewed communication. Overall these findings open the question of whether the amount of effort expended in peer review is justified.

Keywords:

Peer review, reward, scholarly communication, disciplinary differences, rejection rates, funding, conferences

INTRODUCTION

Peer review is undeniably integral to academic life, and yet it is "based in faith in its effects, rather than facts" [1]. There is little evidence to show that it has any measurable effect on the quality of manuscripts [2].

Despite these problems, all academics devote time to the task and most will argue that it is crucial to academic life.

Beginning with a description of the empirical research on which this paper is based, I will explore several aspects of peer review – the amount of time academics spend undertaking review, where and how they approach it, and their attitudes to the task. There are distinct differences between and within disciplines, and this will be briefly demonstrated. The issue of remuneration will be discussed in some depth. Due to restrictions of space, most of the material here is from the perspective of the reviewer, rather than the author or reader (academics are all three). I will conclude with three problem areas for peer review – the difficulty of finding reviewers, the question of whether peer review achieves what it is purported to do, and the issue of falsely placing the imprimatur of 'peer reviewed' on publications which clearly have not been.

I have focussed on the traditional peer review of other's papers and monographs which tends to be the bulk of any academic's reviewing load. I will, however, touch on the issue of reviewing grant proposals, and acting on promotions committees. For the purposes of maintaining anonymity, when unavoidable I refer to both sexes with the same prefaces - s/he and his/her. All monetary amounts are in Australian dollars unless otherwise indicated.

CASE STUDY METHODOLOGY

This work is based on interviews conducted as part of the empirical component of a PhD [3] looking into changing scholarly publication practices of Australian researchers in different disciplines. This has consisted of a series of 42 interviews with members of two Australian universities; the University of New South Wales, and the Australian National University. Three disciplines were chosen: Chemistry, Computer Science and Sociology. Each have distinct publishing practices, with Chemistry almost exclusively publishing in journals, Computer Science publishing in conference proceedings and some journals, and Sociology publishing a mixture of books and journal papers.

The interviews were conducted between October 2006 to April 2007, each lasting approximately one hour. The interviews were semi-structured and based on the same set of questions, but the questions were adjusted to respond to the answers given. The questions centred on the interviewee's interaction with the literature, from the perspective of a researcher, an author and a referee. While the refereeing questions asked of the interviewees were specifically about the time they spent reviewing papers, many people mentioned the time

they devoted to undertaking the whole spectrum of peer reviewing, from writing references to assessing grant applications and sitting on promotions committees.

THE DISCIPLINARY DIFFERENCE ISSUE

In conducting these interviews, it has become obvious that disciplinary differences extend far beyond simply the publishing channels used, encompassing; a publishing framework, attitudes to the 'training' of new academics, the type of contribution expected by the community, right down to the language used within the discipline. These differences are also evident in the peer review practices of each discipline.

While generally in academia there is less kudos associated with conference publications (discussed in detail later), this is not the case for Computer Science which tends to use conferences as a primary publishing medium. The review system for Computer Science conferences is comprehensive and inclusive, with papers in high-level conferences often reviewed by three people and then discussed at a meeting prior to being accepted. The turn-around for reviews is within two months, to allow rejected papers to be submitted to a lower-level conference.

Chemists can be prolific publishers. Chemistry papers, which are often short, and depending on the specialty, based around an image, are often reviewed by three people. Papers tend to be published within 6-12 months.

Sociology papers are usually reviewed by two people, and the turn-around time can be very protracted. In the case of books and book chapters, it can be several years between the writing of the work and its subsequent publication. One academic interviewed has been waiting nine years for a book chapter to be published.

What has become clear across the board is that most academics have little or no understanding of how disciplines other than their own operate, with most fixed within their own culture. Generally this does not matter, except in the case of interdisciplinary assessment for performance measurement or grant proposals.

Identifying these differences between disciplines does not imply conformity within disciplines, where individuals may, in turn, belong to sub-disciplinary groups. In addition, people who are later career researchers will often undertake a higher proportion of refereeing than those starting out. Regardless of the reasons, there are sometimes startling differences in the amount of refereeing being done by individuals within a discipline:

I peer reviewed about 70 papers last year, and knocked back a similar number of requests. – Chemistry

I would review 3 or 4 papers a year, and 1-2 grants per year. Grants probably take longer. Papers take a couple of hours each. – Chemistry

In Computer Science most reviewing is of conference papers, which tend to come in one group with a short and specific deadline. This can cause a great deal of stress during that period:

Because I am on a panel, I get about 200 papers per year to review. There are 15 people in the lab. I personally review about 40 but glance over the others. . . . Sometimes I work very long hours when refereeing comes around. – Computer Science

I am on two program committees a year which require about 20 papers each. Each paper takes 3 solid work hours. I have my own way of doing it, I lock myself away for a week … I dedicate two complete weeks to reviewing and then the committee meeting - two days of travel to the US and back. Altogether it's 3-4 weeks a year. – Computer Science

In Sociology, the publication is a mixture of books and journal articles. Obviously books take considerably longer to review, and as there are fewer books than journal articles published, some people don't have to review books at all:

Sometimes I spend a couple of days reviewing. I try not to rush because they are usually large projects and I don't want to be assessing someone's work quickly. On other occasions I spend as much as three weeks (on and off). It takes a bit of time. I review a couple of books a year, and 4-5 papers a year. – Sociology

I review 3-4 papers a year. They are about 5,000–7000 words. It takes about 3/4 to a day for the whole thing. – Sociology

Even allowing for all the differences, most academics are devoting a considerable amount of their very precious research (non-teaching) time to the task of refereeing. So what is their attitude towards this task?

THE QUESTION OF PAYMENT

It's quid pro quo

Despite considerable discrepancies in the amount of time individuals devoted to the task, across the three disciplines, most academics felt that they were contributing to their field by undertaking peer review, it was 'part of the job':

The university pays me to work full time. If that includes reviewing, marking an honours thesis for a scholar, or writing a job reference for someone, it is part of the job. - Sociology

In a reflection of Akerlof's gift relationship principle [4], many of the Chemists and Computer Scientists quantified their reviewing in terms of their own output – for the system to work, one person must review in proportion to the amount they publish:

It's a service to chemistry, it cuts both ways - if you send something in you are expecting others to referee. I'm basically a good citizen. - Chemistry

Community service is part of the job. You appreciate when you get good reviews back with thorough critical assessment. I try to do the same. – Computer Science

Refereeing is the best way to go about getting quality. You should referee at two times your publication rate. - Chemistry

Peer review even offers some benefits to the reviewer. Positive comments about undertaking peer review included the ability to have early access to papers that were in the reviewer's field. In several cases, academics use the papers sent to them as part of their attempts to 'keep on top of the literature':

A benefit [of reviewing] is it is one way of keeping up the literature. - Sociology

I regard it as simply another form of research. It is an opportunity to read something I am reading anyway. – Computer Science

I like refereeing because I get to keep up with the literature and get to see what the journals think is good stuff. - Chemistry

Somewhat surprisingly, an advantage of refereeing is its flexibility. Much of the reviewing work done by academics is done outside of work time. Chemists in particular, who are tied to their laboratories when at work, seem to appreciate being able to do this aspect of their work in a place of their own choosing:

I read the paper on the way home and write it up on the way in, I quite enjoy doing it. - Chemistry

I read the paper twice, once to mark typos and comments, then I go through it again and write up a report. Sometimes it takes up to a day, between 4-8 hours. Often they are done over the weekend. It is definitely extra work over what you do. – Computer Science

I referee articles and book manuscripts. They take a lot of time. A whole book takes three weeks of work outside the office. - Sociology

There are benefits to it … I can do it away from the office because with chemistry you are either in the lab or next to the lab. - Chemistry

These perceived benefits are, however, comparatively small given the time spent undertaking reviewing, as some people expressed:

When they arrive my heart sinks. I have always got other things to do. – Chemistry

If [I have] a batch [of papers] where I'm the expert it's onerous – it easily takes a day per paper. With 12 papers, half the month is gone. - Computer Science

I tend to write short papers. I tend to receive long ones. – Chemistry

People try not to do it as it's a lot of work. It is time consuming and there is no way for it to be recognised. - Sociology

This last point about the lack of recognition is partly due to the way refereeing is usually undertaken, where the reviewer's name is kept from the author of the work. This prevents professional or institutional recognition of the work being done. In addition, those requesting the review – publishers, granting bodies and other institutions - are expecting the work to be done for little or no compensation.

The 'no quid' pro quo problem[1]

The aforementioned gift principle is the 'gift' academics bestow upon their fellow academics. The gift is not to the publisher, or to the institution sending the PhD thesis or the grant body. They review because they expect others to review their work. None of the interviewees had received any payment for reviewing journal articles and generally this lack of compensation was not raised as an issue. But some individuals were aware enough of the politics behind publishing to express irritation at commercial publishers making large profits based on 'free labour':

I don't mind with societies but commercial journals – we provide everything, the refereeing and content and they charge us for it. - Chemistry

The attitude is, "what do we get out of publishers?" They organise people in the community to referee within the community. If members in the community coordinated it then there wouldn't be much of cost. – Computer Science

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[1] A 'quid' is a British/Australian slang term for a one pound note

On that last point, even without paying reviewers, one analysis of the cost (to the journal) of reviewing has placed the amount at approximately USD$400 per published paper if the rejection rate is about 50% of the journal [5].

While some journals do pay a small honorarium to their reviewers [6], in these interviews there was not a single instance of an academic being remunerated for their time spent reviewing journal or conference papers. In the past, some later career researchers had been offered book vouchers in exchange for their efforts, but tax changes in Australia stopped this practice some time ago.

Sociologists often do book reviewing which does incur some compensation – usually a book:

If I am given a [book] manuscript they may give me six books of choice from a publisher, but that's a surprise or a bonus. - Sociology

I probably do about three books a year (each takes about 3 days), and 3 journal articles (usually takes an afternoon). They usually give me £200 [worth] of books from their catalogue. I get nothing for journal articles, for reviewing books I always get paid in kind. - Sociology

Most academics had been offered a payment for grant proposals and for marking PhDs and Masters theses. It appears the amount is arbitrary and not only does not reflect the time spent, but some academics feel it is an insulting amount:

When I examine PhD theses from Australia & overseas, they offer money - $150-$200, its not worth it. I don't reply about the money. – Computer Science

I have compensation only when reviewing a PhD or Masters. I received about $170 for reviewing it and a two hour teleconference. – Computer Science

Being a reader for ARC[2] takes about a month per year, there are about 25 grant applications to assess. The ARC gives us $30 for a grant application which takes at least half a day. It's a token amount – insulting. Most years I haven't bothered to claim it. - Chemistry

While it appears that there is an acceptance on behalf of the reviewers that the work is unpaid, there are alternative ways of having the work recognised. One suggestion in the literature is to pay for reviews that are returned on time [7] [8]. None of the interviewees made this suggestion, although there were several calls for

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[2] Australian Research Council

some form of professional recognition by their institutions of this work. Academics in Australia are increasingly required to report and justify their employment. While there is some research benefit to reading early versions of papers, the task is essentially an administrative one that is not recognised as such by their academic institutions:

It gives you status within your community, which may not help your job. It's a lot of effort for not a lot of reward. – Computer Science

I think I do a lot [of refereeing]. There is no recognition... You can't put it in annual reviews to count for performance. – Sociology

I feel it's a worthwhile contribution and it would be nice if some consideration was given by the department. The argument hasn't been fought but it will come up because of teaching. Some things count as a service to the profession, [reviewing] should be counted. - Computer Science

While it is not the practice at either of the institutions from which interviewees were recruited, there are instances both within a few Australian institutions and some research councils world-wide, of a form of 'point' system allocated to on-time reviewers that can be accumulated with a monetary reward to the department concerned [9].

YOU CAN'T FIND GOOD HELP THESE DAYS

Not surprisingly, given the amount of time the interviewees are spending reviewing papers (and there is nothing to indicate this is not representative of all academics), finding reviewers for papers has been raised as an issue. Many interviewees indicated that pressure on them by their institution to increase their publication output means they are using techniques such as 'salami slicing' their papers. Others were writing 'unnecessary' articles not normally used to communicate with their peers, simply to meet performance measurement expectations:

I'm much more interested in writing books...I have to write articles too – it's the way you get ahead. To me it's a waste of time. The average article is read by very few people. – Sociology

We tend to salami slice our publications because of the assessment problem. We are tending to publish thinner papers than we would if we published at our leisure. – Chemistry

[Publishing] counts for performance and promotion etc. ... My promotion committee feedback is you should try more journal publication. - Computer Science

This increase in individual output in turn increases the number of reviewers required to cover the same group of researchers. Several individuals mentioned the increasing difficulty in finding people to review papers:

[Speaking as an editor] Every year it is harder to find people. More people are not doing any [reviewing]. Often I have a paper where it is very difficult to find someone. We need to find more people. At some point in the future something has to change in the process. The whole system of refereeing has to change. – Computer Science

Journals are having increasing problems locating people to review your articles. - Sociology

Editors are having trouble getting referees these days. - Sociology

This has translated into a game where people who are already doing a substantial amount of refereeing are being careful not to become too attractive to journal editors:

They look for people who are prompt but like people that reject. It means they have a reputation for being more thorough … Most editors will have a database of referees. They will give you a deadline, I only send it just before deadline, or they will send you more. – Chemistry

The more I go to international conferences and know journal editors – the more obliged I am to do it [refereeing]. – Sociology

There was at least one instance where an academic had been asked to review completely out of his/her field because of a particular skill they had:

I sometimes get asked to review educational jobs because I am competent in statistical analysis and I have to figure out what they are saying. - Sociology

The problem of finding referees is likely to worsen rather than improve over the short term at least. In 2008, Australia is about to embark on a new reporting system for funding allocations, which may affect not only publication output expectations, but also the refereeing load. It is possibly a good time to question the point of peer review in the system.

WHAT IS PEER REVIEW FOR?

Peer review of papers has two distinct functions, the first is defining a quality threshold before acceptance of the paper to a journal or conference, the second is to provide feedback for authors [10]. While it appears that the feedback is usually of a reasonable quality, in Computer Science at least, there have certainly been instances when it has been less than ideal:

I had a [conference] paper rejected. I was so disappointed that the comments I got were so poor – I'm not sure they read it properly. It was one sentence. One score had no comments. ... There has to be some justification [for rejection]. That one had nothing. I then resubmitted couple of months later to a journal. - Computer Science

Some reviews you can tell they have been done in 15 minutes – even for really good conferences. - Computer Science

This last point is probably accurate, as described by a different interviewee:

When I am the chair of a conference and we are right on deadline and still missing reviews, I am doing them in about 20 minutes. – Computer Science

One of the requirements of reviewing is to establish originality of the work – a task made substantially easier now with electronic databases. Indeed prior to the electronic database, the ability or willingness to check whether work had been previously done was apparently almost non- existent, as was spectacularly demonstrated by a 1982 study [11]. The introduction of electronic searches has changed this:

SciFinder is indispensable for saving time. I first check it to see if the work has been done before – people do cheat. I do a quick scan of literature to see how novel the work is. But if I didn't have the benefit of databases, that would take a day, so before we would not do that. Refereeing is more rigorous now with databases. - Chemistry

The originality issue is particularly acute for researchers working outside America. US authors are more likely to be favourably reviewed than non-US authors by all reviewers, but when looking at only US reviewers, there is a significant preference for US papers [12]. The internal US-focus phenomenon is so marked that, particularly in Chemistry, there are instances of research undertaken in the US being published as original when the same research had been previously completed and published in Australia.

[Americans] won't read other stuff like in the Australian Journal of Chemistry – six years after we published something, the same work was re done and published in an American journal. Nothing happened. It shouldn't happen but it does happen because the referees don't know about it and they don't have time to check. This was when I realised Americans don't read other's literature. They are incredibly insular but they do fantastic chemistry. – Chemistry

It appears that peer review is not always fulfilling the functions it is supposed to. This is possibly in some instances because the word 'peer reviewed' is being attached to publications that do not have any intention of conducting rigorous reviewing.

THE CONFERENCE CONUNDRUM

There is a great deal of cynicism about the validity of peer reviewing for conference papers in Chemistry and Sociology. Several academics mentioned the conflict of interest between making a profit with (or even simply covering the costs of) the conference, and rejecting potential attendees to the conference. Practices such as broadening the criteria for review to allow most papers through were discussed. In addition, the people who have had requests for reviews finalised by a date prior to the closing of early-bird registration suggested this underlined the need for the conference organisers to 'put bums on seats'.

The promise of the publication of peer-reviewed proceedings by conference organisers was generally met with caution by the interviewees. Several Sociologists said that unless the proceedings were printed prior to the conference, the publication was unlikely to ever eventuate:

Even conference papers that say they are refereed, everyone knows they are not. It is an error young people make, especially females. – Sociology

When DEST[3] publication points came in, the conferences changed...now there are widely different interpretations in what peer review means. - Sociology

This year in P----, people in the S---- section asked me to be a reviewer, but they sent guidelines suggesting that most papers would be accepted. - Sociology

In general the Chemists said that conferences were a good place to exchange ideas, but were not a publication output option:

Who did the refereeing? Maybe the people who put the conference together, and if you reject the work you miss out on the conference fees. They are not as objective as journals because journals have the interest of the quality of the journal to maintain. A conference might be about getting people there. Is it going to make money? Is it going to break even? - Chemistry

This problem is also occurring in Computer Science, which traditionally uses refereed conferences as its medium of scientific communication:

There are conferences organised by dubious academics who will pretty much accept anything. Conferences in exotic locations ...you can tell them apart – literally they send you junk mail inviting papers ... It is at the stage

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[3] Department of Education, Science and Training

where some academics have written joke papers. One colleague took two papers and alternated lines from each paper. It was accepted. It is really bad for academia. - Computer Science

The expression 'peer review' clearly means very different things depending on the discipline within which an individual works, the publication medium and the organization or group behind that medium.

CONCLUSION

Considering the four functions of scientific communication: registration, awareness, certification and archive [13], peer review maintains its hold in the process because it fulfils the purpose of providing a certification of the written claims made by the authors [14]. It does not guarantee correctness, importance or originality, as these can only come later once other academics have revisited the work and reassessed the contributions [15].

Given the findings from this work, it would appear that the peer review system is imperfect and beginning to suffer from the burgeoning increase in scholarly output in recent years. A system of professional recognition for the time spent refereeing would increase the speed of, and level of interest in, reviewing in the academic community. It is probably a good time to look at alternatives or adjustments to how academic output is vetted and quality standards maintained.

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