

Publication patterns of Australian academics and the impact on open access publishing

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Abstract:

This paper reports on research that is exploring the publication patterns and engagement with open access publication processes by Australian academics. The findings are based on a survey of academics that was administered in late 2006. The survey explores the publication process of the respondents' last article (last instance analysis), as well as discussion of their perceptions and general engagement with open access publication processes. The practice is predominantly one of focusing on international journals, possibly at the expense of local publications. While there is some support for open access publication processes, the last instance analysis suggests that this is not currently extensive.

Introduction

Alternative scholarly publication and access models, including open access publishing and archive repositories, continue to be debated heavily within the publishing and information communities. In 1990 Stevan Harnad coined the phrase 'scholarly skywriting' to refer to the ability that email and global communications could possibly provide in changing and enhancing the ways scholars, academics and researchers could communicate (Harnad 1990).

Since then debate has focused on identification of potential open access business models (Arms 2000); comparing citation and impact rates between open and commercial journals (Antelman 2004; Davis 2006; Davis and Fromerth 2007; Harnad and Brody 2004); the impact of open access publishing models on traditional or commercial publishing processes (Awre 2003; Falk 2004; Toledano 2003); the development of digital repositories (Bradley 2006; Harboe-Ree 2005) and making research finding conditional so that resulting articles are made available through open access means (Harnad 2005). There has also been debate about authors' engagement with open access publishing (Rowlands, Nicholas and Huntington 2004; Rowlands and Nicholas 2005; Rowlands and Nicholas 2006; Swan 2003 and Swan and Brown 2004), however this research tends to have a focus on the opinions of senior academic staff or have a UK emphasis. Only recently has there been exploration of Australian author responses to open access publishing (Kennan 2007; Mercieca 2006).

This paper presents and analyses the results from a survey of Australian academics conducted at the end of 2006. The aim of the survey is to develop understanding of the current publication patterns of Australian academics and to determine the extent that this pattern incorporates open access processes. While the survey complements earlier research, it differs by examining the publication pattern across the Australian university sector. The survey forms part of the methodology of an ongoing exploration of open access publishing within Australia.

Methodology and data collection process

A representative sample of Australian academics was emailed an invitation to participate in the survey. A total of 245 responses were received to the request to participate in this survey. While participation was self-selected, the sample population includes representation from:

- all levels of academe within Australia
- the various university networks
- academics who have a strong publication record
- a variety of discipline groups.

The sample population includes academics that have long term experience within academia or research, with 64.5% of the respondents indicating that they have been in academia for over ten years. This length of experience is spread across the academic levels. Representation from each of the broad Australian university networks is evident in the sample. This means that bias towards a particular type of

university (for example towards a research based university or towards a technical focused university) is avoided.

This survey population represents academics who are active authors, as it is estimated that the journal article output for the twelve months prior to the survey was four hundred and sixty-four articles. Over the five years leading to the survey, it is estimated that the survey population have authored 1047 journal articles. While this survey has an interest in journal publication patterns, if the respondents' conference papers are also included, then respondents have published an estimated 2,113 papers in the five year period leading to the survey. This demonstrates that the respondents have a solid authorship pattern.

Caveats on responses

The survey consists of 245 responses from across academic levels, discipline areas and universities. The responses provide an indication of the publication pattern and attitudes to open access publication options. However, as with all surveys, there is the need to determine to what extent the responses of the survey population reflect the responses or attitudes of the total population from which the respondents were drawn. Academics were invited to participate in this survey; however, as the invitees could then choose whether to participate or not, this means that the sample population is self-selected. Such an approach has the potential to present opinion that is skewed to the extremes of the issue under investigation. It is usually those who have a strong opinion either for or against the investigative issue, that tend to decide to participate. If such bias is evident in the sample population, then it tends to be displayed through a marked difference in responses between the early respondents and those who responded later. In this sample population, there is no difference in the response patterns between the first respondents and the latter and thus bias towards a single viewpoint in the sample should have been avoided.

However, to continue to determine the extent to which the responses represent the total population of Australian academics, further data will be collected through interviews with academic staff to gather additional reaction to the findings of this survey. Thus, the outline presented in this paper represents a series of trends and issues that will be further tested and explored as part of the ongoing research.

Survey aims

One of the aims of this analysis is to identify the current publication patterns of Australian academics and to determine the degree to which open access models fit into this pattern. Open access publishing models have two broad submission processes – submission of articles directly to open access journals and submission of a copy of published articles to open access repositories. In identifying current practice, it is hypothesised that submission to open journals would be low, as the drivers associated with selecting where to publish would support traditional commercial journals. However, the ongoing movement by Australian universities to establish institutional repositories could lead to increased rates of submission to open access repositories.

The survey used three foci to ground the responses of the participants. The first is an analysis of how the academics had their last article published. The second is an

identification of overall publication patterns during the respondents' publication history. The third is identification of reactions to a number of broader statements relating to trends in scholarly publishing. The aim is partially to see if the 'practice', identified by their actual publication processes was different to their 'philosophy', identified by responses to broader questions associated with open access initiatives.

Australian or international publishing?

While Australian academics publish internationally, the extent to which this is done would influence the current development of scholarly publishing initiatives within Australia. The survival of any journal depends on its ability to attract authors. Recent university based electronic press developments, as well as the development of new repositories; depend on the ability to attract content for submission. However, in a global environment, how much of Australian scholarship is published locally?

This survey suggests that Australian based publications are attracting only a quarter of the potential publications from Australian academics. In examining where the sample population (n=230) had submitted their last article for publication, only 25.7% had submitted to a journal that was published in Australia. There was an emphasis to publish in European journals (42.2%) and North American journals (27.4%). There is the perceived notion that for academic recognition, especially under the Research Quality Framework, there is a need to be published in 'leading' journals. This survey may suggest that such journals are viewed as being predominantly ones published overseas or outside of Australia. While each discipline has a strong overseas publication pattern, this pattern is more pronounced within the science and engineering disciplines. This pattern is confirmed through a Chi-square result of $\chi^2(6, N=220) = 18.464, p < .05$ which suggests that this difference between discipline groupings is statistically significant.

This pattern of publishing overseas raises concern as to how to maintain access to Australian authored research articles. While it possibly would be an ideal for Australian university based e-presses to bring some of this content back to an Australian based publication and access process; the reality will be that repository development may be the main way for providing a localised copy of Australian scholarly content.

Reasons for selecting the journal

Respondents were asked to rate a series of statements as a means to indicate reasons for selecting the journal in which their last article was published. The statements were rated against a five point Likert scale ranging from 'very important' to 'not very important', with the middle rating being an indication that the statement was 'not a factor'.

Peer review remains a major criterion when selecting a journal to submit articles for publication (79.5% indicating that peer review was very important and 16.2% quite important). This is in line with other surveys of academics (Rowlands and Nicholas 2005; Rowlands and Nicholas 2006). This is obviously not surprising in an environment or profession where it is accepted that the value of your research is confirmed by your peers. Consequently, this emphasis on peer review is an important factor when trying to attract submission to open access journals. During

September 2007, there was considerable debate within blogs associated with library and open access issues, about the establishment of PRISM: Partnership for Research Integrity in Science & Medicine (www.prismcoalition.org). Part of this debate focused on PRISM's concerns that open access initiatives may threaten the peer review process and thus independence of research and scholarly publishing. Such concerns continue to reinforce the need for open access journals to promote their academic rigour and peer review processes, so that they can compete with traditional journals.

Other reasons for selecting where to publish seem to be based on 'traditional' processes of journal prestige and impact factors. Traditional selection processes are defined as including issues associated with journals being leaders in their discipline area, having high impact factor, strong readership and having impact on the academic standing of the author.

The issue that the journal is a 'leading journal' in the respondents' discipline area was seen as being important by 80.5% (42% very and 38.5% quite important) of the respondents. Perceived impact factor of the journal was viewed as an important decider by 71.1% (35.4% very and 36.3% quite important) of the respondents. The notion of the journal prestige or branding assisting with establishing or maintaining the respondents' academic standing was viewed as important by 74.9% (34.8% very and 40.1% quite important) of the respondents. Such results would be expected under current academic performance measurement and the consideration of the impact of the Research Quality Framework.

However, when considering actual use of the resulting article, the survey responses suggest a possible conflict between the importance placed on the notion of readership of the selected journal and that placed on alternative ways to provide access to the journal. That is, 73.8% (32.9% very and 40.9% quite important) of the respondents indicated that 'large distribution and readership' was a factor in selecting the journal in which their last article was published. This would imply that the academics have an interest in their material being read and used. However, alternative models for access to content were not seen as being a reason for selecting a journal. Only 18.2% (4.9% very and 13.3% quite important) indicated that the journal providing free readership of their article was important when deciding where to publish. The ability to reuse the article (for example to submit to a repository) was rated as important by only 16.9% (5.8 very and 11.1 quite important). Assuming that an aim of open access is to increase readership of content, then one would expect academics' acceptance of open access to mimic that applied to "readership". However, this is clearly not the case with this sample population. Thus, this sample suggests that open access is not necessarily viewed as a model for increasing readership. It seems that open access, as an end in itself, is not a key factor yet when selecting journals in which to publish.

Engagement with open access journals

The survey explored engagement with open access journals through a number of question foci. These include an analysis of whether their last article was published in an open or closed access journal (that is an exploration of their recent practice), an analysis of whether they have generally submitted to open access journals (an exploration of their overall practice), and reaction to a statement about

non-submission to open access journals (a reflection on their philosophical stance on open access).

The last articles that the respondents had published were predominantly in journals that require subscription or other payment for access. This reflects a traditional business model of commercialised access to the journals. Subscription journals accounted for 82.5% of the articles, while only 9.2% were in an open access journal. A further 8.3% were in journals where the respondent was uncertain about the journal's business model for access.

The low frequency count of 21 articles submitted to open access journals does not lend itself to extensive statistical analysis. However, a cross-tabulation was made against discipline groups to determine if the submission to open access journals was clustered in any particular discipline areas. The cross-tabulation indicated that the articles submitted to open access journals were spread across the discipline groups.

When looking at their overall publication history, there has been wider engagement with open access journals. Respondents were asked whether they have submitted any articles to open access journals, and if so whether open access journals were their preferred option for publication. The responses indicate that 14.8% view open access journals as their preferred publication process while a further 15.2% have submitted articles to open access journals, though this is not their main avenue for publication. This suggests that just under one third (30%) of the sample population have engaged with at least one submission to open access journals.

	Frequency	Percent
Yes - Open Access Journals are my preferred option for publication	36	14.8
Yes - I have published in Open Access journals, but it is not my preferred method	37	15.2
No	150	61.7
Don't know	20	8.2
Total	243	100.0

Table 1: Submission to Open Access journals?

Those surveyed were asked whether they agreed with a statement that "they would not submit any of their articles to an open access journal". This question aimed to determine if there is a barrier or negativity to open access journals. Responses were recorded against a Likert scale, with 48% strongly disagreeing and 18.8% somewhat disagreeing to the notion that they would not submit any of their articles to an open access journal. Turning the statement into a 'positive', this implies that up to 67.6% of the survey population showed some support for potential submission to open access journals. Only 4.5% opposed submission of any articles and 27.9% recording a 'neutral' response to the statement.

While these results require further follow-up, they indicate the division between actual practice and potential practice in regard to submission to open access journals. It would appear that there is a small body of academics who demonstrate strong support for submission to open access journals, as demonstrated by the submission of their last article or a preference for open access journals as a means of disseminating their research articles. Up to a third of the sample population have engaged with open access journals, however (as indicated by the submission rate of the last article), this is not consistent practice. The gap between practice and the 'promise' of submission is hinted by the respondents, in that up to two thirds of sample population may support submission to open access journals. It is difficult to determine if the 'promise' of submission to open access journals will eventuate. What seems to be suggested by the difference between last article action and overall publication pattern, is that the sample population has some engagement with open access journal submission, but this is not a consistent or preferred process. Open access journals may be used for some of the respondents' articles, but possibly on a case by case basis.

Repositories and awareness of author rights

Academic libraries are establishing institutional repositories as a means to archive their university's scholarly output and, where permissible, to assist in providing access to this content. Collaborative projects such as Australian Research Repositories Online to the World (ARROW) and Australian Partnership for Sustainable Repositories (APSR) are providing the infrastructure for searching repositories and harvesting the content that has been submitted. Some libraries are clearly taking the lead in assisting academic staff in the processes of submission (possibly even doing so on the academics' behalf), and this may be an important role, as the survey population for this research demonstrated a slightly alarming lack of awareness of their author rights and ability to submit to repositories.

Proponents of institutional repositories suggest that authors have inherent rights in the original versions of their work and thus can submit such versions to repositories or self-archiving services. Some publishers are supportive of repositories, by explicitly stating in author agreements how the author's article can be archived in repositories. Such agreements vary as to whether the final edited version of the article or a pre-print version can be submitted to repositories. However, the responses from the sample population suggest that awareness of whether the content from a submitted article can be reused or submitted to repositories is generally lacking. As suggested by Table 2, 57.6% of the respondents were uncertain whether their author agreement for their last article allowed them to submit a copy of the article to an institutional repository.

This may have an impact on whether Australian academics would believe that they have the ability or right to submit to repositories. The survey did not seek qualification on the reason for the uncertainty – it may simply be that respondents have not checked how they can re-use their submitted articles. However, if this survey population was to extend as a representation of the total Australian academic population, it implies that over fifty percent would not know whether they could submit and thus probably would not engage with repositories. The work that the library community is doing in promoting institutional repositories is important, as it

assists in informing academics of alternative ways to disseminate their content, and this may lead to academics being more proactive when negotiating author/publisher agreements. Libraries are using repository infrastructures as a way to record research output as part of the Research Quality Framework (RQF). Content within the repository may be secure for the RQF or open access if permissible. The survey suggests that academics may not be monitoring their rights and obligations for submission to repositories. Libraries may thus have a role in supporting this process. If academic libraries identify the range of author agreements made available by the larger publishers, then they will have the ability to advise academic staff as to their ability to submit content to repository infrastructures.

Table 2 also suggests that of the total respondents (N=245) only 14.3% indicated that they could submit a version of their last article to an institutional repository. On the surface, this may be a concern as it suggests a limited availability of author/publisher agreements that provide authors with the explicit right to submit their article to an open access repository. If those respondents who had indicated uncertainty about their author agreements are excluded from the analysis, then of the eighty responses who have awareness of their author/publisher agreement, 58.75% have an agreement that prohibits them submitting to a repository, while 41.25% have an agreement that allows submission of a version of the article. The number of respondents (N=80) who were aware of their repository rights under their author agreement is small, and thus it is difficult to indicate if the scale to which the authors have restriction for submission is representative of the total Australian academic community. However, it does suggest the need to monitor author agreements, so as to determine the degree to which authors can then engage with repository submission and whether this submission needs to be a closed archival version or an open access copy of the author's article.

	frequency	% of total responses N=245	% of respondents who are aware of reuse rights N=80
The article cannot be submitted to an open access repository	47	19.2	58.75
A pre-print version - the original version submitted for publication, before editorial changes by the publisher - can be submitted	16	6.5	20
An edited pre-print version - the original version of the article, with annotations of the suggested editorial changes - can be submitted	6	2.4	7.5
A post-print version - a copy of the article that is identical to that which will be published - can be submitted	11	5.4	13.75
uncertain - agreement to allow repository submission	141	57.6	

Table: 2 Author licence agreement for repository submission

Engagement with repositories

It is anticipated that papers at VALA2008 will highlight how submission to institutional repositories is being encouraged and how such repositories are assisting in monitoring research performance as part of the RQF. However, the degree to which academics are submitting their published articles is an issue that needs to be monitored.

The survey asked respondents to indicate whether they had submitted their last published article to a repository. The response indicates that only 12.8% of the respondents had done so. When examining the discipline areas of those who did submit, engineering academics made the highest submissions to institutional repositories.

As a means to determine their overall engagement with repositories, respondents were also asked to indicate whether they have at any time submitted articles to a repository. Responses indicate that 18.8% of the sample population have submitted journal articles to open access repositories. If the submission of conference papers is also included, then 27.2% of the sample has made a submission of at least one type of publication (either a journal paper or conference paper) to an open access repository.

Mandating submission – the answer for Australia?

In some instances funding bodies have stipulated that research funding will only be provided if the output from that research is made available through open access means. Universities have increased submission rates to their institutional repositories by mandating that academics must contribute to the repository for articles published as part of their employment. Is this the process that will make Australian academics increase submission to open access journals or repositories? Cochrane and Callan (2007) indicate that mandating submission to the QUT institutional repository has been a successful way to increase submission rates. Their paper supports the notion that having the library manage copyright and author agreement issues is supportive of increasing submission. However, as at 2005, even with mandating submission to their repository, submission of articles has increased to approximately 50% of the potential university output.

The survey of Australian academics attempted to determine responses to 'mandating' as a means to increase submission to open access journals and repositories. In looking at whether a mandating requirement from a funding body or source would change Australian academic behaviour to submit to open access journals, only 22.8% agreed (14.9% somewhat or 7.9% greatly) to this notion. This is lower than that from other international surveys (Rowlands and Nicholas 2006).

When examining the possibility of mandating submission to repositories, the survey population seems to indicate a greater acceptance or readiness to submit to repositories if this is mandated by funding bodies or instructional/parent bodies. If the research funding body mandated submission to repositories, of articles based on the funded research, then 49.1% of the survey population agreed strongly and 38% agreed somewhat (combined total 87.1%) to such mandating. If the university or

parent institution mandates submission, then 33.1% would strongly agree and 42.9% agree somewhat (combined total 76%) to submission to repositories.

While these responses require further testing as part of the ongoing research focus, it appears that mandating policies may be a means to support increased submission to open access repositories, but may not be a suitable solution for changing Australian academics' contribution to open access journals.

Potential implications

This survey supports other research that identifies academic publication patterns as being focused on submission to traditional commercial journals. However this paper also suggests that there is engagement with open access processes, although the degree of this engagement differs, firstly between open access journal submission and open access repository submission and secondly between actual 'practice' and 'promise'.

There are, obviously, Australian academics engaging with open access journals, and while there seems to be a body of academics who submit to open access journals as a preferred option, there is potential for further engagement if incentives can be developed. It seems that submission to open access journals may be on a case by case basis, and thus submission is not done on the philosophical grounds of providing access to the article, but rather on whether the journal is the most appropriate place to submit an article.

Mandating submission may be an 'incentive' for increasing submission to institutional repositories. However, mandating does not seem to be a suitable strategy for increasing submissions to open access journals. There are other factors that impact on open access Journals, such as author fees, however it would appear that government, funding body or institutional mandating may not be an incentive to overcome these issues, within the Australian environment.

The initial analysis of this survey endorses library initiatives that aim to support the management of author agreements and copyright associated with the articles published by Australian academics. If libraries continue to take the lead in monitoring author agreements then this will assist academics in determining to what degree they can submit their published articles to repositories.

As this paper forms part of an ongoing study, these issues will continue to be explored. Interviews with academics will provide qualitative information to build upon the data collected as part of this survey. This will continue to confirm the publication patterns of the Australian academic community.

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