

HARBINGERS STUDY: YEAR 2 RESULTS

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Executive
Summary

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Introduction

The report is a work in progress and provides the findings for year 2 of a three-year long study. It provides: a) data about changes in early career researchers' (ECRs) scholarly communication attitudes and behaviour between 2016 and 2017; b) an exploratory analysis of the data by age/status, gender and subject/discipline; c) new information from three additional questions on mega-journals, new sharing mechanisms and reproducibility introduced for the first time in 2017. This year 109 ECRs from 7 countries (China, France, Malaysia, Poland, Spain, UK and USA) were interviewed. These countries account for 50% of all papers published globally in 2016.

Changes

One year down the line and our panel has inevitably aged and around three-quarters of the ECR population are now in their thirties, and some in the forties (in Spain most notably). A contributing factor is that because of strong competition to obtain a job ECRs have to be relatively experienced (in China many start a ECR career at 29) and that when one gets a job it usually takes an increasingly long time to get tenure. The panel have also matured, are better informed, more measured and provide plenty of insights.

All countries recorded changes in scholarly communications in the past year with much change being of a small, minor or incremental nature, which is probably to be expected given the passage of only 12 months. The question, of course, is do these minor changes represent the start of the trend? More tellingly, perhaps, every one of the 19 scholarly topics monitored registered changes in at least one country. There were, however, significant changes in a number of areas, most notably regarding:

- a) jobs, employment and the nature of research work, where there is a high degree of churn;
- b) open access publishing, which is felt to be more acceptable largely because of the alleged benefits of outreach and increased citations. Although not so much in the UK/US where ECRs are more interested in the (imagined) speed of OA, although in both countries they would have liked to publish OA, but had to opt for high impact instead. In choosing a journal to submit to, whether it was OA was hardly ever considered;
- c) peer review, where there is disquiet partly raised by a flurry of retractions affecting some countries;
- d) changing career aims brought on by a precarious environment and increased competition;

and, in less respect, to:

- a) authorship/publishing practices and policies, which are tightening up in some countries;
- b) metrics, with altmetrics being thought about more;
- c) sharing and collaboration both of which are being boosted by the social media. Social media and social networks are building on last year, most quickly in China and Malaysia and, maybe, Europe is having to catch up. ResearchGate is on the rise everywhere.

While all countries have seen changes, it has been the greatest in China, which raises the question whether Chinese ECRs are the harbingers of change among the countries we have covered. Interestingly, another Asian country, Malaysia saw the second greatest change. There are differences between change in these two countries. In Malaysia, many areas are seeing significant change, but it is not happening for everybody. In the case of China, there changes are being felt by more people, but not in all areas. France also saw significant changes with many ECRs becoming less conservative. Poland and Spain saw the least amount of change. In Poland, the system is centrally-directed and formal, whereas Spain is still reeling from 8 years of austerity which has hit higher education particularly badly. The UK/US are in the middle and this might, partly, be because there is less left to change there as it has already happened. But what is striking about the USA is the numbers of ECRs turning away from an academic career.

Topics that require watching

Two topics are being watched because last year they produced data that seemed to go against current perceptions and beliefs. The two were the role of libraries and the importance of altmetrics. Last year libraries either were not mentioned at all or when they were this was largely in negative terms. This year we probed a little more, not directly, but in the context of various scholarly activities. What we found was that ECRs are conscious of the library's role in providing access to discovery tools, but sentiments towards the library and its future role is much the same, although it has to be said it was a little higher in the social sciences and in the USA. Despite much conference and commercial interest in altmetrics, last year ECRs showed very little interest in the topic. Generally speaking, this year, ECRs are a little more conscious of what they are and more interested in what they could do/show, but not in China.

Demographic and disciplinary differences

On the basis of two years' data the influence of age/status, gender and subject/discipline was investigated. Age analyses were complicated by the fact that our cohort has aged, leaving a small proportion of ECRs in their twenties and the fact that most doctoral students were in their twenties. However, from what we could tell, there were not many differences other than older ECRs feeling disaffected because they did not have tenure and being more informed generally about scholarly matters and the younger ones feeling pressured to succeed in a precarious and competitive environment. There is also a sense in some countries

(France and the UK, for instance) younger researchers are taking a more independent look at the scholarly system. The published literature contains very little on gender differences in scholarly behaviour; the exception being the use of online communities, where studies suggest that women are more active in these communities. We found no evidence to support this, detecting only concerns about the status and position of women in the workplace and the extra pressures on them.

An analysis based on subject/discipline is much more productive. Just less than three-quarters (72%) of the ECR population are scientists and this was because the funder's (PRC) interest lay mostly in this area and also that the majority of ECRs are found in scientific disciplines. Always allowing for the fact that social scientists constitute a quarter of our sample there does appear to be differences in behaviour between these disciplines best summed up as: a) social scientists are not as paper productive as their counterparts in science; b) scientists are more concerned with publishing in high impact factor journals; c) scientists are more familiar and knowledgeable about scholarly communications; d) scientists collaborate more and work more in groups; e) competition is greater in the sciences.

Malaysia and France often appear to be contrarians and this could well be down to the fact that the former has the highest representation of social scientists (42%) and France the highest proportion of scientists (82%). This is something we shall explore in the coming year.

New questions

Mega-journals. Just over half of ECRs were familiar with mega-journals, with Chinese ECRs most familiar with them (more than 70%) are. Much fewer (19.3%) had actually published in one, although a much higher proportion of Malaysian ECRs had (42%). Most ECRs who published in mega journals were scientists. PLOS ONE was mentioned most by ECRs, but also attracted some criticism and there is a sense that it has lost some of its esteem. The main attractions of mega-journals are seen to be their higher acceptance rates, the fact most are ranked highly by the Web of Science (WoS) and Scopus citation databases and their quickness in publishing. The biggest criticism is their perceived low standards of acceptance and processing, meaning that quality is very variable. What is, perhaps most striking about the results is that a sizeable proportion of ECRs see these journals - specifically PLOS ONE - as quick and non-selective.

More formal sharing mechanisms. Over half of ECRs would welcome a more formal sharing mechanism. It is the Spanish who most want it with the vast majority saying so. The explanation seems to be that in Spain there is a well-known and a well-used data base called Dialnet, which they like a lot and a new one might extend its reach. The lowest proportion of ECRs wanting a formal mechanism came from the USA (just under a third) where the question also seemed least understood, partly because they seemed to think ResearchGate was being talked about. The high proportions of USA and UK ECRs not understanding the question is explained partly by the fact that they appear less familiar with the concept because national databases of the sort in mind just do not exist in these countries. It is possible, too, that access

is so good they simply do not need them. In contrast, in some countries, such as China, national sharing mechanisms already exist so ECRs are more able to understand what the question was about. Only a small percentage of ECRs who wanted a sharing mechanism (13%) did not want publishers to be involved.

Reproducibility. Most ECRs, even the most conservative ones, appear to be sold on reproducibility and they even worry about it. And it was the scientists who worried the most. Most ECRs had suggestions that would help ensure reproducibility and they can be broadly categorised as: a) making sure the dataset and supplementary materials linked to the article are online and easily/openly accessible; b) articles and, especially the methods section, should be more detailed and extended; c) use videos (and conferences) to explain methodology; d) authors should (honestly) answer questions about methodology/data, maybe, at conferences or via social networks. There were some novel suggestions, too, with one Polish ECR suggesting that authors to publish two types of articles on the Internet: traditional papers and expanded papers with access provided to the data and supplementary materials. A UK ECR suggested that part of the publishing process should be to check if it is possible to reproduce. If not, the paper should not be accepted.

Conclusions

Of course, when assessing change, we need to bear in mind that most ECRs are 'servants' to a reputational or assessment system and their behaviour is shaped by others and, especially, by government policies (as in Poland and China). It is shaped most obviously and powerfully towards publishing in high impact factor journals, from which most rewards flow, and, most importantly, tenure. If ECRs want to change things by adopting new ways then all they can do is chip away at the system, and it is only governments and institutions that can ring the big changes, and there are small signs that they are doing this.

The main finding of the report is that, in the space of just 12 months, changes have occurred, with a few being quite significant and many more minor. That change is happening everywhere, in every area and country. The evidence we have gathered shows that the strong winds of change that are buffeting scholarly communications are beginning to impact on ECR's thinking and behaviour. The very fact that we can find many similarities in the changes observed in the different countries, means that ECRs are behaving as a community, as a whole.

It can be no surprise that the biggest changes recorded were in the job and career areas given that ECRs have very little security and work in a precarious and competitive environment. It seems that, because of their unique position, ECRs are more strategic than other researchers. They observe all the time on what can help them, be useful to them in their career aspirations. This means that they are more likely to change their mind and behaviour if they realize that something they criticized yesterday may actually get them quicker to their primary goal.

It is premature to make firm conclusions on the back of this, however, it is worth returning to our main research question, whether ECRs are showing signs of being the harbingers of change when it comes to scholarly communication? Each national interviewer was asked to answer this question on the basis of two years' worth of data and all said they would be, but they all have qualifications about this. For instance, a lot depends on whether ECRs take their millennial beliefs in sharing, openness and transparency into leadership positions.

Lastly, at the end of interviewing in 2017 a lot of ECRs moved to the other side of the track. Thus, we saw over a quarter of those ECRs in US universities (for example) moving to tenure track positions, so a further round of interviewing in 2018 should produce some very interesting and important results.