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Introduction

The origins of the research reported here lie in CIBER's research on the Google Generation published in 2007, conducted for the Joint Information Systems Committee (JISC) and the British Library, who were concerned that the future researcher, those born digital, would bring with them new values, perceptions, and behaviours which would challenge the scholarly establishment and its existing practices, especially in regard to trust. The study showed that the young had been conditioned by the digital environment and as a consequence behaved and thought differently, but what was not clear was whether all this would change when they entered academe and work. Or would academe and employers have to adapt to them.¹ In fact it was not quite as simple as that because follow-up research showed that the existing workforce was also changing as a result of the digital transition.² So, five years on since the original research, what better place to look for the seeds of change than scholarly communications, with their long-established quality-control practices, which are currently being buffeted by social media and new publishing models.³

The evolution of the system of communications between scholars, as well as between scholars and those interested in the results of research, has been built upon quality assurance and trust: establishing trusted sources, channels, and metrics for the exchange of scientific information. However, rapid changes in digital technologies, services, and behaviours mean that it is increasingly important for everyone involved in the scholarly communications process to examine how established, trusted channels, such as peer-reviewed scholarly journals, are faring alongside the many emerging digital sources and services available on the Web. This is what the research project 'Trust and Authority in Scholarly Communications in the Light of the Digital Transition' (2012–13)⁴ set out to discover, and this paper is an early output of this study. It covers the first phase of the

Trust and Authority in Scholarly Communications in the Light of the Digital Transition: setting the scene for a major study

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ABSTRACT. *The paper provides the results of the first phase of the research project Trust and Authority in Scholarly Communications in the Light of the Digital Transition. It provides for an examination of the behaviours and attitudes of academic researchers as producers and consumers of scholarly information resources in the digital era in respect to how they determine authority and trustworthiness in the sources they use, cite, and publish in. The first phase of the study utilized focus groups to formulate research questions for the project as a whole. It provided the direction for the literature review, interviews, and questionnaires studies that would follow. Fourteen focus groups were held in the UK and US in order to obtain this information. A total of 66 science and social science researchers participated. The main findings were: (a) researchers play down difficulties of establishing trustworthiness, not because there are none, but because they have well-developed methods of establishing trust; (b) citation-derived metrics are becoming more important in regard to where researchers publish; (c) social media are ancillary to research, but are used for promotion of research and idea generation; (d) researchers are suspicious and confused about open access, but less so if produced by a traditional publisher; (e) there was a uniformity of perceptions/behaviour of researchers irrespective of differences in subject, country, and age; (f) although some early career researchers behave the same as their more senior colleagues this is because of a fear of the system: they actually think differently.*

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study which utilized focus groups to formulate research questions for the project as a whole. It provided the directions for the literature review, interviews, and questionnaires studies that would follow. In other words, it was a pivotal element of the study and its interest lies in the fact that, of all survey methodologies, the focus group gives more power, opportunities, and space to the subject. It is the least leading of all survey methodologies. We thus get freshness, honesty, and surprises that are often missing in more directive investigations.

The broad aim of the project is to examine the changing behaviours and attitudes of academic researchers in these digital times, as producers and consumers of scholarly information resources. The study sought to establish how they assign and calibrate authority and trustworthiness to the sources and channels they choose to use, cite, and publish in. In this regard the project is unique. Key research questions are:

1. What digital behaviours suggest themselves as challenging our current understanding of trust and authority in the scholarly environment?
2. Are researchers looking for authority and trustworthiness in their reading, citing, and disseminating activities using new measures and processes?
3. Do researchers use and trust the social media in a research context?
4. What influence do research assessment exercises and tenure considerations have on scholarly activities?
5. How do open access journals rate in trust terms compared to subscription journals?
6. Is there diversity in researchers' present-day practices of information-source and dissemination evaluation, by age, seniority, discipline, and country of origin?
7. Are new measures of research impact, such as altmetrics and usage factors, having an impact?
8. In respect to quality and trustworthiness, are things better today than they were a decade ago?

Methods

This paper concentrates on one element of the Sloan research project: the views and behaviours of academic science and social sci-

ence researchers in the UK and US who took part in a series of focus groups employed at the beginning of the study to chart its boundaries and identify the key issues. The data from the focus groups helped frame the questions for the second and third data collection stages of the project, namely critical incident interviews conducted with US and UK academic researchers which drilled deeper into some matters raised in the focus groups; and a global questionnaire, which sought to canvass the opinions of a much bigger and international research population.

In order to recruit researchers for the focus groups the offices of publishers were used to send out invitations to their authors, editors, and editorial board members, and in most cases the publishers also hosted the focus groups. The fact that group participants had a common loyalty to the publisher provided the group with a cohesion, which helped the discussions. Publishers were asked to pass invitations to academic researchers in the social sciences and sciences and ensure a balance in terms of age, subject, and gender. However, early career researchers and physical scientists were difficult to recruit. Without the help of publishers we could not have obtained the degree of co-operation we did but we have to acknowledge the fact that publisher loyalty or association will possibly have a bearing on the kind of results we obtained.

Fourteen groups were held during November 2012 to April 2013 in the UK (8) and US (6). A total of 66 researchers, 36 from the UK and 30 from the US, attended. The groups were comprised as follows:

- Three groups at Taylor & Francis (Abingdon) covering mainly social scientists.
- Three groups at Sage (London) covering: (a) clinical scientists, (b) social scientists, and (c) early career researchers.
- One group at BioMed Central (London) covering biological scientists.
- One group at Wiley (Oxford) covering physical scientists.
- Three groups at Sage (Washington, DC) covering mainly social scientists.
- Three groups at Thomson-Reuters (Philadelphia) covering mainly medical scientists with some social scientists.

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The demographic breakdown of participants was as follows:

- Discipline: life sciences (29); physical sciences (4); social sciences (33).
- Age: under 30 (4); 30–39 (13); 40–49 (14); 50–59 (20); 60+ (15).
- Gender: males (32); females (34).

Sessions typically lasted 90 minutes with 5–8 researchers attending. Two CIBER researchers moderated the sessions; in general, one led the discussions and the other took notes and asked for clarification where necessary. A comprehensive review of the published research on the topic provided an *aide-mémoire* for the moderators and ensured that the same ground was covered in each focus group. After each session the proceedings were written up and shared with the other moderator to ensure consensus and accuracy. In turn, these notes were shared with a representative of the publisher hosting the focus group, who attended the group as an observer. This was done for accuracy purposes.

Results

Establishing trustworthiness

Trustworthiness was said to be all down to the long-established⁵ criterion of the reputation of the individual or journal in one's own research speciality. Whatever was meant by trusted or reliable was best determined by personal inspection and judgement, but because of a shortage of time and too much material to get through, this was not always feasible. Additionally dissemination was influenced by the strictures and policies of their managers and institutions.

Few researchers really dealt head-on with what was meant by trust and reliability; discussions often turned into a debate about the relative merits of personal versus proxy *methods* of establishing reliability and quality. It was easier talking about markers of trust. Trust was seen as possessing two layers. There was institutional or academic trust which was determined by traditional metrics, such as Impact Factors,⁶ and there was personal trust. Even if a source was highly cited or ranked high by Impact Factor, an individual may not trust the content because of author's bias or other personal judgement calls. For example, a num-

ber of researchers said the higher-tier journals have rigid restrictions and did not allow for innovation and creativity, and they were not always inclusive of minorities. Both of these characteristics diminished their trust, but they still felt pressure to publish in the top-tier journals because of professional constraints and pressure.

Surprisingly, perhaps, while nearly all researchers thought it was an important issue, nobody really said trustworthiness was a big or pressing issue, even in the wake of a massive digital transition and considerable market disruption. This was because researchers had developed methods over time for determining what was good and not good in the digital environment. They used metrics, abstracts, and/or journal or author reputation to judge the quality of content. They admitted that these were not perfect measures and did not really like the fact that their citing or publishing decisions were based on tenure or university policy pressures rather than their perception of the quality of the source. But that was the world they now inhabited.

Researchers tended to have a set way of finding, reading, and citing material in their own field and trotted ways out unthinkingly, but when asked how they determine trust of interdisciplinary materials, they thought more deeply and questioned their methods. Impact Factors were said to be helpful as a proxy for a lack of author knowledge, and were particularly useful in related or peripheral fields.

Personas

Researchers function variously as authors, editors, citers, and users of the literature. However, when they talk about trust and authority in scholarly communication they rarely preface what they say by stating that, for instance, as a researcher, I do this. This can be partly put down to the fact that most research conversation concerns a single source, the journal. That is not to say that trust and authority judgements and practices are the same for all scholarly activities, just that they are largely unconscious and there is a blurring of the lines.

So what did we learn about how the different scholarly roles and the activities associated with them bring in to play different trust judgements? Editors most obviously took a dif-

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ferent stance; their thinking was dominated by their own picture of themselves as information providers and guardians of the filtering mechanisms, people offering trustworthy collections for others to trust. They appeared much more traditional, accepting of existing ways of doing things, and were of course more knowledgeable and aware of publishing practices (more on editors later under peer review).

Participants tended to play down issues of trustworthiness in usage, probably because, if something of value was out there, their long-established networks would tell them about it and they did not need to go looking. They also have considerably more freedom as to what they use – they can use blogs and open access (OA) sources freely. Citing was another matter, with the stated reasons given by researchers paralleling many of the motivations noted in the literature.⁷ Researchers clearly weighed up very carefully what they cite and tend to cite material they regard as being authoritative (and certainly not social media). There are also complicating political issues: researchers need to cover their backs; there are people you have to cite to get accepted; you only have a real choice over a few of your citations. Also, citations are used to set work in context – more window dressing than genuine attributions. When it comes to trust in disseminating, almost all conversation is directed towards journals – their standing, Impact Factors, and peer-review systems. Book, report and conference paper publishing just do not have the research clout.

Importance of personal networks

All researchers seemed to belong to a social community. They also considered their university to be a social community and were willing to reach out to their university colleagues. The importance of belonging to a social community of scholars was mentioned quite frequently, and often passionately. Colleagues are mainly used as a trusted way into the literature and for keeping up-to-date, but they also influence citation behaviour and dissemination. Researchers turn to their colleagues for help deciding on the quality of a source. Communities are virtual; however, connections are often made in person (at a conference, etc.) and continued and maintained online, largely by email.

Peer review – the central pillar of trust

Peer review was universally thought to be very important, a finding that fits in well with previous research.⁸ It provides ‘a degree of certainty about the quality of the product’. It shows that someone has put in an effort and that work had been validated by a community of scholars. It was a familiar, standard, and traditional practice and as a result was thought to be an important scholarly attribute which enables researchers to search, use, cite, and disseminate with confidence. On the one hand, researchers want to be published in journals that have robust peer review (despite the heartaches involved); and on the other, they feel secure in citing peer-reviewed material. While there is a strong attachment to peer review, most researchers preface their expression of trust with recognition that there are problems with the way it is undertaken. They were not blindly trusting of peer review, and they still need to examine the author, content, and other criteria to judge quality.

The most frequent criticisms are that reviewers are biased and the system not transparent enough. They also thought the peer-review system allowed for some low-quality articles to be published. However, when delving into the mechanisms of peer review it was apparent that there is no consensus as to how it might be improved, particularly in the often-quoted area of double-blind reviewing. Nobody wanted any slacking in peer assessment; the crowd is certainly not to be trusted in this respect.

Editors as guardians

Editors are seen to be the ultimate judges of quality and trustworthiness and it was felt that, given this role, they should be (more) proactive and should not always heed the views of their referees, overturning them if they felt they were being too lightweight or had misunderstood the peer-review process. It was said that editors should function as a relief valve for the peer-review process, which sometimes fails to allow for difference, freshness, and innovation.

Proxies for quality (metrics)

There was little mention of metrics beside Impact Factors, which attracted considerable

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comment, and *H* indexes, which were less often mentioned and did not seem to be fully understood. Researchers like proxies for trust that are quick and easy to understand, and this is probably why Impact Factors are so successful. There was also some interest in the citation data Google Scholar provides. There was, however, some unease about the widespread use of metrics. It was said that the scholarly world is being governed by 'algorithms' and the consequence was that creativity and new ideas were being driven out by a (high) metric-driven culture, the downside of which is the standardization of scholarly communications. Some researchers felt metrics were too easily gamed by self-citation, OA publishing (thought to increase citation) and the timing of an article's publication. As a consequence, some so-called 'high-end' articles were worse than some rejected papers, a belief for which there is some evidence in the literature⁹.

There were some differences in attitude according to the discipline of the researcher. Scientists were largely unquestioning about the merits of metrics; social scientists were slightly uneasy but felt there was little choice; the few humanities scholars clearly felt culturally uncomfortable and alienated, but uncomfortable or not they accepted they were part of it. The most extreme case of shaping behaviour was found in business and economics, where researchers are told in no uncertain terms where to publish by the academic journal quality guide produced by the Association of Business Schools (ABS).¹⁰

Early career researchers are particularly conscious of rankings and very careful in regard to what they used, cited, and published. As academic apprentices they exhibit the concerns of someone starting their profession and not wanting to put a foot wrong. This is only to be expected, of course. Indeed, as a 2010 survey of faculty values and needs for in-progress scholarly communication reports,¹¹ no evidence was found to suggest that 'tech-savvy' young graduate students, postdoctoral scholars, or assistant professors are bypassing traditional publishing practices. In fact, as arguably the most vulnerable populations in the scholarly community, one would expect them to hew to the norms of their chosen discipline, and they do.

A senior materials engineer provided some

very interesting insights into early career researchers in his department and how they measured up in terms of performance metrics. He mentioned an interesting exercise he had recently completed in which he reviewed the quality metrics of the 11 members of his department. He looked at three quality markers: (1) five-year *H* index; (2) numbers of publications over five years; (3) number of citations attracted over five years. The choice of these three metrics is significant in itself, but it is the actual numbers that are most interesting: their *H* index varied between 4 and 10; publications 13–50; citations 30–200. He observed that younger academics performed relatively well (especially in regard to the *H* index), which led to a discussion of why. It was thought that the explanation was that they were much more switched on to the opportunities offered by the new digital environment, and hence: (a) were very active in developing networks; (b) were always looking for collaborative opportunities; (c) were listed in many more papers as author because of their collaborative work; and (d) because of an increasing competitive research environment they worked in new and emerging fields, which attracted more citations, which made up for the lower numbers of publications produced.

The readership, diffusion, and reuse indicators that can be tracked via blogs, social media, peer-production systems, and collaborative annotation tools commonly referred to as altmetrics¹² were neither raised nor familiar to most researchers. There was a degree of scepticism as to what a 'like', re-tweet, bookmark, or user comment actually meant. User (crowd) recommendations that Science Direct and Mendeley provides did find favour with one UK participant and another liked a similar function which PLOS One provides.

The Research Excellence Framework (REF)

The REF¹³ is a UK government-run exercise, conducted every seven years, which measures research quality in UK universities and then distributes funding to them on the basis of their performance. It is a highly competitive exercise covering tens of thousands of researchers from more than 100 universities. With a census date of October 2013 it was on all UK researchers' minds and hence a big conversation point. Ironically, despite the

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complaints of researchers about the metric-driven nature of scholarly evaluation, the REF submission does not include citation data, all research outputs being subject to peer review. However, this is not quite a case of parallel quality universes, because, according to researchers, the evaluators, who have to read each article to make a judgement on its quality, are very aware of the rankings of journals and faced by the prospect of reading hundreds of documents – some of it in cognate fields – use rankings as a shorthand for quality. After all, mentioned one researcher, what reader-evaluator is going to challenge the ranking of a *Nature* paper? Thus metrics and the REF are intertwined in the minds of UK researchers. The biggest impact the REF has had is in creating an *institutional* peer review in universities throughout the UK – a system in which researchers are constantly monitored by their managers and colleagues.

Impact Factors and the REF constrain and skew choices about where to publish and what to cite; these choices are not made entirely on the basis of perceived relevance, reliability, or trust.¹⁴ The US does not have a similar research exercise, but the tenure system does place pressure on younger academics to publish in certain ‘top’ journals.

Social media

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Social media were generally well down on the list of credible scholarly resources, which is very much in line with previous findings.¹⁵ While more US researchers were engaged with social media, at least occasionally, they were also untrusting about their content. Often the only way researchers would trust social media material was if it was linked to a traditional source (e.g. a tweet about a peer-reviewed journal article). Only a few – mostly young and early career researchers – thought that social media were anything other than social and peripheral (see below). Regular blog readers would privilege journal articles even when they know and respect the author of the blog.

The lack of interest in social media either as a source of information or for networking can be partly explained by trust and validity problems that arise, but there were many other reasons: (a) many researchers were novices when it came to social media; (b) they were antagonistic towards it; (c) they had no

free time to spend on it; (d) they were put off going down that route by the current higher education climate, which they felt favoured peer review, journals, and citation indexes; (e) the (informal) language of social media was not suitable for scholarly discourse; (f) there are no measures by which content can be evaluated, whereas traditional material has, for instance, Impact Factors and peer review in place; (g) they did not use it because there was no benefit to it – it did not help their career.

While UK researchers generally expressed a lack of interest in using social media themselves, they said they knew people – usually younger people – who use social media a lot and quite a few expressed guilt about their lack of involvement, especially when it came to promoting their own work. It was perhaps a surprise that we did not come across many of these ‘other’ people in our focus groups. These researchers did, however, recognize that social media could be valuable in a scholarly context for: (a) obtaining new ideas, stimulation, and starting new conversations; and (b) the self-promotion of articles, books, and conferences, especially in regard to public outreach of their research. Interestingly, what most interested researchers (when told by facilitators or other participants) was the possibility that social media could increase their citations as a result of providing greater digital visibility for their publications. US researchers were a little more engaged with social media, with a number saying they used it for starting new conversations and sparking ideas. If a researcher said they used social media, they also tended to use it to promote their work. It was also felt that if their research has a wider constituency, then social media was more relevant, whereas some disciplines or research topics did not have the right audience for social media to be useful. Older US researchers also voiced the idea that younger researchers were more likely to use social media, but it could not be determined if this was true or a misconception.

US researchers were more vocal in stating that they used many of the same standards to judge the quality of a social media source as they used to judge a traditional source (e.g. author, publisher, or university affiliation). They viewed social media as a channel that offers new ways to contact one another but

which they choose to use depending on criteria similar to those they apply to traditional channels. However, in the case of most UK researchers there was a sense that these new channels were rejected out of hand, except in the case of early career researchers.

There were subject differences among US researchers, but not among UK researchers, with a few of the (older) medical scientists saying they trusted and frequently used blogs and podcasts by well-known academics in their field. They did not trust all social media but they did trust those because they were linked to trusted academics. Their fields depended on up-to-date information, and they viewed social media as a way to get that information without going through the mire of traditional journal publishing, which was inevitably behind what was happening.

An early career researcher focus group held in the UK did lend support to the views expressed above that young researchers are more likely to use social media in their research work. However, they are scared to embrace it fully and sometimes camouflaged its use, because in many cases their supervisors disapprove. These early career researchers said that as increasing numbers of young researchers use a wider range of dissemination and communication tools, it will become easier to get their research known and acknowledged. One researcher spoke for them all when he said he wanted to take full advantage of the 'dissemination plus world' we are all now part of. They could see many academic benefits associated with social media: (a) helping to develop personal networks; (b) facilitating collaboration among researchers; (c) speeding-up finding fellow researchers to work with ('can be done in real-time'); (d) useful for staying in touch with what is going on in the field; (e) the ability to follow authors you are interested in ('stalking' as one researcher put it); (f) making it is easy to find someone with a particular point of view. Despite the aforementioned advantages there was a reticence to contribute too much to the social media, largely because young researchers did not want to let themselves down/show their immaturity. 'When I feel more confident I will come out', said one. It was acknowledged that social media was open to 'grandstanding', self-publishing, and promotion, but, on the other hand, is

this not all part of climbing the academic ladder?, questioned another. Most worryingly for the group, social media could have a negative impact on career development. It is so easy to comment today and in the digital world the record is always there. Hence, something you said twenty years ago that was premature or immature could come back and bite you at a crucial time in your career development.

Open access

What complicates questioning about the trust of open access publications is that in the minds of US researchers there is a significant confusion about the difference between open access and open source, and what the characteristics are that make something OA. Thus some of the distrust, or dislike, of OA from an author and reader perspective that was very evident can be put down to misunderstandings and unfamiliarity. The most common misunderstanding was that OA journals were the products of a breed of new, not to be trusted publishers, interested in money above all else, when in fact many traditional publishers have OA journals. The other common perception was that OA journals are not peer reviewed or do not have proper peer-review systems, when in fact many OA articles are subject to the same rigours as traditionally published ones. Often, as the discussion developed and the facts came to be known, participants retracted their earlier statements about ubiquitously never trusting OA and were willing to trust OA journals in certain circumstances. Thus, although few researchers, but more of the Americans, were fully aware of the pioneering efforts of PLOS One publications, after being told, they did like, in principle, what they had achieved – PLOS One could be trusted. Distrust also diminished considerably (but did not quite evaporate) in the case of OA journals published by an established publisher, such as Sage or Taylor & Francis. Those who do accept that OA is just a business model and can go along with the fact that you can still have a proper peer review show a surprising trust in publishers (at least those publishers with whom they work) which goes against all the branding arguments that are repeatedly made – the argument that publishers have no brand to speak of in most cases.

There is a palpable unease among some

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researchers about paying to have an article published – a notion that has been shown in previous studies to be rife.¹⁶ This may be because it is too much like ‘buying’ and too commercial, and that was something that jarred with researchers. They acknowledged, however, that you could get speedier publication as a result, having heard *PLOS One*’s response times of several weeks.

In terms of disciplines, engineers seemed particularly hard to convince; they were very suspicious of the ‘real’ motives behind OA and, indeed, the real need for it ‘after all is not everything free somewhere’. OA seems to have made little inroads in engineering but it was suspected, even among engineers, with all the policy might/mandates behind it (especially from funders), that things will change. Indeed, there was even talk that the next REF in the UK would reinforce OA practices by only accepting publicly accessible material. A systems engineer seemed to have had a number of ‘road to Damascus’ moments regarding OA. He was initially against it, then moved to being positive as a result of being convinced by arguments saying articles will be more widely read and cited (a view which is only partly supported by empirical evidence: OA articles are indeed downloaded more, but not cited more frequently¹⁷) and is now convinced that the upheaval OA will bring is quite unnecessary because anyone who wants his ‘stuff’ can find it freely anyway, courtesy of author websites, Google, and institutional repositories.

Researchers from teaching-intensive universities are generally supportive of OA on openness grounds and happy to cite and publish in OA sources; although, ironically, none had published in an OA journal. It was said that OA journals might have career benefits: universities might rank high Impact Factor journals more highly but Google ranks OA publications higher in its hits list; hence, if you want to come out first to impress headhunters, then OA is a good career route. There were also fears that the financial model underpinning OA would close down whole lines of research work in fields where it was difficult/impossible to get funding to pay for publication.

Early career researchers liked the principle of OA but are scared to embrace it because they feel academe has not made up their mind

about it. If they published in an OA journal, or cited one, they might have backed the wrong horse and found, for instance, that they had published in a second-rate journal. As one researcher explained, ‘There might be a reputation threat.’

Unethical practices

With two psychologists attending one UK focus group this was a good topic to bring up as psychologists have recently been in the news for fabricating research.¹⁸ The discussion that followed focused on a researcher whom many of the participants appeared to know. What was of interest was that the researcher in the dock, who was Dutch, was in fact a well-established researcher and not an aspiring one. Apparently he made up the numbers a few times and was not caught by the peer-review system because he was really too big to suspect or challenge. It was felt by the particular group that you could do nothing about this and it was probably more widespread than believed. They hoped that in these circumstances, because of the high digital visibility of publishing, it is the readers who do the policing and there are a lot of them. This case made one participant reflect that while you generally trust people you know most, here was a case which made you question your beliefs.

Perhaps not so unethical as complete fabrication, editors say they are finding themselves faced with ‘cut and paste or pick and mix jobs’, even from top researchers, as people try to drive their article productivity up to make their heads of department, deans and vice-chancellors happy. An alert editor should see that there is nothing new in such papers and reject them, even if they feel uncomfortable in so doing (i.e. upsetting a top researcher).

Hence, participants are aware of plagiarism and the falsification of data in scholarly works, but felt they did not really have a system or method for dealing with this. This fits in with the findings of an international survey which explored journal editors’ perceptions about publication ethics.¹⁹ A few participants that said as long as you cited the work, you were protected if that work turned out to be false. While there was some discussion of whether providing the raw data would help dissuade people from falsifying data, the participants thought it would have less effect than hoped

because people rarely check the data. Basically, they did not think it was their job to check for unethical practices; if the work was published you had to trust the system and therefore trust that the work was ethical.

Diversity

In general there was a surprising uniformity about the views, perceptions, and behaviour of researchers in respect to trust issues, irrespective of differences in subject, country, age/experience, and institutional background, although we have highlighted any (small) differences we feel significant in the sections above. Of course, a relatively small qualitative study like this raises questions rather than providing definitive answers, and we leave it to the questionnaire study, which this study informs, to establish where significant differences lie. Here we reflect further on where such significant differences might be found and we will start with age and experience, where possibly there is the most daylight between researchers.

Ask senior researchers and editors whether their younger colleagues approached things differently and they say that if anything they were even more fixated on Impact Factors than they were, because they have still to climb the career ladder. Ask young or early career researchers themselves, and while they do not deny this, if you probe them further you find that their *own* attitudes and belief systems appear to be different, especially those in the social sciences. This can be put down to the fact that they: (a) do not yet have an established personal network to rely on/contact with; (b) are not very active in the editorial side of things, so not in the system as such; (c) are outside the club rather than a member of it; and (d) possibly, represent the views of a new generation. Recent JISC research on young researchers supports our findings.²⁰

The early career researchers we talked to, and there were not many, although emboldened when grouped together, saw themselves as 'slaves' to a metric-based/journal-focused system. They have to adhere to the rules to climb the academic ladders but they thought the ladder was broken. For some, journals were in fact a manifestation of all that was wrong with the scholarly communication system. REF panels, tenure, and hiring commit-

tees enforce a certain form of metrics-driven behaviour that boils down to publishing in high-impact journals, as single authors in the case of non-scientists. Journal writing was seen as simply utilitarian for a majority of participants. They would like to be more collaborative – after all, the tools are out there now – but the face of academe is unchanging.

At the other end of the scale, senior researchers, who were very well represented in the focus groups, and naturally involved with the running of traditional journals, took a more conservative and traditional view of the way journals should be run and championed their importance as trusted sources of information. They also have more academic freedom to publish where they want. Older researchers were also more likely to trust their experience to figure out what was a trustworthy source, whereas early career researchers did not trust themselves as much and, therefore, depended on traditional metrics and other colleagues to tell them what to trust. Senior researchers trusted their ability to know what was trustworthy.

There were more subject similarities than differences, although, albeit only on the evidence of a few researchers, education appeared to be the odd one out in the UK and medicine the odd one out in the US. Regarding education, it appeared that communication and dissemination went on at so many levels and with so many audiences, with practitioners and policymakers for instance, that this meant having to disseminate via blogs and websites, and to cite and use these sources/channels. Government websites seemed to be an important source of data, but were not reliable because political factors impacted on what was available at any one time. It also appeared that because official data was increasingly unreliable (political) researchers had to turn to unofficial sources. Education also seems to have its share of cliques, and if you were not a member of that clique you never got to publish in its journal.

There appeared to be some institutional differences between the views of research- and teaching-intensive universities in the UK. Researchers from teaching-intensive universities tended to be idealists and the fact that they came from lowly ranked research universities meant they could indulge their passions

Senior researchers trusted their ability to know what was trustworthy

(they did not face the same level of expectation to publish at the highest journal level). They were more social and caring and certainly did not care for metrics, hierarchies, or competition. They were not academics being regimented for the REF; indeed their universities, even if they entered, would obtain very little REF money. Without the 'discipline' this brought they were far more liberal and relaxed regarding trust and authority. Rather like the early career researchers, they were quite critical about the existing scholarly system, largely seeing it as too industrialized and commercialized. No data for the US was forthcoming on this, possibly because all participants were from research-intensive universities.

Because the focus groups were only undertaken in the UK and US (both English-speaking countries with a common academic heritage) there was only limited scope for investigating geographical differences in respect to trust. What we obtained were the views of UK/US researchers on the scholarly efforts of their foreign colleagues. In regard to UK researchers there was no suggestion at all that scholarship from the developing world is by definition of no use and 'unreliable'. But it is clearly the view of our researchers that some of it is, especially that coming from Africa and India. African material is thought to be very poor, largely because Africans are badly taught and because they assume that research means surveys. Editors among the focus groups felt particularly uncomfortable talking about the topic because of their high rejection rates for authors from developing countries. It was hoped that things would change. After all China once had a problem but there had been a marked improvement in its scholarship; and Eastern Europe scholarship was poor just a decade ago. However, there was no question that any of our participants would want to publish in a journal from a developing country, but they might just 'look' or 'glance' at an article from such a journal if it was on their specialism.

Better/worse than a decade ago?

While researchers acknowledged the fact that there is more 'bad stuff' around, largely because it is more accessible (thanks to search engines such as Google) and there are many more opportunities and places to publish (e.g.

online-only journals, open access, blogs, social media), it was widely accepted that quality had risen. The result of more researchers entering the field and the greater competition that comes with it has led to an improvement in quality. This increase in quality has largely taken place in the quality journals, and with the newly founded niche/specialist journals taking full benefit of an abundance of run-of-the-mill material. So, interestingly, it was not OA journals that were being blamed for the rise in poor or mediocre work, but the big increase in new subscription journals.²¹ It is these journals that have led to a big increase in the number of technically competent, but very boring papers. In the words of one researcher:

Why would you want to read that!?! There is a massive sea of mediocrity now because it is just easier to publish, but at the higher end the quality is better because of better training, greater competition and rewards for publishing.

The rise in quality, together with greater access to information, meant that researchers could live with the bad and boring 'stuff'. They trusted their experience to sort the bad from the good. Researchers also thought that what they considered to be a reliable source of information had grown over the years. For instance, participants previously never trusted Wikipedia for reliable information but now, in certain cases, they would use it because it is easier to verify information. A researcher, for example, said he used Wikipedia as a quick overview of a topic and follows the reference links. Even though researchers considered more sources, such as Wikipedia, reliable, they would not trust them enough to cite them.

Conclusion

While we have to regard these results as tentative and exploratory in that the work reported took place at the very beginning of a 15-month project, and was the product of just one methodology when four more would ultimately be used (interviews, questionnaires, log analysis, and literature reviewing), the attraction of the data presented here and the interest in the findings stems from the fact that the focus groups allowed free, fresh and unscripted personal opinions to be aired, and consensus to be quickly determined.

*a researcher
said he used
Wikipedia as a
quick overview
of a topic and
follows the
reference links*

On learning of the project's early findings, the publishers who provided support for the project felt that there were few big surprises arising from the research. In some respects they were probably right and in this the research provides an evidence base to underpin their beliefs:

- Although academic researchers have moved wholesale into the digital world, they have taken their traditional practices for determining trustworthiness with them. In the minds of most researchers trustworthiness is still delivered by long-established channels and ways of doing things (e.g. peer-reviewed journals and traditional metric-based citation systems), even if they see flaws in them. But they do not know a better alternative and trust their judgement and experience to overcome the problems.
- If anything, the peer-review journal is even more dominant now, thanks to a widely adopted metric system that has them at its heart. Citation-derived metrics are becoming more important in regard to where researchers publish.
- Researchers play down the difficulties of establishing trustworthiness in the virtual scholarly environment, not because there are none but because they have well-developed methods of establishing trust, and at the centre of these methods is their research community and peer-reviewed journals produced by traditional publishers. And it is easier today to check credentials of documents /web pages/authors
- Social media is nothing other than ancillary or supplementary to the research activity, used largely, and helpfully, for the promotion of research, especially in order to reach a wider public and to alert fellow colleagues to new publications of interest and the passing around of references.
- Researchers are suspicious and confused about OA publications, but not if they come from a traditional publisher.
- Overall, researchers believe there is lots more untrustworthy stuff around in the scholarly environment, but they also believe that there is also more good stuff around. So overall they are happy with affairs.

But there were surprises too:

- There was a general uniformity about the

views, perceptions, and behaviour of researchers, irrespective of differences in subject, country, age/experience, and institutional background. We might have expected discipline differences at the very least, but these were minor; the main difference being that scientists were happier with the existing trust and quality mechanisms. There was also some evidence to suggest that while early career researchers in the social sciences behaved the same because of a fear of the system, they actually thought differently. We can only guess whether this will become contagious.

- While researchers were very traditional and circumspect in regard to where they published and what they cited, they were much more liberal and novel in regard to what they used.
- Nobody mentioned publishers' discovery platforms – the tools of choice (and trust) were very much Google and Google Scholar – and they generally do not go anywhere near the once-trusted library.
- Finally, there was a sense that early career researchers might think and do things differently.

These findings have helped construct an interview schedule for an interview programme, covering more than 80 researchers, which focuses on their individual scholarly behaviour and, together with the results of the interviews, fed into the construction of an international questionnaire study. They also empower the project by providing triangulation, a powerful technique that facilitates validation of data through cross-verification from two or more sources.

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