Patterns of scholarly communication in the humanities and social sciences: a literature review by the Research Information Network

Annex 3 to the Report of the HEFCE Monographs and Open Access Project

The shape of the literature

1. The questions posed by this review sit at the confluence of a number of different bodies of literature, each with its own priorities, methods, assumptions, strengths and weaknesses. In order to keep a tight focus on the primary issue of importance – namely, evidence about the way in which humanities and social science (HSS) researchers use monographs – we have been relatively selective about the studies that are considered in the body of this review. But this initial section provides an overview of the various streams of work that might be considered part of the broader questions about researcher behaviour and scholarly communication priorities.

2. One important body of literature, and the main one that we have drawn on for this study, is based upon what might broadly be termed social research methodologies. Studies in this area range from large-scale surveys of academics to qualitative studies involving just a handful of subjects. Survey researchers select their respondents depending upon the question of interest, and might focus upon a particular discipline (Andersen, 2000), set of institutions (Tenopir et al, 2012; Estabrook and Warner, 2003), set of roles within an institution (Cronin and La Barre, 2004), members of an organisation (British Academy, 2005) or some other framework that makes sense for the research question. Surveys often struggle to achieve high response rates and many studies do not attempt statistical analysis of the findings, preferring to focus on descriptive reporting. But they offer a useful overview of behaviours, attitudes and perceptions among their target populations. Many of these studies are funded by external bodies and result in a published report instead of or in addition to articles in peer-reviewed journals. We have included these grey literature outputs within the review.

3. Qualitative studies are usually designed to offer a more in-depth insight into the behaviour of small groups of participants. Most researchers using this methodology rightly warn about the dangers of extending findings to wider populations. Nonetheless, their findings are often thought-provoking and worth consideration, as long as the limitations are borne in mind. These studies are bounded in some way, by considering a specific discipline (Bulger et al, 2011; Rutner and Schonfeld, 2012), a department within an institution (Harley et al, 2010; Bulger et al, 2011; King et al, 2006), an institution itself (Buchanan et al, 2005), or a particular role or career stage (Estabrook and Warner, 2003). Often, researchers use a mixed-methods approach, combining interviews or focus groups

with surveys in order to triangulate findings. Again, many of these studies are not published as peer-reviewed journal articles, but we have included them within the review.

4. Another important body of literature is based upon bibliometrics and citation studies. These use, as their raw data, information drawn from databases, samples of research outputs or other collections of published academic work to understand the networks of influence and reuse between scholars. There are many well-known problems with citation studies which seem to be particularly magnified in HSS. Some of the critiques focus on practical issues. For example, standard citation databases such as Web of Science, often used as a basis for data collection, do not have good coverage of HSS outputs (Engels et al, 2012; Nederhof et al, 2010). Hicks (2004) adds that such databases rarely achieve good coverage of non-English-language outputs which are often important in HSS literatures. Patterns of monograph citations are different from journal citation patterns routinely used as a basis for these studies (Tang, 2008) and the reliance on old monographs as primary sources in certain humanities fields may affect the average age of citations (Thompson, 2002). In other fields, research outputs such as novels, music performances, or conference outputs not published in formal proceedings, do not include citations at all, meaning that the network of influence around them cannot be understood by looking at whom they cite (Creaser et al, 2010). Andersen (2000) discusses the 'obliteration by incorporation effect' – that is to say, work that informs the cited work is not itself cited.

5. Other critiques relate more to the theory that underpins citation studies. As Fry et al (2009b) argue, bibliometrics tends to treat citation decisions as though they have a rational, empirical explanation; the reality is that a researcher's decision to cite something can be influenced by a number of what they call 'human decisions' which cannot be captured in a simple numerical analysis. Larivière et al (2013) explore the large literature on why people make citation decisions, highlighting in particular that motivations can change throughout a researcher's career. Hargens (2000) suggests citation context analysis as a methodology to understand the point that researchers are trying to make with a particular citation. Even given these limitations, citation studies provide a useful insight into how researchers use material within their disciplines, and they are therefore important to include within this review. Those studies which focus on HSS disciplines tend to recognise and attempt to compensate for practical problems such as gaps in databases.

6. A further set of literature might, broadly speaking, be considered as coming from a more humanities-based tradition of analysis. The approach is based upon argument or theory, and tends to be more narrative than the social science-type research mentioned earlier. References tend to be to previous studies rather than to original data collected from surveys, interviews or bibliometric analysis. As the approach is so different, we have not included these within our work. A final set of literature might broadly be termed opinion pieces or personal reflections on trends in scholarly communications. These are often found in conference papers, editorials or professional journals and do not draw upon original evidence, beyond the author's own experience or perceptions. These could form an extremely interesting corpus for original analysis of attitudes and perceptions, but do not fit neatly within this literature review, which focuses upon the findings of other researchers' studies.

Main priorities for HSS researchers in communicating research findings

Communicating with peers and developing scholarship

7. Sharing knowledge with peers to build a scholarly literature is a crucial aim of scholarly communications. Core to that is ensuring work appears in a place where peers are likely to see it, and indeed this does seem to be an important motivation for scholars. Harley et al (2010) identify this behaviour in case studies in three HSS subjects, finding in relation to journal articles that scholars prefer a combination of high-impact publications in flagship publications with smaller, niche ones designed to target particular audiences. The appropriate outlet depends upon the audience for the content. Huang and Chang (2008) argue that HSS researchers choose the language in which they publish their work in order to reach their target audience through the publication outlet where they think they will get most feedback from their peers. In their case studies, King et al (2006) found similar results for English-language literature researchers publishing books, who would choose a press that was well known and respected in their particular sub-field, rather than one which might have the 'glossiest' appeal. There is overlap, here, between the drive to communicate with peers and the desire to achieve maximum credit and prestige for work; the two issues are closely connected.

8. Identifying these outlets is not always easy, however, as they are different within subdisciplinary fields and seem liable to change over time. Garand (2005), in a survey of political scientists, found that researchers from different methodological areas and different disciplinary backgrounds rate the same journals differently. This can mean that research areas become disconnected and self-referential: 'one scholar's specialisation is another scholar's insularity' (Garand, 2005, p. 1002). Ellison (2007), using data from US economics departments, found that Harvard economists are increasingly getting citations to unpublished research, and therefore receive little benefit from publishing in what are widely-considered to be high-impact journals within the field.

9. Quality assurance and peer review appear in many studies. A number of interview-based case studies find peer review to be absolutely central to publication, and new forms of scholarship must be seen as undergoing rigorous peer review in order to be accepted (Bulger et al, 2011; Harley et al, 2010; King et al, 2006). But scholars also make frequent criticisms of the peer review process and of editorial power (Harley et al, 2010). The data from Ellison (2007) suggest that in some economics departments – and it is probably not coincidental that economists have a strong tradition of sharing online pre-prints – researchers are obtaining high numbers of citations to unpublished research, and that publication through peer-reviewed outlets is no longer the only, or even primary, way of disseminating work. And Engels et al (2012) mention, almost in passing, that when selecting a sample for their study of changing patterns in HSS publishing they struggled to identify peer-reviewed books because most publishers do not submit all of their books to peer review. More data on this would be helpful – it is possible that the authors are referring to edited volumes or books that are peer-reviewed at different stages in the writing process. Overwhelmingly, researchers remain in favour of the *principle* of peer review, feeling that it helps them as authors to improve their work and as readers to select the most appropriate content – but the *practice* of peer review is not accepted as an unquestioned good and researchers have other, often discipline-specific, ways of identifying important information.

10. There are many other drivers to publish, beyond communicating with one's peers, and some studies suggest that these may be in tension with the desire to build a scholarly literature and share research findings, particularly in relation to books. For example, Harley et al (2010) found some concern in their interviews with humanities researchers that the growing two-book requirement for tenure in history and classics might affect the quality of output – that researchers are writing in order to be promoted rather than because they have original ideas which deserve to be communicated. They also found that archaeologists have reservations about traditional publication outlets such as journals and monographs, which may restrict the amount of supplemental materials that are needed to communicate research findings effectively. Rutner and Schonfeld (2012), in a case study of US historians, find some researchers who would prefer to use digital methods to communicate their research outputs nonetheless publish a book because it is necessary for career advancement. King et al (2006) cite an English-language literature interviewee who considers the reliance on books to be 'stultifying' (p. 23), preventing researchers from communicating in the format best suited to their material – for example, digital media or a series of journal articles.

Reputation and reward

11. Publications are core to many systems of recognition and reward in academia. Many studies focus on the United States, as the tenure system creates a clear process of evaluation throughout the initial stages of a researcher's career which does not have a precise parallel in, for example, the UK. Cronin and La Barre (2004) surveyed a number of language and literature departments and, looking at their tenure and promotion guidelines, found that academic excellence and a contribution to scholarship are at the heart of many. In a cross-disciplinary case study, Harley et al (2010) found that tenure and promotion are linked to service and teaching, but that these count for little without an outstanding publication record. Andersen (2000) agrees, finding that although more relativistic approaches in the social sciences recognise 'pluralities of prestige hierarchies' (p. 675), the scholarly communications system continues to play an important role. Although speaking at conferences and maintaining networks are important to career advancement, the publication aspect is in most cases non-negotiable (King et al, 2006; Harley et al, 2010). In other territories, researchers look at institutional reward systems such as the Research Assessment Exercise (RAE)/Research Excellence Framework (REF) in the UK, many of which focus very heavily upon published research outputs although these tend to measure a slightly different thing and, in some cases, the best interests of an institution may not be the same as the best interests of their researchers (Huang and Chang, 2008).

12. Despite this high-level agreement on the importance of publications for career advancement, it is clear that there are several factors which might influence what is considered to be a 'significant' publication for the purposes of promotion or tenure. Field is probably one of the most important, and disciplinary cultures play an important role (Fry et al, 2009b). This can vary even within a field: King et al (2006) in their interviews with anthropologists find that books are, in general, expected for promotion, but that anthropologists working from a more biological background feel that journal articles are as important. Across all economics disciplines, authors of articles appear in alphabetical order in 89% of cases, while in the sub-field of agricultural economics alphabetical order is used in only 44% of cases, suggesting that the author lists are being used to assign credit in some way within the sub-field (Fry et al, 2009b). Understanding these nuances is important, where they exist: in other disciplines the question may not even arise – in language and literature departments, for example, sole authorship is expected for both books and journal articles (Cronin and La Barre, 2004). Formal guidelines often refer obliquely to the kinds of scholarship and

publication that are expected in different disciplines, especially if they are generalised and not tailored to a specific department, which leaves those appointing with a measure of discretion (Cronin and La Barre, 2004).

13. Institutions also play an important role in setting tenure and promotions criteria for their researchers and, as Cronin and La Barre (2004) find, these are by no means consistent. Between and within institutions, expectations for language and literature departments vary and can be set out at a very local level, shared between several departments or captured in a single institution-wide handbook. Harley et al's 2010 interviews with HSS researchers find an impression that 'second-tier' institutions have different performance standards for their researchers than the most competitive, and that this is to be welcomed, but that problems arise when teaching-focused institutions adopt the standards of research-focused ones.

14. The role of books, and specifically monographs, within tenure and promotion decisions is particularly marked in some sections of the humanities. Estabrook and Warner's 2003 survey of university faculty in anthropology, history and English in Committee on Institutional Cooperation (CIC) institutions found a strong emphasis on books among historians: 82.9% agreed that a book should be required for tenure. English faculty were less convinced, with 46.6% of respondents agreeing with the statement, and only a minority of anthropologists (17.9%) believed that a published book was a necessary precondition of tenure. The interviews with department chairs which accompanied this survey showed a clear expectation that faculty should have a book published or in-press before being considered for tenure. And this expectation seemed to have increased in recent years: 89.2% of faculty in these disciplines tenured since 2000 had published a book at the time of tenure, but only 64.2% of those tenured before 1980 (Estabrook and Warner, 2003). A later survey of modern language departments found that 88.9% of departments in Carnegie Doctorate-granting institutions ranked publication of a monograph as important or very important for tenure. There is a marked distinction between these top-ranking institutions and Masters and Baccalaureate universities , where 44.4% and 48.0% respectively find monographs important or very important; this rather supports Harley et al's findings about the different expectations of different levels of institution (Stanton et al, 2007; Harley et al, 2010).

15. This expectation about books is not always formalised in universities' written statements about tenure and promotion: Cronin and La Barre's study found it was quite uncommon to see a book mentioned explicitly in the tenure and promotion criteria, although this may have been because the department was using general university-wide criteria which are not discipline-specific. A handful of institutions attempted to draw some kind of equivalence between a certain number of journal articles and a book - the norm appears to be somewhere between five and seven, which rather puts the RAE and REF's two to one ratio to shame (Cronin and La Barre, 2004). Similarly, King et al (2006) find that it is unusual to see a book explicitly mentioned in English-language literature contracts, but that an assumption exists nonetheless that one should have been written.

16. The literature suggests that social scientists place less emphasis on publishing books for career development than humanists. Andersen (2000) found that Danish social scientists rank books and journals almost equally for career development, and Fry et al (2009a) in the UK found that social scientists rank journals slightly higher than books for personal career advancement and for meeting funder requirements – although they do also value books for the former purpose. King et al (2006), looking at the emerging interdisciplinary field of law and economics, found that a large number of

high-quality outputs around an original research idea or area is the most important factor for career advancement; where and how these outputs are published seems less important.

17. Other, less traditional, types of output were more problematic for tenure and promotion committees. Some humanistic disciplines are already used to judging non-textual output such as music or works of art (Harley et al, 2010). In general, however, studies seem to find that both individual and organisational assessment systems do not give enough weight to non-traditional outputs (Harley et al, 2010; Bulger et al, 2011). Part of the problem is the vicious cycle described by Harley et al, whereby because nobody knows how to judge them, nobody puts them forward, and therefore nobody ever learns how to judge them. Cronin and La Barre (2004) describe a resistance to change among senior faculty, and this can mean change even from print to electronic versions of traditional outputs. King et al (2006) find younger scholars reluctant to publish electronically because they fear it may prejudice their chances of tenure: this may be a reasonable perception as Stanton et al's 2007 survey of doctorate-awarding institutions found that 65.7% of English and foreign language departments had no experience of evaluating monographs in electronic format. Although Estabrook and Warner (2003) find that heads of department are beginning to consider outputs such as critical editions, memoirs and creative materials in promotion decisions, monographs remain a standard.

Public engagement

18. Public engagement and outreach have become increasingly important for researcher across disciplines, but evidence about such activity in the humanities and social sciences is somewhat mixed. Humanities and social science researchers appear to be relatively good at public engagement. Huang and Chang (2008) cite a rather old 1989 study which found that HSS departments in the Netherlands published a relatively large number of non-scholarly outputs - magazine articles or trade books - compared to their science, technology and medicine (STM) counterparts. A newer study by Kyvik (2003) looking at Norwegian faculty found that 64% of humanities and 60% of social science researchers had published what they termed a 'popular science' article, compared to 38-44% of researchers in STM disciplines.

19. This said, case studies by both Harley et al (2010) and Bulger et al (2011) find that many disciplines do not feel that non-academic audiences would be particularly interested in their research. The level of interest was seen by some interviewees as being on a sliding scale, with - for example - music theory less likely to be of interest to the general public than history. Only archaeologists saw public engagement as important to the success of their research: in other disciplines interviewees highlighted the risk of being perceived as a 'public intellectual' (rather than a serious scholar) if publications that are primarily public-facing outweighed a strong scholarly record (Harley et al, 2010).

Writing as thinking

20. Some of the more in-depth qualitative studies found that researchers consider the discipline of writing a book to be very important. Palmer and Neumann (2002, p.100) argue that ‘the act of writing is formative’, and ideas emerge and mature through the process of writing at length. King et al (2006, p.21) cite an English-language literature interviewee who says that ‘the medium in which we, ourselves, construct our arguments is book-based’. Huang and Chang (2008, p.1824) argue that many researchers choose to publish in their native language (where this is not English) because their

'thinking may be deeply intertwined with their language expressions', again indicating the very close relationship between thinking and the writing process. On a more practical level, Rutner and Schonfeld (2012) find evidence of historians using potential chapters to organise their notes and sources before they have even begun to start writing the book, showing yet another way that research and writing are intertwined.

21. Interviewees in many of these studies were also concerned about the way that external pressures might affect the process of writing a book, and the development of intellectual ideas. Harley et al (2010) found some – though not universal – concern about the growing pressure for a two-book requirement for tenure in history and classics, leading young researchers to waste time on second books that are not, in fact, very good, rather than developing new ideas through a slower writing process. Looking at pressures from the other direction, Cronin and La Barre (2004) quote a director of graduate studies in Harvard's English department who is concerned that commercial pressures might prevent young researchers from experiencing the training of writing a book, if they cannot subsequently get it published – although, as the authors note, if the benefit is in writing the book, perhaps it is not necessary to publish it in order to achieve the positive outcome.

How do monographs fit into the wider scholarly communications activities in the humanities and social sciences, and what are their strengths and weaknesses?

What to share, when and with whom?

22. The most important formal outputs from research in the humanities and social sciences are books and journal articles. In comparison with other disciplines, HSS researchers seem less reliant upon journals. An Australian study found 85% of natural science outputs were published in journals, while the equivalent figure for HSS was 61%; a Spanish study found 81% for natural sciences and 54% for HSS (Fry et al, 2009b; Hicks, 2004). The general perception is that humanists are more reliant on books and social scientists tend more towards journals as the primary formal published outlet for their work (Creaser et al, 2010; Fry et al, 2009a; Huang and Chang, 2008; Engels et al, 2012).

23. Indeed, discipline plays an important role in the decision about whether to publish in a book or a journal, reflecting both the scope of the research and the expectations of one's peers (Fry et al, 2009b). But there can be variation even at a subdisciplinary level. Archaeologists, for example, work within a broad discipline: those at the more humanistic end publish monographs, while those working with more scientific or technical aspects prefer to share their findings through journal articles (Harley et al, 2010). A separate study has similar findings for anthropology: biology-focused anthropologists publish in journals while socio-cultural anthropologists use books (King et al, 2006). A rather old study from 1983 found that, within English literature, scholars working on contemporary writers tend to write in journals, but as their subject becomes older, they 'turn to the monograph as the form in which to offer more extensive critiques' (Watson-Boone, 1994, p.204). Becher and Trowler (2001) find that economists behave more like biologists than historians or modern linguists when it comes to speed of publication and the nature of research outputs. And even within book-focused humanities disciplines, 'journals play an important role in disseminating

short arguments, book reviews and other discipline-specific communication' (Harley et al, 2010, p.24).

24. Books are seen as giving an opportunity to develop ideas fully, in a way which is not possible through a series of journal articles, for example (Cronin and La Barre, 2004). In Estabrook and Warner's study, 46.8% of humanities researchers felt that a book was needed in order fully to develop their argument and ideas; a further 25.4% felt that while their work could be published as a series of articles, they would rather present it in a single book. Again, disciplinary differences are evident here: 65.6% of historians felt that their ideas needed a book, compared to 38.7% of English researchers and 30.5% of anthropologists (Estabrook and Warner, 2003). Becher and Trowler (2001) make a close link between the nature of an academic's research and their preferred output type, describing researchers as either 'urban' – focused on a narrow area of study – or 'rural' – ranging across a number of themes or topics – with the former more likely to publish journal articles and the latter more likely to publish books.

25. Once the medium of publication is decided, researchers must choose where to place their book or article. Prestige is important here, and university presses seem to be considered the most prestigious outlets for humanities books according to two US-based case studies (King et al, 2006; Thompson, 2002). However, other, very practical, factors may also come into play when deciding where to publish. For example, Harley et al find that permissions to reproduce content can be very expensive in subjects such as music, history or art history, and that subventions do not always cover costs. Estabrook and Warner (2003) find that 24.5% of faculty surveyed have been asked for a subvention for one or more of their books, and that in 90% of cases the cost was more than $1,000. A focus group within the same study identified a concern that large subventions may begin to look like paying to publish, and an impression that books with lots of pictures are best published with European presses.

26. Researchers may have other types of output that they wish to share formally. Fry et al (2009a) find that more than half of humanists consider datasets to be 'not applicable' as a research output; social scientists found them slightly more relevant but unimportant nonetheless in relation to other types of research output. Harley et al (2010) find some evidence that economics and political science journals increasingly expect datasets to be published alongside articles, and that many archaeologists (who produce an unusual amount of data for a humanities field) expect that data to be shared as a public-good 'commons' (Harley et al, 2010). On the whole, however, most disciplines do not seem to expect that data will be shared as a matter of course, possibly reflecting difficulties in defining what 'data' might be in some disciplines.

27. Other types of published output may be more field-specific. For example, Oppenheim and Summers (2008) found that only 38% of outputs from music researchers for the 2003 RAE exercise were written research, while 52% were practice-based research and 12% fell within the catch-all 'other' category. In the 2008 RAE, the written outputs rose to 49% of the total, perhaps indicating an increased conservatism on the part of researchers at least in what they choose to submit to the panels, if not what they are actually publishing. Social scientists are particularly likely, compared to researchers in other fields, to see reports and working papers as important outputs from their research (Fry et al, 2009a), perhaps reflecting the impact that they might like their work to have on government and other public bodies.

28. Of course, most scholars do not restrict communication with their peers to formal publications, and there are a number of more informal channels that they may use to test and share early-stage ideas. Conferences are perhaps the most common of these. Compared to other disciplines, researchers in the humanities are least likely to see conference presentations or posters as a very important research output, followed by social scientists (Fry et al, 2009a). It is interesting that conferences are rated highly, in other studies, as a way for researchers to develop and maintain the networks which will help them to achieve career advancement (King et al, 2006; Harley et al, 2010). Harley et al (2010) find in their case studies that conference proceedings allow humanists to disseminate early findings, something which may be particularly important in fields with 'long lags to monograph publication' (p.22). King et al (2006) observe some English-language literature researchers beginning to use listservs and emails as a replacement or addition to in-person conversations at conferences, as a way of sharing early ideas. Two studies note that working paper repositories such as the Social Science Research Network (SSRN) may be providing a similar service for social science researchers, particularly now that citations to the archived version of the manuscript are perceived as legitimate, removing some fears about having work 'poached' through early but uncitable publication. Bulger et al (2011) find similar behaviour among philosophers, who use the PhilPapers website to share their work in progress. However, formal archival publication remains very important, and pre-publication repositories have in no way replaced traditional journals (Harley et al, 2010; King et al, 2006; Bulger et al, 2011).

What to use, and for what?

29. Researchers in the humanities and social sciences build their research upon a very broad range of resources. One study describes humanities researchers as dealing with a 'complexity deluge, dealing with a multiplicity of types of information, much of it highly dispersed, difficult to find and complex to use' (Anderson et al, 2010, p.3781). While humanities researchers may have their own 'core' collection of resources – primary sources, archives, secondary texts – this is supplemented by additional information as a project progresses (Palmer and Neumann, 2002). A survey of Danish researchers found that fewer than 25% of respondents from the social sciences named the same journal as one of their top three within their discipline – by contrast, 60% of physicists who responded named *Physical Review* as one of their top three journals (Andersen, 2000).

30. The interdisciplinary nature of much research in the humanities and social sciences can make it particularly difficult to identify a 'core' literature in many research areas (Palmer and Neumann, 2002; Hicks, 2004). A 1987 survey of inter-library loan requests by humanities researchers over a two-year period found that more than 50% of scholars had asked for material from five discrete areas of knowledge – general, humanities, history, social science and science (Watson-Boone, 1994). A 2000 survey of Danish political science authors found that 'respected authors' are likely to be from disciplines other than political science (Andersen, 2000). A 1971 citation study suggests that books are particularly transdisciplinary – in sociology, a book received a higher percentage of citations from work outside the discipline of sociology than a journal article (Hicks, 2004). HSS researchers' willingness to publish in several languages can also mean that a core literature might look different in different countries. For example, in Denmark, most economists and business administration researchers rated Anglo-American journals as the most influential in their discipline, but in political science and sociology most of the top-rated journals are published in Danish (Andersen, 2000). An earlier survey in 1991 found that in the humanities and social sciences

non-Dutch speakers are largely unaware of Dutch-language journals, and that they tend to ignore Dutch-language articles (Huang and Chang, 2008).

31. It is clear, however, that in most HSS disciplines books play an important role in scholars' research. A 1985 citation study found that researchers in numerous humanities disciplines prefer to cite books over journals (Watson-Boone, 1994). A more recent citation study, looking at outputs submitted to the UK's RAE exercises in 2003 and 2008, finds that humanities researchers cite the most books, on average, with fewer citations from social studies and education, and very few from the STM areas within the study (Creaser et al, 2010). Tang (2008) cites a number of studies which show that books are more heavily cited in humanities and, to a lesser extent, social sciences, compared to STM disciplines. Given the known limitations of citation studies, it is interesting that surveys of researchers – asking about their behaviour, rather than extrapolating from their citation patterns – found similar patterns. Tenopir et al's 2012 study found that humanities researchers read, on average, 20.50 books or book chapters per month. The equivalent figure for social scientists is 9.02 – lower, but more than the next-highest discipline, engineering/technology, at 5.27 books or book chapters per month. Interestingly, there appears to be a correlation between book reading and age – the older you are, the more books you are likely to read per month (Tenopir et al, 2012). Survey evidence also suggests that humanists see books as more important than social scientists: 90% of humanities respondents to a recent survey said monographs or edited volumes are 'very important' to their research activity, compared to 60% of social scientists. They are also more likely to assign monographs or chapters to their student than social scientists (Housewright et al, 2012).

32. There is some evidence to suggest that 'the journal and the book literature form different worlds' – although they overlap, they each retain a distinct identity (Hicks, 2004, p.7). Authors who write books, cite books; the same is true for journal articles (Tang, 2008). Creaser et al (2010) found within their sample of outputs submitted to the RAEs in 2003 and 2008, 64% of citations in books were to books, compared to 27% of citations in books which were to journal articles. Cronin et al (1997) find, in sociology, that there are two distinct populations of highly cited authors, one for journals and a second for books. This may link into other research which finds that books are more likely than journal articles to cite primary sources: in nineteenth-century American/British literary studies, 47.8% of citations in monographs were to primary sources, while only 32.5% of citations in journals were to primary work. Since primary sources are often themselves monographs, this might explain at least part of the separation (Thompson, 2002).

33. Humanities and social science researchers also seem to make significant use of relatively old content, compared to other disciplines. Tenopir et al (2012) find that around half of the 'last articles read' in the critical incident component of their survey were more than 6.5 years old; a quarter were more than 15 years old. In STM disciplines, only around 10% of articles read were over 15 years old. Hargens (2000) finds distinctive patterns of usage in humanities, social sciences and STM disciplines in relation to the age of the work cited, and shows that research in the two social science disciplines of the total seven considered in his study are particularly reliant on 'foundational' (i.e. older) work. Tang (2008) cites research which shows diversity at a subdisciplinary level in the social sciences: the half-life for all types of social science publication ranges from seven years (economics) to 37 years (study of social customs). Thompson (2002), looking at humanists, concludes that humanists use material from a broad age spectrum, rather than simply using old material.

How have new technologies affected scholarly communications in the humanities and social sciences?

General approaches to technology

34. Much research in this area has focused upon humanists and, in particular, their ongoing fondness for print. Ithaka (2006) identify that researchers across all disciplines believe that they will be more dependent on electronic resources in the future than they are now, but that humanists believe this to a lesser extent. The same study found that humanists were least comfortable transitioning to electronic-only journal collections, and that they had a particularly strong preference for at least some libraries maintaining print collections for safety (although this preference was noticeable across all disciplines: this finding was confirmed in a repetition of the survey in 2012 (Housewright et al, 2012). Bulger et al (2011) also find that humanities researchers are not ready to move away from print collections and manuscripts, but that they are prepared to use digital resources for their work.

35. Indeed, it would be unfair to classify humanities researchers as wilful Luddites, and several studies find interesting hybrid use of print and digital material. For example, Bulger et al (2011) find that researchers will move between print and digital versions of the same text, using whichever is more appropriate to their research needs. The British Academy (2005) found a similar result in a survey of HSS researchers: they asked, in a situation where print and electronic versions of content are available, which one respondents would prefer to use; 34% preferred electronic and 38% preferred print, but 28% said that they would use either, depending upon the reason for use. Similarly, Housewright et al (2012) found that researchers felt certain types of book use, such as searching for a topic or exploring references, were easier in digital formats, whereas others – reading in depth, for example, are easier in print (these findings aggregated responses from researchers across all disciplines). By extension, it is perhaps unsurprising that several studies find humanities researchers unwilling to adopt new technology simply for novelty's sake: they will only do so if it is useful. Watson-Boone drew this out as a key finding of her 1994 study; Bulger et al identified the same behaviour in 2011. Researchers are more likely to adopt new technologies if they fit with existing research patterns and behaviours (Palmer and Neumann, 2002; Collins et al, 2012).

36. There are of course other drivers that may affect researchers' uptake of digital resources. Bulger et al (2011) find that humanities scholars are easily deterred from using digital resources if they are not intuitive. Rutner and Schonfeld (2012) find some evidence among historians that those with tenure felt more comfortable experimenting with digital methods or outputs. The British Academy (2005) found several issues to do with supply and availability which may limit uptake of digital resources. At the time of writing, organisations responsible for supplying resources (they give examples of the British Library, the National Archives, museums and university libraries) were aware of the need to engage with e-resources but making only 'modest attempts to grapple with the problems involved' (p.36). Moreover, digital products presenting themselves as secure long-term storage solutions 'appear and then disappear with unpleasant rapidity' (p.6); a particular problem for researchers who are heavily reliant upon historic or old materials for their work. Though this study is relatively old, considering the rapid pace of developments in the digital environment, more recent studies suggest the problems are not entirely solved – for example, Bulger et al (2011) highlight the problem of partial digitisation and non-availability of primary resources, while Housewright et al (2012) find a continued reluctance on the part of humanities researchers in

particular to rely exclusively upon digital resources for long-term availability and access; there is a particular antipathy to relying exclusively upon electronic versions of books.

Research process

37. New technologies affect the research process at all stages. Beginning with discovery of resources, researchers have long been aware of the potential impact of new technology on their working practices. Citing research from 1986, Watson-Boone (1994) suggests that only 3.5% of humanities researchers had used the library's online catalogue, while work in 1990 found that humanities faculty preferred card catalogues or citations to source information over computerised databases. By 2005, however, the British Academy survey found that 47% of researchers used Google and other services to identify resources for their research. In 2006, Ithaka found that humanities researchers tend to begin their searches using the online library catalogue, while social scientists are more likely to use a specific electronic research resource: however, both groups are relatively unlikely to use the physical library and electronic tools have clearly achieved dominance in researchers' search choices. Repeating the study in 2012, Housewright et al found that arts and humanities researchers (like those in other disciplines) are most likely to begin their research with a general purpose internet search engine, followed by a specific electronic resource – the same is true for social scientists. Often, use of electronic resources to search implies using keywords rather than browsing through collections (Watson-Boone, 1994; Bulger et al, 2011) and some researchers miss the serendipity which was more common when using library shelves, particularly in history and social science (Harley et al, 2010). Other studies have identified the important role of electronic search tools in helping researchers to identify primary resources that they may want to use (Rutner and Schonfeld, 2012).

38. Once they have identified resources that they want to use, researchers then have to make a decision about whether to access them in print or electronic format. Availability (as distinct from accessibility, which will be discussed later) plays an important role. Many studies identify researchers' concerns that content that they might need is not available to them in electronic format. Selective digitisation occurred as a concern for political scientists and historians in Harley et al's study (2010), while Bulger et al (2011) identified a similar concern among musicians. In another study, humanities researchers felt that online systems did not hold enough old content (Palmer and Neumann, 2002). Electronic availability may be a particular problem for books: 78.2% of respondents to the British Academy survey said that the books they need are not available to them in e-format (British Academy, 2005). But new technologies may also be improving the availability of certain types of research material – for example, original sources located in overseas archives which are now much easier for researchers to reach (British Academy, 2005; Bulger et al, 2011; King et al, 2006) or images from national institutions (Ithaka, 2006). And Rutner and Schonfeld (2012) find widespread use of digital cameras among historians who want to create their own copies of archival materials.

39. Other issues affect a researcher's decision about whether to use print or electronic versions of the resources that they need. Most studies in this area identify a strong feeling among researchers that electronic resources are not yet a direct replacement for print versions of the same work. Often, these findings relate to primary sources where the presentation is as important as the content – for example, Bulger et al (2011) discuss the importance of markings on original manuscripts for researchers working in music. In some cases, the preference for print can be less

about utility and more about field-specific norms: one musicologist reports 'I do feel pressure to work more with originals than with the digital images because of the traditions of the field' (Bulger et al, 2010, p.34). Palmer and Neumann (2002) have similar findings.

40. With respect to secondary texts, there is also a strong preference for print, including print books (Tenopir et al, 2012). Again, use of e-resources for research seems to vary by discipline: Houghton et al (2004) cite research showing that 66% of law and 56% of business researchers used e-resources for research most or all of the time; only 37% of social scientists and 25% of humanities researchers said this. Several studies note an interesting 'hybrid' approach to print and electronic resources, selecting the most appropriate format for the purpose of use. For example, both Bulger et al (2011) and Rutner and Schonfeld (2012) find humanities scholars who use Google Books to search or read through content of books that they either already own or are thinking about buying. Bulger et al (2011) also identify a habit, across a number of humanities disciplines, of citing the print version of a book even if use has been made (partially or primarily) of the electronic version. This probably reflects standard behaviour in the field, but it also suggests that looking at citations to establish the extent of print vs electronic resource use is likely to underreport true usage of electronic resources: this may explain why Thompson (2002) found very low citations to digital media in her study of monographs and periodicals in nineteenth-century British and American literary studies.

41. Access to electronic resources is by no means guaranteed. Even where content has been digitised, the British Academy (2005) survey found that potential users may be limited by not having a subscription, only being able to access electronic resources when onsite at the library or even not understanding how to use the services providing access. It found that researchers in smaller institutions or outside institutions were most likely to experience these challenges. On the other hand, Ellison (2007) argues that the internet has increased the ability of authors to reach their readers outside the confines of top peer-reviewed journals, while some interviewees in King et al's (2006) study noted that their work is accessed far more often through copies placed on their personal websites than through the formal publisher channels. And, as the British Academy (2005) study suggests, some resources which are highly valued by HSS researchers, such as librarians, cannot be digitised.

42. Once researchers have found the content that they want to use, many of them like to store and organise it in their own way, often relating to projects that they are currently working on. This is a well-developed habit for print resources (Watson-Boone, 1994). Researchers working with electronic resources often maintain these practices, creating mini-databases using software like Excel to record and store useful information that they need (Bulger et al, 2011; Rutner and Schonfeld, 2012). These studies do not, however, uncover evidence of researchers using new electronic tools specifically designed to store and track research outputs in an online environment: rather, they use standard software and files stored locally on their machines or external memory drives.

43. There is a general consensus across studies that new technologies have sped up or improved the research process. The British Academy (2005) survey found that 68% of respondents felt their research had changed as a result of working with e-resources, in terms of speeding up discovery, making it easier to locate and access material, working more rapidly with data and communicating more effectively with colleagues – but these changes were more likely to be identified by older than younger respondents. The authors suggest that young researchers have developed their working

practices in a digital environment and therefore see the opportunities offered by new technologies as less of a change. King et al (2006) observed similar reactions from English-language literature researchers: new technologies make resource discovery and use easier, and democratise research with open listservs which permit anyone to join and participate. Harley et al (2010) have similar findings across the humanities and social science disciplines that they consider, as do Bulger et al in the humanities (2011). Houghton et al (2004) suggest that new technologies support collaborative research, but mostly in fields where collaboration is already common; Collins et al (2012) draw similar conclusions.

44. Many of these studies also consider the question of whether new technologies have fundamentally changed research methodologies and research questions in HSS. There is not a strong consensus here. Most studies working with traditional humanities fields find that researchers believe new technologies have not changed their fundamental work: the 'careful analytical research process' as one study put it (Harley et al, 2010, p.18). The British Academy (2005) study found that 65% of respondents either disagreed with or did not respond to (a strange amalgamation of response options which unfortunately is not presented in a disaggregated format) the proposition that e-resources are sufficiently different to offer new research possibilities. Similarly, Bulger et al found that most researchers in their case studies felt that new technologies made it possible to answer long-existing research questions that would previously have been too arduous (searching through numerous texts for a single person for example), but did not suggest new questions. However, studies working specifically with researchers using more advanced technologies, such as digital humanists, found more evidence of changing research questions, particularly when researchers work in partnership with tech developers to create new resources. Anderson et al (2010) talk about the 'mutual shaping' of e-research structures that occurs in these situations, offering new perspectives on established research questions (Anderson et al, 2010, p.3781). Bulger et al (2011), considering the development of a specific digital humanities resource, identify the collaboration between humanities researchers and tech developers as an important opportunity to drive forward not just the technical possibilities but also the underlying theoretical approach to research questions. So it seems that this kind of development is possible but not, as yet, particularly widespread in the humanities.

Research outputs

45. Studies indicate that some researchers want to explore how new technologies can support communication of their research findings. As was identified earlier, perceptions of peers and particularly hiring and promotion committees are very important for researchers thinking about exploring new ways of communicating research outputs. Harley et al (2010) find that established scholars have more flexibility in experimenting with new ways of communicating outputs: by contrast, untenured scholars are unwilling to present non-traditional publications as part of their tenure packages as review committees often do not know how to evaluate them. They also found that researchers working in newer or less-established departments are more willing to take risks with formats of scholarly outputs; this is often a conscious decision to help carve out a niche identity and is supported by their employing university. King et al (2006), in their work with English-language literature scholars found similar results, with a strong emphasis on the importance of legitimation from the field itself for new formats of research output. Interviewees felt that change would not be achieved by administrators writing new forms of publication into tenure and promotion guidance; it would only come from a bottom-up movement from within the field itself. Estabrook and Warner

(2003) concur, finding that the number one concern about e-publishing among faculty is that it will not be rated as highly as print by promotion and tenure committees. Fry et al (2009b) find that tradition means that the monograph remains dominant in the humanities, even though other outlets may do a better job of communicating research findings.

46. If any such bottom-up movement within the field is to occur, peer review is certain to remain at the heart of it. Harley et al (2010) suggest that experiments in communication are occurring in every field in their study, but that they are 'taking place within the context of relatively conservative value and reward systems that have the practice of peer review at their core' (p.13). Blogs, for example, are often rejected as a waste of time because they are not peer reviewed, although they may be used to identify developments in the field. King et al (2006) found a perception that electronic-only publication means no peer review; even those who understand that this is not the case are concerned that their colleagues, reviewing job or funding applications, may not. However, the anthropologists in their study suggested that online-only journals may struggle, not because they are online-only, but because they are new; in general, new journals without a reputation struggle to establish themselves, regardless of publication format. King et al record that English-language literature academics suggested peer review may need to evolve for e-resources by including some measure of persistence and stability for long-term availability. This ties into concerns about the technical integrity and long-term preservation of research outputs made available in electronic format (British Academy, 2005).

47. Studies identified researchers who are already experimenting with new types of output, but the definitions of 'new' were perhaps rather broad. The British Academy (2005) survey found that 51% of respondents were e-resource creators, although this data tells a slightly different story when we understand that it includes contributions to journals with an online presence, e-editions of books and putting papers on a departmental or other website. Other studies also found a surprisingly narrow understanding of new technologies. One English-language literature interviewee mentioned that print-on-demand could revitalise availability of obscure out-of-print books in their discipline (King et al, 2006). The British Academy (2005) study suggests that electronic workflows can speed up the creation and sharing of information. But in general the perception was very much around digital content which is more like a reproduction of a print book than a new type of digital discourse. Harley et al (2010) probably came closest to this kind of change, identifying innovators in book-based fields who used hyperlinks, graphics, video and audio in their work to enhance content, but even these might be considered quite limited. Furthermore, researchers interested in using them found a dearth of support from institutions or publishers.

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List of Abbreviations

CIC	Committee on Institutional Cooperation
HSS	Humanities and social science
RAE	Research Assessment Exercise
REF	Research Excellence Framework
SSRN	Social Science Research Network
STM	Science, technology and medicine