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Background

Reputation is everything to the scholar.¹ However, for a long time it has been associated with just one scholarly activity (research) of many, one output of that activity (publication in peer-reviewed journals) of many, and one measurement of that output (citations) of many. Indeed, recent search shows that this practice, if anything, is becoming more embedded in the highly competitive, global digital environment in which scholars find themselves.² Everyone, it seems, is trying to establish and enhance their global digital presence. Clearly, such a narrow view of reputation marginalizes all the other scholarly activities (see Table 1 for an abbreviated list and Appendix 1 for a comprehensive list) and this skews scholarship and academia. Conventional indicators of reputation fall well short in reflecting scholars' reputation and impact.

However, the traditional and conventional way of establishing and measuring scholarly reputation is now being challenged, changed, and widened by Science 2.0 developments, which harness information-sharing and collaboration activities made possible by network technologies.⁴ Thus, Science 2.0:

- gives rise to new formats for conducting, publishing, and disseminating scholarship (e.g. blogs, online communities);
- ushers in new types of scholars (freelance scientists, innovators, citizen researchers – we are all researchers now and connected to the big fat information pipe, which was once the preserve of only a privileged group of academic researchers);
- provides more inclusive and broader mechanisms for measuring scholarly reputation (the digital makes everything visible and recordable and new metrics abound, covering scholarly activities that have not previously been easy to measure and review, such as teaching and collaborating);
- gives birth to 'emerging' reputational

New ways of building, showcasing, and measuring scholarly reputation

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ABSTRACT. *The article reports on a study of the views and actions of nearly a hundred scholars – mostly academic researchers – from four European countries and four disciplines in regard to scholarly reputation in the Science 2.0 age. It specifically looks at the role that 'emerging' reputational mechanisms and platforms are playing in building, maintaining, and showcasing scholarly reputation in the digital age. Popular examples of such platforms are ResearchGate and Academia.edu. Data were obtained through one-to-one interviews and focus groups, supported by desk research. The main findings were: (a) it is early days and uptake is light and patchy with platforms largely used for non-reputational purposes, such as sharing documents; (b) most users were passive and did not fully engage with the social aspects of the platforms; (c) the reputational focus was very much on just one scholarly activity (research), on just two outputs of that activity (publications and conferences) and one measurement of that activity (citations), but there are the stirrings of change; (d) young researchers are set to profit most from the emerging platforms.*

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Table 1. Categorization of scholarly activities (based on Boyer, 19903)*

1	The scholarship of research (discovery), the individual or collaborative creation of new knowledge;
2	The scholarship of integration , the arraying of extant knowledge into larger intellectual patterns, often within a wider, cross-disciplinary context;
3	The scholarship of application , the application of disciplinary knowledge and skill to societal/practical problems;
4	The scholarship of teaching , the conveying of the human store of knowledge to new generations;
5	The scholarship of co-creation , the participation of teachers, students and practitioners in the increasingly converging processes of knowledge production and transmission.

* Another important part of a scholar's activities is holding managerial and leadership positions. Although not strictly a scholarly activity, it is potentially reputation-enhancing.

platforms, such as ResearchGate and Academia.edu, which provide a more open, public, inclusive, and encompassing means of building and showcasing scholarly reputation;

- makes reputation easier to benchmark, much more open, and comparative.

This paper provides the first findings of a European-wide, EU-funded research investigation entitled, 'Analysis of Emerging Reputation Mechanisms for Scholars', conducted July 2014–January 2015, which sought to analyse the first footfalls of users of the new emerging technologies and determine whether this is an area that could benefit from EU policy initiatives.

As far as we are aware this is the first study to investigate comprehensively the use and impact of emerging scholarly platforms from a reputational point of view that embraces all scholarly activities, not just research. There have been previous studies^{5–8} but they largely focus on membership, popularity, and general use of individual platforms and confirmed that LinkedIn was the most popular platform among scholars (not a surprise given its wide professional reach and enormous membership of over 350 million). Between 25% and 68%

of academics surveyed had LinkedIn profiles. Of the specifically academic platforms, a large study in *Nature* found ResearchGate to be the most popular emerging reputational platform, with nearly half of those surveyed saying they used it.⁹ This study also asked respondents how they used the platform: the three top purposes were joining the site just in case someone wants to contact them, discovering peers, and finding recommended papers. Other reasons given were to track metrics, follow discussions, discover jobs, and share links to published content.

A survey of Spanish users of Academia.edu showed that users were mainly lecturers and PhD students. They were young and mostly from the social sciences and arts and humanities. The three main reasons for using Academia.edu are similar to those mentioned above in respect to ResearchGate: to get in touch with other researchers, 67%; to disseminate research outputs, 61%; and to follow other researchers' activities, 59%.¹⁰

Age and generational differences in the use of social media and online communities are always a focus of interest for commentators and a paper by Hoffman on ResearchGate shows that junior researchers take more advantage of emerging reputation platforms in order to build social capital and so climb up the academic ladder more quickly,¹¹ whereas older faculty members tend to use them to connect more effectively to people they know already. Jordan in a study of Academia.edu found something similar, confirming that junior academics were the most active users.¹²

One study of ResearchGate¹³ focused on some of the reputational aspects of platforms and investigated whether they can be used for the assessment of academic performance, at least as complement to the traditional systems and measures. They showed a correlation between the ranking of universities and countries based on ResearchGate scores and other global rankings (e.g. THE World University Ranking). However, the authors admitted that their results did not demonstrate that use of ResearchGate would be advantageous to researchers (correlation does not mean causation).

More information on the study which is the focus of this paper, including further readings, can be found in Nicholas *et al.*¹⁴

Aims and research questions

The principal aim of the study is to better understand what Science 2.0 innovations mean for building, showcasing, and measuring scholarly reputation. Might these innovations, for instance, lead to new practices that are more comprehensive and representative of scholarly achievement by going beyond the ‘publications and citations’ paradigm? Will, perhaps, the emerging mechanisms and platforms lead to the evaluation of scholars’ careers being undertaken in a more holistic way by taking into account a greater variety of their activities with reputation built from non-conventional academic sources such as the social media? The EU felt that the best way of achieving the aim and answering the main research questions was to gather data on the use and non-use of emerging mechanisms and the platforms that host these mechanisms.¹⁵

For the purpose of this study ‘emerging scholarly reputation platforms’ are defined as either social networking websites or sites that utilize social media, usually as part of a broader portfolio of services, to build, promote, and measure reputation. They do this by providing mechanisms for conducting various scholarly activities, typically disseminating research, and enable the quality or impact of these activities to be measured, demonstrated, compared, and, sometimes, rated in the form of scores that can be viewed by the whole community.

To illustrate this, say a scholar chooses to build or enhance their reputation by gaining peer recognition and esteem by utilizing the open peer-review mechanism on ResearchGate. The reviewing they do stimulates discussion and debate on the platform and the scholar gets noticed and achieves increased visibility. This manifests itself either in explicit measures of value, such as comments or rates, as it is in the case of ResearchGate, or implicit ones, derived by capturing and integrating altmetrics (document downloads, Twitter counts, blog postings, bookmarks, and reference sharing). Online communities may also offer their own measures of value, such as ResearchGate’s RG score, which then becomes a proxy for the scholar’s reputation.

The study identified 25 websites relevant to EC scholars that could be classified as being emerging reputation platforms (Table 2) as defined above. The market is still in its infancy, growing and fragmented (there are 14 different types of platform among the 25). Few are avowedly reputational services and most offer other services, such as resource discovery and contact finding. As is the case with any emerging technology definitions are inevitably going to shift and the definition we have adopted must be regarded as being tentative. Twitter and Facebook were excluded because they are general-purpose social platforms although, of course, emerging reputa-

Table 2. Emerging scholarly reputation platforms

Type of platform	Name of platform
Altmetrics	ImpactStory
Citizen science	FoldIt, Socientize
Code repository	GitHub
Data repository	Dryad
Discipline specific	BiomedExperts; Epernicus; myExperiment; Scitable
Electronic laboratory notebook	Labfolder
Multidisciplinary social networking	Academia; Academici; LabRoots; MyNetResearch; MyScienceWork; Profology; ResearchGate
Open peer review	PeerEvaluation
Outreach	Kudos
Professional social networking	LinkedIn
Q&A sites	StackOverflow
Reference management, with social media function	Bibsonomy; Mendeley
Review system for MOOCs	CourseTalk
Social learning	Edmodo

tion platforms utilize data generated by them in their scholarly measurements. Furthermore, also excluded were bibliographic management platforms that provided little in the way of reputational mechanisms. There are at least a dozen reference management tools and most function purely as bibliographical aids, providing little in the way of reputational functions.

Scope

Specifically we sought answers to the following questions:

- What constitutes scholarly reputation in the digital age?
- Are emerging reputation platforms being used and by who?
- What are the practices, motivations, and experiences of individuals/institutions using the emerging reputation platforms?
- What are the challenges and problems faced in using emerging reputation platforms?
- How are such issues as trust dealt with?
- What are the skills/attributes needed to use these platforms and what resources are drawn upon to support use?
- What is the relationship between new reputation mechanisms and prospects for future scholarly success?
- What new indicators (i.e. currently not being employed) could be used to measure impact and importance of scholarly activities?

Countries were chosen on the basis that they

provided a mix of languages, different population sizes, and contained universities willing to co-operate with us. For all countries the host/hub institution was a university. In the case of Spain and France more than one institution was involved, including government research laboratories. A representative sample of subject domains were distributed among these countries (Table 3): computer science (Poland), economics (France), humanities (Spain), physical science (Switzerland). Subjects were chosen on the grounds that they represented the three major disciplines (science, social science, and the humanities) and, in the case of computer science, allowed us additionally to study a subject in which academics also undertook large amounts of consultancy work and thus provide a different take on reputation. These were also subjects where host institutions felt co-operation would be forthcoming.

Methodology

This was an exploratory investigation of the topic, which sought ideas and opinions, consensus, diversity, and, above all, help in defining the scope of the field. It was also a precursor to a larger quantitative study, yet to be published. What we were seeking from the quantitative element of the study was the equivalent of literary warrant. Therefore a basic, pragmatic qualitative research approach was taken to data collection, which meant that it was not guided by an explicit or established

Table 3. Country case studies

Case study	Host institution (and satellites)	Subjects	Notes
France	Université de Lyon 2/3, (plus Gate CNRS, and Paris 9 Dauphine)	Economics scholars	Mixture of focus groups and interviews involving 15 scholars, 1 research manager, and 1 librarian
Spain	University of Leon, plus University of Salamanca and the Spanish National Research Council (CSIC)	Humanities scholars, plus a few social scientists from CSIC	Mixture of focus groups and interviews involving 46 people: 38 scholars, 2 deans, 1 head of international and institutional relations, 1 head of research support, and 4 librarians
Poland	University of Warsaw, plus Technical University of Warsaw	Computer science scholars	Interviews with 24 scholars/consultants
Switzerland	Haute Ecole Spécialisée de Suisse Occidentale	Physical science scholars	Mixture of focus groups and interviews involving 9 scholars and 1 member of the rectorate

set of philosophic assumptions in the form of one of the known qualitative methodologies.¹⁶

Focus groups and open-ended, one-to-one interviews (face-to-face and virtual) were the tools used. They were conducted in three different languages, in four countries, and in respect to four subject fields. Therefore it was important to provide detailed guidance to facilitators and interviewers in order to provide a uniform approach and this was furnished in the form of a detailed schedule. However, the topic being new, ill-formed (emerging), and very sensitive meant that it was important not to be too precise and prescriptive: we did not want to shoehorn people into the investigators' preconceived categories. The questioning therefore was as 'open' as possible, allowing individuals and groups a full and unfettered opportunity to express themselves, but not so open that the direction and shape of the investigation was lost. The questions asked were those listed in the scope section of this paper and they were informed by a comprehensive review of the literature on scholarly activities and by an audit and systematic review of the available reputational platform.¹⁷

These questions formed the categories around which the data was collected and evaluated using simple coding and thematic analysis. Because of the sensitivity of the topic sessions were not recorded. Instead detailed notes were taken. Coding was undertaken at a general level and therefore we cannot generalize our findings nor make statistically significant comparisons between subjects and countries. We can only highlight and raise questions that can be taken up in following investigations.

Research findings

Scholarly reputation in the digital age

For the Spanish humanities academics reputation came from a combination of factors: (a) publications; (b) conference presentations; (c) collaboration; and (d) obtaining research funding. When someone becomes very good at all these scholarly activities they acquire a good reputation. However, reputation does rest heavily on the quality and importance of publications, especially journals indexed by top abstracting and indexing services.

The more scholars publish in their field's top journals, the higher their reputation. These publications constitute their 'business card'. Academics acknowledged that this particular representation of reputation is very narrow indeed, but justified it on the basis that assessment authorities (institutional, national and international) do not take into account anything other than research and its publishing outputs. The Swiss physicists generally agreed, although felt even more strongly about the reputational merits of publishing in highly ranked journals and added that having a good reputation also meant being recognized by the scientific community as being reliable, innovative, and original. However, the Swiss high-energy physicists and the Polish computer scientists differed in that they felt the main tool for creating recognition is conferences rather than journals. Indeed, in the case of high-energy physics, reputation affording evaluation cannot be based on publications as articles emanate from huge research groups and may have thousands of co-authors. Instead, it is participation in conferences that brings reputation for the scholar: the researcher who is chosen by the team to represent them at a conference will see their work recognized and will automatically benefit from high visibility and, then, enhanced reputation.

The Polish computer scientists very much agreed about the importance of collaboration towards reputation believing that 'without collaboration there is no reputation'. This view might be explained by the teamwork that prevails in computer science.

The French academics, whilst basically agreeing with their Spanish, Swiss, and Polish counterparts, also felt that reputation depends on the dynamism of a scholar's research activity because it is important to be seen to be in a constant state of advancement, whether it be in terms of coming up with new theories, research projects, or publications. Successfully completed projects are especially important in providing that essential momentum. One economist advanced the view that 'In the end the economists who are "consecrated" are the ones who are constantly moving things on.' Polish computer scientists agreed strongly with this view because for them reputation was mainly associated with innovation, something

they believed is yet to be effectively measured by the platforms.

Across the board when scholars discuss reputation it was linked to their legitimacy within their communities. Thus the Swiss physicists said that activities within the scientific community, such as consortium membership or journal article reviewing, were important for reputation. Recognition by colleagues from other scientific fields at their own institution was also thought to be especially important by the humanities scholars. For the French economists the communities of interest were the national and international ones. According to the Swiss physicists there was also a strong link between scientific authority and professional reputation, which came from lay public and civil society recognition and not their peers. For some of the humanities academics, too, reputation came from serving the community around them. In Spain it is common to contribute freely to national/regional organizations and this adds significantly to scholarly reputation.

As to the possibility of going beyond the 'publications and citations' paradigm in reputation building, interviewees provided little indication that new practices are about to be put into place. For example, despite the fact that teaching is a major activity of scholars and a rising goal of Europe-wide policy initiatives, our study shows that it is neglected as a component of reputation and reward. In France, teaching is not assessed for reputational purposes, and therefore it is no surprise to find that just one economist, the oldest, found this situation regrettable. The same holds true in Poland, and for the same reason: teaching is ignored in reputational assessments, mainly as a result of the fact that there is no coherent or standard policy to create reputation in Polish universities. It is largely left to the wishes and practices of individual heads of department and deans. Neither do teaching tasks play an important role in establishing reputation for the Swiss physicists. However, a few Spanish humanists did raise concerns that teaching was not fully recognized for reputational purposes and put this down to the fact teaching is a local activity and does not transcend itself to the national or international stage – and therefore not considered highly by their university.

By the same token, as the Swiss physicists explained, while management and administrative activities represent an important part of academics' daily activities, they do not count for international reputation purposes and for them international reputation is everything. The French economists were more divided in their views and, again, the Spanish humanists offered a slightly different take on reputation claiming that management activities do help indirectly in enhancing reputation by enlarging the circle of contacts.

In general, it seems that active researchers connect reputation with prestige among peers in their specialist area. Less active researchers connect reputation with teaching tasks and activities aimed at society outside the academy. All in all, as the Polish computer scientists mused aloud, the main problem for establishing reputation via the novel platforms is that 'the activities of scholars are broad and different in character', so it is hard to find a common denominator to all these activities and equally difficult to weight them.

Use and users of emerging reputation platforms

Use and knowledge of social media tools and online communities was generally low among the 15 French economists interviewed. Traditional platforms, such as Google Scholar, loomed much larger. Just two social media-based reputational platforms, LinkedIn and ResearchGate, were widely used, but neither heavily nor regularly. Mendeley and Academia.edu were little used. However, even the non-users among them were cognisant of the opportunities and benefits of using these services. More active were the Spanish humanists and social scientists. Thus, at the University of Leon 11 of the 16 academics had profiles in Academia.edu and 3 of them also in ResearchGate. However, only 5 of them were frequent users. This illustrates nicely the fact that having a profile is not the same as being an active user, so statements about the popularity of emerging platforms have to be taken with a large pinch of salt. At the University of Salamanca 8 of the 15 participants had profiles in Academia.edu and/or ResearchGate. At CSIC 3 of the 7 researchers had profiles in Academia or ResearchGate and a few used emerging platforms with citation management functions, most notably Mendeley.

The Polish computer scientists were relatively active too, with 20 out of the 24 interviewed using LinkedIn and ResearchGate. Mendeley (14), GitHub (10), StackOverflow (10), and Academia.edu (8) followed in popularity. But, as we will learn, use of these platforms tends not to be directly connected to reputational building or checking purposes. The Swiss physicists were aware of academic social platforms, in particular, LinkedIn and ResearchGate. Three had accounts, but for curiosity purposes rather than use, as one said 'it is after all a trending topic'. They, of course, do have their own long-established, dedicated networks and databases and perceive academic social platforms to be too generalist and/or redundant for their purposes. The current tools used are sometimes 'craft' based (e.g. mailing lists), but they are efficient and sufficient because they are built and maintained by and for the community.

So who are the main players and beneficiaries in this emerging market? The opinion of the French economists was that it is the researchers themselves. Even as light users, they can see that there were gains to be had in terms of enhanced visibility and were beginning to understand that what they were doing on the platforms was increasing their authority and reputation. Even though not all the researchers used the platforms with the same intensity, they all realized that 'something is happening'. That is why some of them are becoming 'influencers', inviting colleagues onto the platforms and asking them to become active. Age does not seem to be a determining factor in usage or membership, although, unsurprisingly, people below 50 years old are most preoccupied with questions of authority and reputation. French research managers and librarians appear not to be engaged at all.

For the Spanish humanists the main players or participants were thought to be researchers too. Especially those under the age of 55 with a specialism in fields such as prehistory and medieval history where journals are the main means of communication. There is evidence that young researchers in the first stages of their careers take more advantage of reputation mechanisms. Deans and senior managers, again, do not see the promotion of staff reputation as one of their responsibilities. They were more interested in managing

their staff's teaching load. Also, individually, deans do not know much about the emerging platforms and show no interest in finding out. And, as with the French case study, librarians are not concerned about reputation at all and are only familiar with LinkedIn, which meets their professional needs.

The Polish computer scientists offer up a contrary view that, in theory anyway, the university and the state, the benefactors of grants, should be the key stakeholders, but in practice they are not involved at all. Polish universities, especially state-owned ones, are generally conservative when it comes to the implementation of information technology to assess the work of their academics so this is perhaps not surprising. University computer scientists who specialize in theoretical problems (often mathematicians) are not participants as they are very attached to the traditional university career patterns based on publications and the accumulation of higher degrees. In fact, long established professors do not use social media services at all. They have a reputation as a result of becoming a professor, and therefore do not care about their reputation as viewed from the prism of the social networks. They have enough university power in their hands and they do not need to look 'cool' by using the latest in social media. They are professors for life and are not about to upset the reputational applecart. This was a strong undercurrent of discussions with academics from all our case study countries

It follows, then, that the younger generation of Polish computer scientists are not leading the way and this is said to be because they tend to be conformist. To progress up the academic ladder they have to adhere to all the rules forced on them by university authorities, who appear to have no interest in reputational systems whatsoever.

In the case of the Swiss physicists it is hard to determine who the participants or stakeholders are or should be, as reputational platforms were not used much and, anyway, they felt that the platforms do not have a very good reputation themselves! But in some instances (e.g. the University of Geneva, which has integrated 'Science 2.0' in its strategic plan) institutions are just beginning to get involved, with perhaps Geneva leading the way in Switzerland. But for now reputational systems

seem very far away from the concerns and priorities of researchers, who all claim to suffer from a lack of time, a theme that we will take up later.

Practices, motivations, and experiences of using emerging reputation platforms

For French economists, while the emerging platforms were not even remotely challenging the traditional reputation platforms such as Google Scholar and Scopus or their own national ones, there was some evidence to suggest that they are beginning to explore and supplement them by providing more opportunities for promoting and showcasing content. Although ResearchGate-type scores are not yet taken into account by institutions or research assessment policies, and hence are not a priority for French economists, they are implicitly accepted because they offer the possibility of building a wider media-based reputation, and all academics know they need that. What emerging platforms are also good at are helping to promote an economist's particular viewpoint or school of thought. However, conversely, it was pointed out that reputation platforms can work against researchers when they fail to complete their profiles and/or do not show any regular activity, leaving an impression of vacuity. In other words reputation can be gained and lost in the emerging platform.

The practices and related motivations of the French platform users fell into two categories: those with passive or active profiles. The passive profiles were embodied by researchers who see advantages in using the platforms, but do not feel confident and concerned enough to participate actively. They 'consume' information and contents; they make use of some of the mechanisms, but do not really engage. These researchers considered the platforms more as a free information resource, and do not yet see the reputational potential they could gain from them. For instance, they, like many other scholars, found ResearchGate very effective for obtaining articles that they would otherwise have to pay for on a publisher platform. (This is a concern for publishers, with the STM Association currently mounting an investigation into this practice.) This category of researchers spend very little time on the

platforms. For their reputation, they rely on more traditional mechanisms.

The active profiles were embodied by the few economists who, while also appreciating that the platforms were an invaluable information resource, mainly used them in a 'collective game' which they can play with members of their community to obtain visibility, esteem, recognition, reputation. These researchers were convinced that their behaviour on these platforms contributes to a widening of their reputation. They were connected regularly to platforms and spent time posting content, downloading publications, updating their accounts, exchanging messages; in a word 'interacting'. At the same time, they observed and learnt what is undertaken around them by other 'game' players and how they might obtain a reputational advantage.

For most of the Spanish humanities scholars their main motivation for using emerging platforms, like that of the 'passive' French economists, was not directly reputational. They used them to obtain updates about publications in their fields. Most were conscious that they used the reputation mechanisms poorly. It was noteworthy that they almost never participate in online fora, which in the case of ResearchGate counts towards the RG reputational score. They tend to use the repository mechanisms of the platform, but not the social ones.

Spanish CSIC social scientists differed from their humanities colleagues. This may be partly due to their disciplinary differences and partly the fact that the former were purely researchers with no teaching responsibilities. Thus, CSIC researchers were more aware of the reputational benefits of social media. More generally they talked about the usefulness of Twitter in staying informed of developments in their field and to disseminate research findings to a wider audience. Something which Kudos takes full advantage of. They also felt more strongly that blogs have a value for research dissemination purposes and generally better understand the potential of emerging mechanisms. They are more aware too that profiles need to be updated regularly, otherwise they reflect negatively on researchers – something we also heard from the French economists. Unusually, and unlike their humanities counterparts, the social scientists felt that reputa-

tion, as represented by the platforms, should be considered in career progression. If this constitutes the first seeds of change in the scholarly environment then it is happening outside of the confines of academe and in the social science sector.

For the Polish computer scientists the most popular activity associated with the platforms was simply maintaining a profile in case someone wanted to get in touch with them. LinkedIn was mainly used in this context and their profiles function as a digital business card for the benefit of headhunters. After that, the most popular activity was posting content related to research, discovering related peers, tracking metrics, and finding recommended research papers. Thus, emerging platforms were mostly tools to raise their profiles and so become more discoverable, not community tools of social interaction or collaboration. In fact, computer scientists did not know or care that scholarly social networks have a reputational side to them. They preferred to make their own decisions about trust and reputation of other scholars mostly by reading their papers or by meeting them at conferences, not by looking at their altmetrics or scores.

The Swiss physicists, typically the odd ones out in our investigation, were sitting on the fence. Some of them were aware of the phenomenon, but were waiting to see what transpires down the line. Having said that, there were physicists who thought that an online presence can have repercussions for their professional reputation and believed that opinion about the role of social networks in scholarly reputation can be finely shaded. For example, it might be important 'to increase one's visibility on the web to obtain grants and project funding: it's necessarily an advantage to be seen when you're Googled in regard to someone who is not visible'. Reputation and visibility, it was argued, go hand-in-hand.

Challenges and problems faced in using reputational platforms

The main reason preventing French economists from greater use of reputational platforms was a lack of time. Very tight working schedules meant they cannot find the time to use the platforms 'enough' or 'fully'. This was true even for those researchers who were

convinced of the usefulness and reputational impact of the platforms. This explains why certain functionalities and mechanisms were not mastered by even regular users of the platforms. Another drawback to using reputational platforms lay in the fact that they do not carry the weight and authority of 'official' places where reputation can be gained, such as HAL (the national open archive), or thematic international open archives, such as IDEAS: Economics and Finance Research, or RePEc. These platforms, in France anyway, benefit from a sense of seniority and legitimacy, which leads researchers to favouring them more than the emerging reputational platforms.

The principal problem for the Spanish humanities researchers in using the platforms was also a lack of time. Academics at Spanish universities have to perform as lecturers and managers as well as researchers, leaving little time for anything else. However, for the Polish computer scientists it was much more than a lack of time. There were too many fundamental weaknesses associated with the platforms for their liking. The main one was that the activities of scholars are so broad and different in character it is impossible to find a common denominator to/measurement for all these diverse activities, so why bother? Another weakness cited was the immaturity of semantic systems that underpin the reputational platforms. Thus they tend to count and judge publications and not actual knowledge or impact, although the likes of Kudos, a service relatively unknown to them, are trying to address this problem. A third weakness was that computer science is a highly competitive world in which the disclosure of research details can be used by competitors; it is not an 'open' world and the emerging reputational systems – by definition – operate on an 'open' basis. Although no scholars were confident enough to say this openly, it was apparent that to many science is not just about sharing and co-operation, it is often viewed as a competitive battlefield.

The Swiss physicists felt that they will require management support and encouragement in order to change their mind-set, and there were initiatives afoot. And, just as in the case of the French economists, lack of time and availability were obstacles to use.

How are such issues as trust dealt with?

Many of the owners of reputational platforms are completely new to the environment and have had little time to establish their trust. This, combined with the well-documented concerns about the value and validity of social media measurements, might have been expected to lead to widespread worries about trustworthiness or reputational platforms.² But this turned out not to be the case. It is possible that positive experiences with Google Scholar have allayed scholarly fears or simply everyone has become conditioned to 'the new'. There were, however, some pockets of concern. The Polish computer scientists were the most worried, concerned as they were with the commercialization of science. The Swiss physicists were also suspicious about online social networks in general and academic platforms in particular, saying that they were 'mistrustful' and 'reticent' of them. More generally, there were mild worries about the scores from the reputational platforms being used for evaluations since there are very few controls over them and the algorithms which they employ are kept secret (largely to prevent gaming).

Skills, attributes, and support needed for using reputational platforms

Again, this was another area where we had expected more comment but little was forthcoming, possibly because the platforms are relatively easy to use and researchers have learnt to 'just cope'. Some French economists, however, did find it difficult to understand the 'social' meaning of certain actions on the reputational platforms. For example, on LinkedIn, researchers whose skills had been endorsed by a third party did not necessarily know if they should reciprocate the action. On ResearchGate, an economist who had recently published a study did not know if they were allowed to upload it on the platform, and this is clearly a grey area where there is need for advice. Researchers tend to learn to use platforms on the job and therefore do not master all the skills needed to feel completely comfortable using the platforms. Other skills the French researchers thought to be required included:

- Speaking English. All the systems use the English language.
- Knowing and understanding what actually constitutes scholarly reputation and how to burnish it.
- Having good time management skills to ensure you keep up with what happens on the platforms and to regularly post new updates.

The Spanish humanities scholars agreed with the need to have English skills and this holds them back from engaging more with reputational platforms. Additionally, they thought it was necessary to be an active researcher because if you are mainly a teacher you will not have much in common with the platforms. None of the Spanish institutions have undertaken any promotion of reputational platforms and this might be needed at least in the fields of humanities and social sciences to encourage more participation. Neither the Polish computer scientists nor the Swiss physicists commented on this question (possibly because both groups were light users, and the small number of participants were highly proficient and active).

Relationship between emerging reputation mechanisms and prospects for future scholarly success

For many of the scholars interviewed the relationship was not clear, hence much of the previously reported ambivalence towards emerging mechanisms and platforms. This, of course, is quite understandable as the platforms are still 'emerging' and are also in English (there are no native-language platforms available). Furthermore, there is not one platform that covers a sufficiently wide range of scholarly activities. However, there are a sizeable number of scholars, even scholars who did not use platforms or only use them occasionally, who feel that emerging mechanisms and platforms will be the future and especially important for young scholars building a career. There is a sense that their time is coming. This was true for all subjects, countries, and ages.

The more active French economists, albeit a minority, argued that emerging platforms will be of future benefit, partly because services such as ResearchGate and Academia.edu frequently send them messages that scholars they do not know have 'Googled' them from far-flung places. This is taken as a sign that

they are having an impact. Also, they were conscious that when applying for a position, for a new job, for funding, for a research project, and so on, the reputation gained from the platforms might be able to confirm the quality of the candidate and help them pass through the selection process more easily and quickly than others. There was an optimism in the Spanish humanities camp as well, with some scholars believing that as the use of reputation platforms increases (as they felt they inevitably will) scholars will obtain more invitations to conferences and participate in networks or in projects, so speeding career development. By using reputation platforms too, their work will get more citations and hence improve their future prospects.

However, there were concerns about the future. A social science researcher from CSIC felt that social networks (in general) and expanding metrics (in particular) have done damage to the reputational system because they have given rise to a scholarly 'Tower of Babel', a confusing multiplicity of ways of providing recognition for scholarly work. They vie with each other in order to establish their own reputation. Hierarchies that were once clearly established at the academy have become defunct. Nowadays, according to that scholar, reputation can be won or lost in a few days, thanks to the social networks. Reputation rather than becoming more established is becoming more transient.

Are there any new indicators which might measure the impact and importance of scholarly activities more accurately or comprehensively?

It could be argued that this question is rather premature because most of the scholars questioned have yet to engage with the full range of indicators currently available. On the other hand, it might be the case that they are not engaged because the indicators they value are not there. One suggestion from a French economist was that there should be indicators for teaching activities (especially in regard to Masters and PhD students). A few Spanish humanists agreed with this, but they also felt that more than just journal publications need to be taken into account in reputational calculations. For instance, why not include conference participation, conference organization, participation in projects or networks, and

successful funding outcomes? Swiss physicists were of the opinion that science sometimes needs time and some research projects do not produce visible results for years, especially in theoretical physics. Reputational judgements therefore cannot be rushed through, although they recognized the pressure to do just that. They felt that 'e-reputation' will soon be taken into account for evaluations and they were fully aware of the risks if scholars themselves do not participate in the debate about new indicators.

Conclusion

While we believe that the topic of emerging reputational mechanisms and platforms has not been considered in such depth and detail before, and certainly not in regard to scholars from continental Europe, what we have reported on here is nevertheless a relatively small, exploratory study, and care needs to be taken when it comes to generalizing its findings. New platforms are coming onto the market even as we write,¹⁸ and the opinions of European scholars are diverse and changeable. What we have reported is a qualitative study that sought to convey the rich texture and complexity of the topic.

Despite its size and 'soft' methodology, the findings of this study do chime with those of the previously mentioned Sloan-funded Trust study, some of which have been reported in this journal.² The overarching finding is that despite the global march of Web 2.0, altmetrics, and social media, some things in the scholarly world are seemingly more resistant to change: trustworthiness and reputation appear to be two such cases. Thus, in the case of reputation, despite the fact that in today's Science 2.0 scholarly environment many more scholarly activities (e.g. collaborating, knowledge transfer, public participation in science, and online, public teaching) can now be showcased and routinely evaluated in many more ways (e.g. usage, likes, tweets, and followers), scholarly reputation is still largely determined by research outputs in highly cited sources such as refereed journals. This remains true even in the case of many emerging platforms. This, of course, reflects reality because today's universities and colleges use this criteria (although perhaps this is less important in the

research world outside academe). It follows, then, that use of emerging mechanisms and platforms is light and patchy, explorative, and institutionally unrewarded.

In every subject and country there are scholars using the emerging reputational platforms. And while scholars do not currently see these platforms as being central tools for the management of their academic reputation, they do see a future potential and are cautiously dipping their toes in the new waters. They are more than just cautious though; they are strategic as anyone would be in the changing and borderless scholarly world they find themselves part of. They have to optimize the opportunities for their careers in a period of transition and deal with the risks in so doing. They recognize that reputational systems could be beneficial tools, but at the same time they do pose reputational risks for them in the traditional system. This could explain the somewhat ambivalent attitudes presented to us.

As mentioned earlier, in such a small study it is difficult to determine whether there are differences in behaviour and perception according to country, discipline, and age but there is some evidence to suggest that the latter two are the more important variables. Thus the scientists (physicists and computer scientists) appear to be more wedded to the traditional scholarly world and all its attributes whereas social scientists and humanists are more willing to adapt to the new paradigm. Young scholars are seen to be the ones that will most benefit from the existence of the emerging platforms.

What then are the biggest surprises? The largest was that trustworthiness and credibility are well down the list of the concerns of scholars. Of course, that could be because the platforms are not yet strategic to reputation and this could change if they become more important.

It is, of course, still early days and most 'emerging' platforms are barely 5 years old. Even so, user numbers are beginning to stack up nicely with, possibly, nearly 30 million scholars, worldwide, using one or other of the platforms already, with 18 million alone using Academia.edu. More importantly numbers are growing very fast indeed, with ResearchGate having grown by nearly a quarter in the past

year and the fledgling Kudos service more than doubling in size (to 40,000) during the duration of this project. Clearly there is a head of steam building up – although our research revealed that many scientists are passive users at present.

There are also other mitigating factors for the patchy and 'lite' take-up: the biggest being that no emerging reputational platform has yet obtained the standing and market dominance that Google Scholar or Scopus have in the traditional reputational world. Nor do any of the platforms cover anything but a small proportion the 43 scholarly activities which the study identified to have reputation-conferring goals and potentials (see Appendix 1 for a full list). Platforms will only improve and in the medium term a number of reputational platforms look likely to embrace a wider range of activities outside of research publishing/dissemination. Kudos, for instance, are going to address the so called 'esteem factors': editorial board membership, role as a reviewer, society posts, invites to speak at conferences, etc., as well as policy improvement and changing practices and public engagement – things that funders in particular are interested in tracking. In the case of teaching (the elephant in the room) surely with students now customers and its practice becoming increasingly public and digital (e.g. MOOCs), it cannot escape the attention of the emerging reputational movement for long.

Interestingly, developments in the field are largely being driven, not by the established publishing community, who have long been the curators of scholarly reputation, but by new organizations that originate and do business purely through the Internet and who had no existence before the Internet. Belated attempts are being made to ensure that publishers do not miss out. Thus Elsevier bought Mendeley and several dozen publishers are actively working with Kudos. Maybe the Kudos initiative represents a strategic shift in thinking on the part of the publishing industry. Publishers, after all, faced with the economic uncertainties of open access publishing, need to adapt their practices and services and maybe that means getting closer to their authors and assisting them in building/maintaining their scholarly reputation.

Finally, a word of caution and a big pol-

icy concern. It is possible that reputational platforms could become too powerful (like Thomson/Reuters has become in the traditional system) because of the increasing use of metrics in scholarly decision-making. The algorithms on which they are based need to be open and transparent, which they are not at present. Reputational systems would argue this is because they are worried about gaming, but there needs to be quality assessment of reputational systems if scholars and their employers are going to run with them.

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Appendix 1: scholarly activities in the digital age that possess reputation conferring potential

The scholarship of research

- Obtaining funding
- Planning a research project
- Building upon previous knowledge
- Releasing data to the scholarly community
- Releasing methodologies, research tools and protocols to the scholarly community
- Disseminating research results formally via traditional scholarly channels
- Disseminating research results informally via active participation in conferences
- Disseminating research results informally via social media
- Peer reviewing
- Monitoring one's impact

The scholarship of integration

- Identifying a topic for a comprehensive literature review/textbook

- Identifying a researchable multiple-faceted topic
- Planning a comprehensive literature review/textbook project
- Planning an integrative research project
- Producing a literature review/textbook via traditional strategies
- Producing a literature review/textbook via open strategies
- Producing an integrative research output
- Producing an integrative, often multi- or inter-disciplinary research output collaboratively
- Producing Open Education Resources (OER)

The scholarship of application

- Identifying a researchable topic focusing on practical problems experienced by public/practitioners
- Identifying a researchable topic focussing on practical problems experienced in organizational or industrial settings
- Planning a research project focussing on practical problems experienced by public/practitioners
- Producing an application oriented research output
- Producing a community-interest driven, application oriented research output
- Producing an application oriented research output via a public participation in scientific research project
- Participating in the commercialization of one's inventions/discoveries (for example, by filing patents)
- Serving industry or government as an external consultant
- Serving one's professional/disciplinary community
- Popularizing scientific knowledge

The scholarship of teaching

- Designing a course/learning programme
- Producing and delivering a teacher focussed, face-to-face, institution-based, often access controlled course/ learning programme
- Co-producing and co-teaching a teacher focussed, face-to-face, institution-based, often access controlled course/learning programme

- Producing and delivering a teacher focussed, online, institution-based, either access controlled or freely accessible course/ learning programme
- Co-producing and co-teaching a teacher-focused, online, institution-based, either access controlled or freely accessible course/ learning programme
- Conducting a social networks based, participatory MOOC (massive open online course)
- Pursuing the Open-Notebook Science model in the classroom
- Tutoring/mentoring students on an individual basis
- Advancing learning theory through classroom research

The scholarship of co-creation

- Participating as a consultant in a PPSR (public participation in scientific research) project
- Leading a Contributory PPSR (public participation in scientific research) project
- Leading a Collaborative PPSR (public participation in scientific research) project
- Collaborating in a Co-Created PPSR (public participation in scientific research) project
- Conducting a PPSR (public participation in scientific research) project in classroom or web based course/learning programme.