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### RESEARCH ARTICLE

# Democratising the knowledge commons: The shared goals of open and community-engaged scholarship

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## Abstract

Community-engaged scholarship is at a transitional moment, seeking to effect cultural change in academic and research institutions, which will expand the concept of scholarship to encompass the methodologies and definitions of scholarship embodied in community-university research and engagement. Open scholarship is similarly employed in transforming scholarship to broaden its scope, influence and impact beyond traditional modes of academic practice. Written from the perspective of practitioners of open access publishing, this article explores the development and current state of the open movement and considers intersections and opportunities for collaboration with community-engaged scholarship.

## Keywords:

**open scholarship, open access, F.A.I.R., scholarly communication, engaged scholarship**

## Introduction

Community-engaged scholarship (CES) and open scholarship (OS) share similar aims to ensure universities achieve a public good and utilise their significant resources to help resolve local, regional, national and international issues. They both seek to extend scholarship beyond the walls of the university to the wider community and civic life. Since emerging in the 1990s, community-engaged scholarship and open scholarship have become integrated into academic

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processes and practices at the individual, institutional and national levels. This acceptance has been achieved through a combination of top-down support in the form of policy innovation, national reports and compacts, and funding support, as well as bottom-up approaches, including specific local projects, joint community-university initiatives and new forms of scholarly activities conducted by faculty. Despite substantial progress over the past 30 years, both forms of scholarship have encountered significant challenges in being accepted as part of mainstream teaching and research within the traditional university model.

The most significant of these challenges is the current academic reward system, which incentivises practices perpetuating traditional concepts of scholarship and scientific knowledge, while disadvantaging faculty and institutions that are exploring new modes of creating and sharing knowledge and focusing on the university's civic mission, as embodied in both CES and OS. To create an environment in which both engaged and open scholarship are central to academic life, significant policy and cultural change is necessary to widen the concept and practice of scholarship, including new types of academic practice and research focused on the democratisation of knowledge and positive social change.

The need to effect changes in the academic reward system appears, therefore, to provide a point of convergence where open and engaged scholars can fruitfully collaborate. To date, there has been little evidence of convergence or cooperation between the two movements. Written from the perspective of practitioners of open scholarship, this article begins a dialogue with the aim of bridging this divide. Through exploring current practices and innovations in open scholarship at the institutional and national levels, it is hoped that the synergies of open scholarship and community-engaged scholarship will be highlighted. Through these commonalities, the two streams of academic practice – openness and engagement – may find ways in which to intersect and collaborate to implement the types of long-term institutional, national and international changes in systems, policies and culture that will embed openness and engagement within higher education and assist universities to fulfil their potential as agents of positive societal change.

## Open scholarship and its parallels with community-engaged scholarship

Open access – the precursor to the broader concept of open scholarship – emerged in the 1990s as a response from scholars to a growing dissatisfaction with current norms of scholarly communication. Early proponents noted financial and social inequities in the system of academic publication whereby scholars produced research, gave the written results of that research to academic publishers, and then paid the publishers large amounts of money – sometimes directly as individuals, but more normally via the institutional library – for access to the journals in which their own research was published (Suber 2009). Embedded in these practices was a geo-political privileging of scholars in wealthy institutions and developed regions which could afford to participate in this increasingly expensive mode of scholarly production and exchange (Adcock & Fottrell 2008; Evans & Reimer 2009; Lor 2007).

The advent of online publishing and widespread internet access in the 1990s led corporate academic publishers to offer a new business model to university libraries: large online collections of journal titles packaged for an amount much less than the aggregate sum of purchasing each title individually. The practice was commonly known as ‘the Big Deal’ and was generally taken up enthusiastically by libraries which saw a way to exponentially increase their library's holdings and offer the convenience of online access to their patrons. However,

the Big Deal had far higher overall costs than the previous practice of purchasing title by title – even though the average cost per title was drastically reduced – and removed flexibility in library budgets (Carlson & Pope 2009; Frazier 2001; Friend 2003; Poynder 2011). Corporate academic publishers often took advantage of the new monopolistic hold they had on libraries through sharp annual price increases to maintain these online journal collections (Ball 2004; Dingley 2002–2005; Fortney & Basile 1998; Kronenfeld & Schlimgen 2004). The effect of this ‘journal crisis’ was exacerbated by the consolidation of academic publishing into the hands of a few corporate publishers – often at the cost of small guild-based publishers. Moving into the new millennium, many libraries found themselves facing the reality of drastically cutting their online collections as the cost of providing access to information rapidly outpaced the ability of institutional budgets to cope (Anderson 2017; Harvard University 2012; Siler 2016; SPARC 2018).

As the costs of accessing scholarship increased, many of those involved in the scholarly communication cycle as producers, consumers or administrators of information sources became aware that the costs of this rapid shift were not only financial but also educational, cultural and social. As costs spiralled upwards, fewer institutions and individuals could afford to access current research as it was published in the academic literature. Scientists, researchers, educators and students were being cut off from information – ironically at a time when the advent of the internet made the broad and rapid dissemination of information technologically easier than ever before (Rao 2001). The flow-on effects in terms of educational standards, the pace of new scientific discoveries, and the potential retardation of innovation in business, government and society were difficult to quantify, but were to be deeply feared.

The Budapest Open Access Initiative (BOAI) was one of the first attempts to articulate this mood in an international framework that could drive change. Drafted at a meeting of the Open Society Foundations in 2001, the BOAI provided both a statement of principles and a roadmap for practice. Its goal was to implement changes in scholarly practice that could remove inequality in access to information, which was seen as an increasing barrier to universities and scholars fulfilling their core mission: to apply new knowledge and research to improve society (Guédon 2017).

An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge (Budapest Open Access Initiative 2002).

Parallel with the emergence of the open access movement, community-engaged scholarship was gaining traction, particularly in US universities. Unlike open access, which was a predominantly bottom-up initiative driven by individual scholars organising into loose associations to advocate for change, the impetuses for community-engaged scholarship were multiple: faculty and higher education leaders, government and communities articulating a need to bridge the divide between universities and the communities in which they were

located but from which they were seen to be increasingly isolated (Boyer 1990; Groark & McCall 2018; Soska 2015). While CES often aimed to have an immediate and direct impact on the community through collaborative projects which tackled social issues at a local level (Maurrasse 2010), the movement's overall mission included a more comprehensive public good. Specifically within the US context, community-engaged scholarship sought meaningful, broad-based social change by enhancing or returning to the publicly funded university's original mission of producing civically minded students whose education would benefit not just the student but the broader national demos of which he or she was a part. This mission can be summarised as generating 'democratic, community-based knowledge and action' (Saltmarsh, Hartley & Clayton 2009).

As it expanded beyond the US, the CES movement explored broader questions of what constitutes knowledge and who should be included in scholarly conversations shaping the near and distant future. Hall and Tandon (2017), for example, argued for including various ancient systems of thought that lay beyond the comparatively young and exclusive Western notion of knowledge. By first recognising, and then drawing on, the knowledge systems of ancient and demonstrably more sustainable cultures, they argued that, through Western science, we were more likely to be able to learn together and work together to achieve the shared economic sustainability and ecological balance that currently eludes us.

In its attempts to broaden the concept of scholarship beyond Western scientific rationalism and to apply other forms of knowledge to the resolution of global issues, community-engaged scholarship has moved further than the open access movement in revolutionising the concept and practice of scholarship. While open access sought to enact public good through the belief that wide and unfettered access to information would result in an uplift in knowledge, education, research and innovation, it has not radically questioned the nature of Western academic empirical knowledge. Nevertheless, both practices share a common goal in progressing traditional modes of research and academic practice to more directly apply the fruits of scholarship to pressing social, economic and health issues beyond the walls of academia. Open scholarship, as it has progressed, has also called for greater contribution to the academic conversation from those with often disenfranchised voices. This, of course, supports the work of established engaged scholars such as Hall and Tandon (2017). Given these shared aims, it is unfortunate that there appears to have been little systematic awareness between the two groups of scholars and no cross-pollination of ideas at this early stage. Foundational works of both practices do not reference the parallel changes happening in open and engaged scholarship (see, for example, Bok 1990; Boyer 1990, 1996 on community-engaged scholarship; Harnad 1995, 1997; Suber 2012 on open access). This silence is perhaps explained by the disciplinary boundaries between proponents of each concept. Open access arose largely within scientific disciplines, its leading scholars were mostly scientists, and the problem was often framed as one of 'scientific' communication rather than 'scholarly' communication. Engaged scholarship, conversely, was often – although by no means exclusively – focused on humanities and social science faculties, and sought from quite early on (Boyer 1990) to advocate for the inclusion of community-based intellectuals and practitioners in both public and scholarly debate.

Since these early origins, both practices have had marked success. The open access movement, for instance, has expanded well beyond its initial focus on journal publishing within the scientific community to encompass an interest in removing barriers to all forms of scholarly activity, including monograph publishing, data publishing and sharing, and the creation and dissemination of educational resources – generally captured under the umbrella

term of ‘open scholarship’ (SPARC, ‘Setting the default to open’). The component elements of open scholarship are described below, highlighting some of the major innovations and some points of relevance to community-engaged scholarship. Many of these component elements and innovations are contained in the recently published ‘Ad Hoc Task Force on Open Access to MIT’s Research’ (MIT 2019), which emerged from the highly influential ‘Institute-wide Task Force on the Future of Libraries’ report also commissioned by MIT and published in 2016.

## Open scholarship today

### OPEN ACCESS PUBLISHING

The open access movement initially focused on finding new and fairer means of distributing research than the traditional academic journal. Great progress towards this goal has been achieved through a combination of top-down and bottom-up approaches. Scholars working individually or in informally constituted associations have contributed to a shift in the scholarly communication landscape. For example, they have chosen to publish in open access journals or to self-archive in institutional or discipline-based repositories to ensure wide and free access to their research publications, with arXiv.org (2019) being a particularly early and notable success as a discipline-based open repository. Scholars have also banded together to start new open access journals exploring alternative business models and removing the economic, technical and legal barriers which prevent traditional journal articles being widely shared, read, cited and used by those outside affluent universities. The Open Humanities Press and the Public Library of Science (PloS) are two key examples of these enterprising new publishing arrangements (Open Humanities Press n.d.; PLoS n.d.). Scholars have become activists, boycotting authoring, editorial and peer review roles at traditional paywalled journals in favour of volunteering their labour to open access journals. Notable examples of scholar activism include The Cost of Knowledge project, which calls on academics to boycott Elsevier journals and to date has garnered over 17,000 signatories, and the 2015 mass resignations of members of the editorial advisory committee of Australia’s leading medical journal, *Medical Journal of Australia*, in protest at what members saw as unethical commercial arrangements with Elsevier to publish the journal (The Cost of Knowledge n.d.; McInerney 2015; Patty 2015).

This grassroots movement has resulted in large-scale policy change at the institutional, national and international levels. Individual departments and entire universities have implemented open access policies requiring academics to make a version of published works freely available in an open access format. Latest figures from the open access policy tracking service, ROARMAP (n.d.), estimate that 732 universities or research institutions and a further 75 sub-units of research organisations (e.g. faculties, departments, schools) have an open access mandate. This is increasingly becoming a requirement of funders, who require the outputs of grant funded research to be made openly available. ROARMAP lists 85 funders and 57 research organisations (such as university aligned research centres) as having an open access mandate, led by major American and European funders such as the Bill and Melinda Gates Foundation, the European Research Council, Wellcome Trust and National Institutes of Health.

Governments have also mandated open access publishing, although with mixed success. In 2012 the UK government commissioned a report ‘to develop a model, which would be both



effective and sustainable over time, for expanding access to the published findings of research' (Finch 2012). The aim of the year-long review was to address the types of issues which the open access movement had raised, but the proposed solution was met with widespread dissatisfaction. The key recommendation was to follow a 'gold OA' route, whereby authors or their institutions would pay an article processing fee (APC) to publish an article under an open model. While the results did see an increase in the percentage of research being published open access, it resulted in large increases in expenditure for institutions (offset by government subsidies) paying these APCs, mostly to large publishers who offered a 'hybrid' publication model under which they continued to charge subscription fees to read the majority of their content, but would make individual articles freely available where authors had paid APCs (Earney 2018; Jubb 2017). This 'double-dipping', where publishers established two revenue streams from institutions, which paid to publish and then paid to read, has been widely condemned, and the outcomes of the Finch report have been met largely with disappointment and scepticism by open access advocates (Harnard 2012; Kingsley 2016). This case demonstrates many of the complexities and divisions within the open access movement as to how to achieve its aims to make research more widely available.

Other national and international efforts have been more cohesive and successful. Since 2006 the European Commission (EC) and the European Union (EU) have funded OpenAIRE (Open Access Infrastructure for Research in Europe) to coordinate projects 'aimed to support the implementation of Open Access in Europe'. With a broad mandate and members from 33 countries, OpenAIRE supports large-scale national infrastructure projects to provide the necessary technological underpinning for open and free access to research publications and data, as well as policy innovation to 'position Open Access and Open Science onto national agendas' (OpenAIRE 2018a). The vision of OpenAIRE, which encompasses inclusive scholarly practice to foster social benefits, could equally be applied to engaged scholarship: '[to] transform society ... [and] allow citizens, educators, funders, civil servants and industry [to] find ways to make science useful for themselves, their working environments, the society' (OpenAIRE 2018b).

The F.A.I.R. principles have also transcended national boundaries. Initially developed specifically as a set of guiding principles for the sharing of research data, they have since been adopted more broadly and applied to all research outputs (Force11 2015). The concept of F.A.I.R. (Findable, Accessible, Interoperable, Reusable) moves beyond simple open access to consider how research may be easily discovered, shared and used by both humans and systems to ensure ongoing access and reuse. In Australia, the F.A.I.R. principles have been adopted by peak library and other bodies, such as the Council of Australian University Librarians (CAUL 2015) to advocate for national action at the governmental level. The two major national research funders, the National Health and Medical Research Council (NHMRC 2018) and Australian Research Council (ARC 2017) have both introduced open access policies for funded research to facilitate open sharing of research and research data.

The open and F.A.I.R. scholarship movements have also grown beyond the often anglo-centric sphere of academia, with a range of national funding and research bodies in both developed and developing nations providing institutional statements of support and direct financial commitments to the European Commission's Coalition S initiative – 'Plan S'. Perhaps most significantly, national libraries and research funders from China, one of the largest producers of research, have made statements of commitment to the Plan S goal to provide open access to research from 2021 (Schiermeier 2018). Meanwhile, Latin American countries have their own strong history of driving research sharing through regional

collaborative initiatives, such as Scielo and Redalyc, which predate Euro-centric policies such as Plan S (Minniti 2018; Sayer 2019).

In the wake of these national and international principle statements and policy changes, there is evidence that the open access movement has achieved real changes in academic culture and practice, and that this has resulted in research being more widely distributed and disseminated. The number of academics involved in some form of open publishing practice is one measure of this. While it is difficult to quantify numbers, the 17,000 signatories to The Cost of Knowledge project and the growing number of research institutions and funders tracked via ROARMAP indicate widespread adoption. Studies have also attempted to quantify the number of materials being made available openly and the impact of this work (Tennant et al. 2016). Quantitative statistical analysis has demonstrated that the number of open access research publications is growing. A recent large-scale survey suggests that 28 per cent of scholarly literature is now open access, and claims a strong citation advantage for open articles, with OA articles receiving 18 per cent more citations than the average (Piwowar et al. 2018; on the citation advantage of OA see also Davis & Walters 2011; Eysenbach 2006; Harnard & Brody 2004; Lewis 2018; McCabe & Snyder 2015; Tang, Bever & Yu 2017). Measuring the societal and economic advantages of open access publishing has been harder, but new 'alternative metrics' have been developed to measure engagement with research publications via web-based news and social media channels to track how research is achieving readership and visibility beyond the academy (Galligan & Dyas-Correia 2013; Mehrazar et al. 2018; Priem et al. 2011). Others have demonstrated that economic growth and improvements in community health and public life can arise when research is widely shared (Gruen, Houghton & Tooth 2014; Tennant et al. 2016).

Engaged scholars have certainly adopted some of the practices of open access, and there is strong evidence of open access journals publishing the work of community-engaged scholars. However, to date, engaged scholars, as an organised group, do not appear to have been a strong voice in the rapidly evolving cultural and policy changes of open access. This seems a missed opportunity, as the mutual and equitable relationships on which engaged scholarship rests are bolstered by the open sharing of information (Community Partner Summit Group 2010).

## OPEN EDUCATION

The open movement has expanded beyond a focus on open access to research publications to include open education, which focuses on making educational material freely available for reuse, adaptation and remixing as a means of reducing the costs of producing and acquiring vital education resources (McGill 2010; OECD 2007). This may be a single document such as a lesson plan, an entire online course, or an open textbook, and all can be shared by individuals or organisations free from financial costs, but also from restrictive copyright limitations which prevent reuse and adaptation.

Engaged scholarship has a strong educational and student focus, with many university programs focused on service-learning to develop civic values in students and enrich learning through community-engaged programs. There is an obvious synergy between open educational practices and learning inspired by and delivered through community engagement. However, the authors have been unable to find current examples of service-learning programs sharing learning materials as open education resources to allow the dissemination and wider adoption of these pedagogical approaches.

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## OPEN DATA

The open data movement advocates sharing research data and enabling its reuse. This is seen as having two important consequences for scholarship. It reduces the amount of time and resources required to conduct research by minimising duplicate studies and experiments, allowing academics to utilise existing data sets rather than undertaking their own data gathering and to subject them to further analysis and interpretation, which in turn drives innovation and further discoveries of benefit to academia as well as economically (Manyika et al 2013; Piwowar & Vision 2013). It also increases the quality and veracity of research findings by allowing raw data behind research publications to be verified, replicated and subjected to independent assessment (Chen 2019; Nosek 2015).

While the open data movement has focused primarily on the STEM disciplines and areas of basic research and has therefore been predicated on the basis of storing and sharing scientific quantitative data, increasingly there is awareness that the social sciences and humanities also generate datasets which could be valuable for reuse, adaption and reinterpretation. Applied research, such as that undertaken in engaged scholarship, could be particularly beneficial to both academics and practitioners, potentially producing economies of scale and savings in time and resources, and enabling data gathered in the course of community-engaged research, service-learning and community activities to be applied in contexts beyond the original projects.

The evidence that open scholarly practices break down disciplinary and academic-community barriers speaks directly to the vision of engaged scholarship: to work with communities to help address social issues and improve public life. Engaged scholarship works at the nexus between research, teaching and outreach to improve both the university and the communities they serve through educational programs and service-learning approaches, which resonates with the aims of the open education movement to make learning accessible and authentic. Engaged scholarship also co-creates data which could be reused as part of applied research projects and civic programs, if it adopted the principles of F.A.I.R. and open data. The evidence therefore suggests greater interaction could provide mutual benefit to both open and engaged scholars. For proponents of engaged scholarship, fuller participation in the range of open practices, including open data and open educational practices, would further its mission to enact wide public benefit from research and broaden participation in knowledge creation and scholarship beyond the academy. For open scholarship, greater engagement with CES's questioning of the Western scientific tradition as the basis of knowledge and scholarship would increase the impact and relevance of its attempts to share knowledge and enact public good from university-based scholarship.

Perhaps the most fruitful focus of collaboration, however, lies in addressing the shortcomings and inequities of the current university reward system. As noted earlier, the barriers to adoption of more engaged and open scholarship are largely related to the value and reward systems prevalent in academia, and the privileging of basic research disseminated by traditional means over applied and innovative research and scholarship. In the next sections we will explore this value system in more detail and the changes necessary to enable wider adoption of open and engaged scholarship.

## The academic reward and incentive system

In recent decades, the development within universities of career incentives that reward the individual academic for research publication in high-ranking journals and focus measurement



of research success at the institutional level around international ranking tables has seen the work of civic service and community engagement by scholars relegated to a lower tier of importance and prestige within the academic world (Birch, Perry & Taylor Jr 2013). This prioritisation of scientific research and publication output over teaching and scholar–community engagement, despite the core educational and civic missions of publicly funded universities, presents a significant barrier to more fully embedding the practices of both community-engaged scholars and proponents of open scholarship into research workflows and academic life. Perhaps more critically, it acts as a brake to recasting the university as an ‘anchor institution’; a responsible and contributive stakeholder within local, state, national and international communities (Birch, Perry & Taylor Jr 2013).

The need to develop reward systems that embed the values of community engagement within institutional and government policies has long been recognised by engaged scholars (Barnett & Moher 2019; Ellison & Eatman 2008; Kaplan 2015; Saltmarsh et al. 2009; Ward 2003). As Ward (2005, cited by Saltmarsh et al. 2009) points out:

Faculty members, in their roles as arbiters of the curriculum, teachers, knowledge producers, and citizens, hold a prominent role in realizing the goal of making higher education more responsive to community and public welfare. For faculty to claim, own, and foster institutional efforts to connect the campus more meaningfully with society calls for reward structures that clearly define and reward this type of work.

Groak and McCall (2018, p. 8) have made the point more bluntly:

... faculty in many universities that emphasize basic research and scholarship as a criterion for promotion do not value research and other types of projects that have local rather than national relevance and are conducted in the messy laboratories of the community.

Advocates of open scholarship have also recognised the ‘publish or perish’ culture of the academy as the greatest impediment to the changes in research culture and academic practice that would result in more open sharing of research outputs. Publication in prestige journals – where prestige is measured by traditional citation metrics and well-established journal ‘brands’ – has become entrenched as the standard by which academic output is valued. Academic reward and ranking systems reward publication in journals which score highly on traditional citation measures, such as impact factor, driving a cycle which entrenches the position of established journals, with no reward for academics who seek to publish in ways that engage readers beyond the academy, or innovate new forms of publishing and scholarly communication, such as open peer review and multi-media and interactive web-based publishing. *Public*, the open access, multimedia digital journal of community-engaged learning and research, is an example of how effectively new forms of publishing can communicate and engage across disciplines, and between researchers and practitioners and communities. However, these types of publications remain relatively rare as the academic reward system favours publication of traditional research in high-profile established outlets.

This situation has led to organised movements aimed at changing the current value system which links personal academic career progression and institutional rankings, prestige and funding to crude quantitative measures, especially citation metrics. The Declaration on Research Assessment (DORA) and the Leiden Manifesto (Hicks et al. 2015) are notable collaborative efforts that urge publishers, libraries, universities and individual academics to ignore journal impact factors as a measure of the value of research.

The need to challenge traditional reward systems based on simplistic bibliometrics has also been identified in a recent European Commission report aimed at directing research towards pressing social issues. The report urges that stakeholders:

When participating in research assessment, for example in hiring, promotion and tenure, and funding decisions, focus on the merits and impact of a researcher's work and refrain from the use of metrics - particularly journal-based metrics - as a proxy. In particular, they should incorporate the recommendations from DORA and the Leiden Manifesto into the assessment process. ([Directorate-General for Research and Innovation, European Commission, 2019, p. 8](#))

## Points of convergence and the road forward

From within the current academic reward system there emerges clear points of convergence for open and engaged scholars to work together. Through more systematic collaboration, advocacy and practice, both groups could more effectively enact the kinds of cultural and policy changes required to widen the concept of scholarship and support more inclusive practices. This broader concept of scholarship should include new types of insight from the community and other knowledge systems that have all but been displaced by Western knowledge. By democratising knowledge in this way, and creating and sharing new knowledge on topics of global importance such as sustainability, academic practices could be established that co-generate socially responsive research that would have broader and more fundamental societal impact.

This article posits that one powerful way to change the global university policy and research culture would be to consider models incorporating 'more socially responsible criteria for ranking universities' (Barnett & Moher 2019). By including openness and engagement as key criteria against which universities are ranked, and subsequently financially supported by government and funders, university administrators would be freed to apply top-down directives that reward engagement and openness through researcher employment, tenure and promotion.

There are encouraging signs that funders, universities, and national and international organisations are starting to recognise the need for a more inclusive, engaged and open scholarship, which may drive necessary changes in reward and ranking systems. A number of statements have emerged recently, which, while predominantly focused on evolving the scholarly communication system by making research open and F.A.I.R., also assume - sometimes explicitly, sometimes implicitly - that such change must include research collaboration with the broader community. The 2019 European Commission report referenced above, for example, sums this up poetically by reference to H.G. Wells' 'world brain' as an analogy for how academic-social collaboration may help solve the planet's most pressing social and environmental challenges:

... Wells' vision rests on all human beings partaking in some fashion in all the world's knowledge. Because knowledge is accessible to all, researchers as well as other individuals, all across the globe, can become active participants in a worldwide structure of distributed intelligence. This powerful metaphor provides for a vision of an ideal state of scholarly communication. (Directorate-General for Research and Innovation (European Commission) 2019, p. 24)

The report invites all key actors in the scholarly communication system to *act*, and thereby facilitate change. For 'practitioners, educators, and other societal groups', the EC authors

recommend four clear steps to engage and participate and thereby shape the local, national and global publicly funded research agenda for direct social benefit. The four steps are:

1. Organize and advocate for free access to, and right to reuse of, publicly funded research results.
2. Reach out to funders, research institutions, and policy makers in order to develop new communication channels, new forms of co-creation and co-planning of research, and new forms of funding in response to needs, concerns and issues emanating from the population at large.
3. Look for opportunities to engage with research topics/results that are of interest to societal groups and their communities.
4. Bring forward research topics/questions that are mis- or underrepresented (e.g. by contacting relevant researchers, attracting the attention of other actors in the science system, or mobilising action in organised interest groups). ([Directorate-General for Research and Innovation](#) ([European Commission](#)) 2019, p. 49)

The EC report echoes the 2018 League of European Research Universities' paper on Open Science in advocating for cultural change towards open and F.A.I.R. scholarship with a community focus (Ayrís et al. 2018). Its 41 recommendations for cultural change within universities include a section on 'Citizen Science' and engagement in research by scholars, non-professional scholars and the public to shape beneficial public outcomes via applied research (Ayrís et al. 2018, p. 20).

Drawing these statements together into a plan for practical action, Plan S is the ambitious project of the European Union (EU) to make all their publicly funded research open access by 2021. Currently the EU, along with 13 other (mainly European) national funders, make up 'cOAlition-S'. They will require that from 2021:

... all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo. (Science Europe 2019)

The move towards large-scale, funder-driven open scholarship, which Plan S requires, will help drive the cultural change necessary within the research ecosystem to bring open and engaged scholarship into the mainstream. By unlocking research at scale, it will bring a far broader cross-section of the public, previously hidden behind publisher paywalls, into the orbit of published scholarship. If widely adopted, Plan S will also disrupt the economics of the current scholarly communication and research ecosystem driven by traditional publishers and ranking-driven governmental funding, enabling a greater role for funders focused on social and community goals. This disruption may allow for wider concepts of the purpose and nature of scholarship, beyond traditional Western scientific research, to gain greater prominence. In such a system, the community, who funds research, will be able to freely access, read and reuse research outputs, as well as actively co-design research projects to better meet their pressing social and environmental needs. It is research that the community can contribute to, not just as research subjects or as data sources, but as peer collaborators and research co-designers whose aforementioned needs can help guide the research agenda.

## Conclusion

Open scholarship seeks to make changes to the way universities engage with their local, regional, national and international communities by making knowledge available free of financial, technical or legal barriers so that it may be applied to the benefit of society. This goal is closely aligned to the vision of engaged scholars to effect change and address social issues through active engagement and partnerships with their communities. Both groups have made significant progress in making these new approaches an acceptable part of the academic and research workflow, and in some cases university policy. However, there are still significant barriers to overcome before they are accepted as mainstream practices. Most significant of these barriers is the current reward and incentive system within universities. The system is one which favours basic research, disseminated via traditional models of publication in established journals. This method of valuing academics and institutions disadvantages those who seek to work beyond traditional academic boundaries and directly with communities on issues of local, regional and national significance. Effective change requires expanding the concept of scholarship to include openness and engagement and to embed those elements into the university reward and tenure system. This work has already begun with the recent inclusion of an 'Open Access' category within the CWTS Leiden Ranking league table which measures the openness of a university's research, and the development of the Carnegie Community Engagement Classification as a measure of a university's community engagement. Notably, however, these moves towards new measures of openness and engagement have proceeded in parallel, but without collaboration on a more coordinated approach, to revolutionise the university incentive and recognition systems.

Scholars working within the open movement and scholars engaging with communities could benefit from closer collaboration to forward their agendas. For engaged scholars, working and publishing in more open modes presents opportunities to socialise their research and practice to a wide audience, both within academia and to the communities who are partners in their scholarly endeavours. For advocates of open scholarship, publishing engaged research would help to fulfil the most basic mission of openness – to make quality scholarship available to all audiences who may benefit from and use research to effect real social change. This in turn would help advocates of openness and engagement build the evidence base they need to drive policy change at institutional and national levels, embedding incentives that reward new concepts and practices of scholarship.

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