Systematic and Open Identification of Researchers and Authors: Focus on Open Researcher and Contributor ID

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Unique identifiers of researchers and authors can help all stakeholders of scientific communications improve their workflows. There have been several attempts to establish professional networks of scholars and list their scholarly achievements on digital platforms. Some of these platforms such as Google Scholar, Web of Knowledge and PubMed are searched to pick relevant peer reviewers, assess authors' publication history or choose suitable candidates for research and academic projects. However, each of these hubs has its specific applications, limiting the universal use for permanent tagging of researcher profiles. The Open Researcher and Contributor ID (ORCID) initiative, launched in 2012, is aimed at registering scholarly contributors and averting the persistent ambiguity of recorded author names. The ORCID registry is growing fast and integrating with other ID-generating platforms, thereby increasing the functionality of the integrated systems. ORCID identifiers are increasingly used for selecting peer reviewers and acknowledging various scholarly contributions (e.g., published articles, reviewer comments, conference presentations). The initiative offers unique opportunities for transparent disclosures of author contributions and competing interests and improving ethical standards of research, editing, and publishing.

Keywords: Science Communication; Author Identifier; Peer Review; Editing; Research management; ORCID

Current digital technologies enable reliable archiving, opening access to, and fast distribution of scholarly information that facilitates a wide variety of academic and social activities. The publishing industry is both the major consumer and prime distributor of such information, which is created by a huge army of authors, reviewers, and editors. Each scholarly contribution, be it substantive or minor, transforms into the completeness and integrity of the final product - a reviewer comment, an article, or a journal issue. Crediting and referring to such contributions is an integral part of the transparency of science communication. But is there a universally acceptable scheme to record and credit all those contributions?

Over the past decade, several attempts have been made to systematize searches for researchers and academics by issuing unique author identifiers and linking their publication records to related affiliations and/or citation counts (1, 2). The idea of unique identifiers materialized in 2012 by the development of the International Standard Name Identifier (ISNI) under the auspices of the International Organization for Standardization. ISNI can be assigned to any individual contributing to any me-

dia. Author profiles on multidisciplinary platforms of Scopus, Web of Knowledge, Google Scholar, and Index Copernicus, managed by indexers and/or authors themselves, served the purpose to some extent and helped with identifying and ranking researchers. As a prototype of comprehensive author and researcher registry, Index Copernicus provided space within its author profiles for listing a variety of academic accomplishments such as publishing scholarly papers, reviewing, membership in editorial boards, and professional meeting attendances. It also helped researchers to present all these activities along with keywords of their professional interests on CVs, which could be formatted as PDFs and printed on demand. Specialized abstracting databases such as PubMed provided an outlook at specialists in certain fields by listing their publications, but without tracking citations, issuing unique author IDs and distinctive profiling of those with common names or variable spelling of the same names. All these initiatives have been positively accepted by the global scientific community. Now, researchers, reviewers and editors affiliated to most academic and research institutions can access subscription databases and combine searches through

the highly informative Scopus Author ID or ResearcherID with those offered by Google Scholar and other open platforms (3). Most scholarly publishers have already linked their editorial management and manuscript processing with such search engines.

As other members of society, authors are active in social networking through Facebook, LinkedIn, Twitter, and ResearchGate, all of which are designed to properly identify individuals, create virtual communities, and offer opportunities for open discussion and sharing professional information.

Despite some successes of all these, mostly fragmented initiatives, a growing number of professional associations, institutions, libraries, publishers, indexing services, and funding organizations, with experience in different models for evaluating scholarly output, went further and recently backed a new ID scheme - Open Researcher and Contributor ID (ORCID; http://orcid.org/). ORCID is the latest initiative, which is meant to absorb all positive elements of previous author and researcher ID schemes. Its identifiers are presented as Uniform Record Locators (URLs) or in a short form of 16 characters. For example, the identifier for Laurel L. Haak, the Executive Director of ORCID, is http://orcid.org/0000-0001-5109-3700, or 0000-0001-5109-3700.

The long list of ORCID supporters now includes the world's leading universities, the British Library, large publishers such as Elsevier, Springer, Nature Publishing Group and Dove Press, and major funders such as the Welcome Trust and the National Institutes of Health. ORCID was officially launched in October 2012, and the number of registrants reached 900,799 by September 24, 2014. As a registry of scientific authors, ORCID was initially seeking to avert the ambiguities in recording author names. Over the short period since its launch, ORCID has become a global hub for tracking scholarly output - a type of "digital curriculum vitae". The scheme was praised for its comprehensive coverage of all types of scholarly contributions, free use, and integration with other ID-generating services such as Scopus Author ID and Thomson Reuters' ResearcherID (4-7). More recently, ISNI and KUDOS announced separate models for integration with ORCID, which adds to the functionality of all these schemes. KUDOS is yet another fast-growing platform for listing an individual's scholarly achievements, maximizing their visibility, and tracking citation-related and alternative impact metrics. With the ORCID identifiers at play, it may improve the visibility of scholarly output further (8).

ORCID offers a new solution to the persistent problem of variable transcription and order of complex names, omission of middle names and initials, changes in married and divorced women's names, and existence of common names across most countries and continents (2, 9); and may improve the tracking of papers with variable bibliographic records of the same sources across several databases.

The ORCID scheme supports multiple languages, and therefore, holds promise for increasing international visibility of researchers and authors working in non-Anglophone countries. Spanish, French and Chinese interfaces of ORCID are now available, while Korean, Japanese and Russian character sets can be added in the foreseeable future. The ORCID compatibility with open repositories, digital libraries and platforms such as Cross-Ref, PubMed Central, ScienceCentral, and KoreaMed Synapse made its IDs particularly useful for fast and transparent transfer of scholarly information globally (10). As a prime example, many Korean journals archived in KoreaMed Synapse have already included ORCID identifiers in their publications' metadata, thus facilitating accurate profiling of Korean authors by global bibliographic databases. The journals also incorporated web links of their editors' ORCID identifiers into the editorial team members' pages, which can be an aid for choosing target journals by authors and for judging the editors' scope of interest and credentials by journal indexers.

The advantages and functionality of the ORCID scheme can be best viewed in parallel with those of the Digital Object Identifiers (DOIs), which are issued by CrossRef® for tagging a variety of scholarly papers, books, and data sets from 2000 onward. Importantly, CrossRef supported the idea of "author DOI" and worked closely with the ORCID team (11). The use of DOIs increased the accuracy of managing references, unambiguously locating full-texts, interlinking with other sources across digital platforms, and indexing them by bibliographic databases (12). Like DOIs made the retrieval of sources easier, the ORCID identifiers can aid in finding candidates for research, writing, editing, mentoring, lecturing, moderating meetings, and other academic and social activities. CrossRef now imports information from the ORCID database, which empowers the functionality of both digital hubs.

ORCID offers free, permanent and regularly updated registrations to all scholarly contributors, including freelance editors and other facilitators of scholarly communications, who do not always have access to proprietary registering services (13). The scheme currently strives to systematize data-mining for improving digital infrastructure of local and global academic meetings and funding institutions, which saves time and resources for research management. Experts of ORCID are committed to regularly validate and manage information on their platform to secure the reliability of each and every registered account, which can be best achieved with the support of all the registrants and their research and academic institutions.

Some large publishers have already embedded ORCID identifiers into the peer review workflows, and particularly through the editorial management systems such as Aries™ and ScholarOne™, laying a firm ground for selecting the most skilled reviewers and properly acknowledging their contributions in the ORCID registry (14). Most journal editors currently pick relevant reviewers by performing searches through PubMed, Web
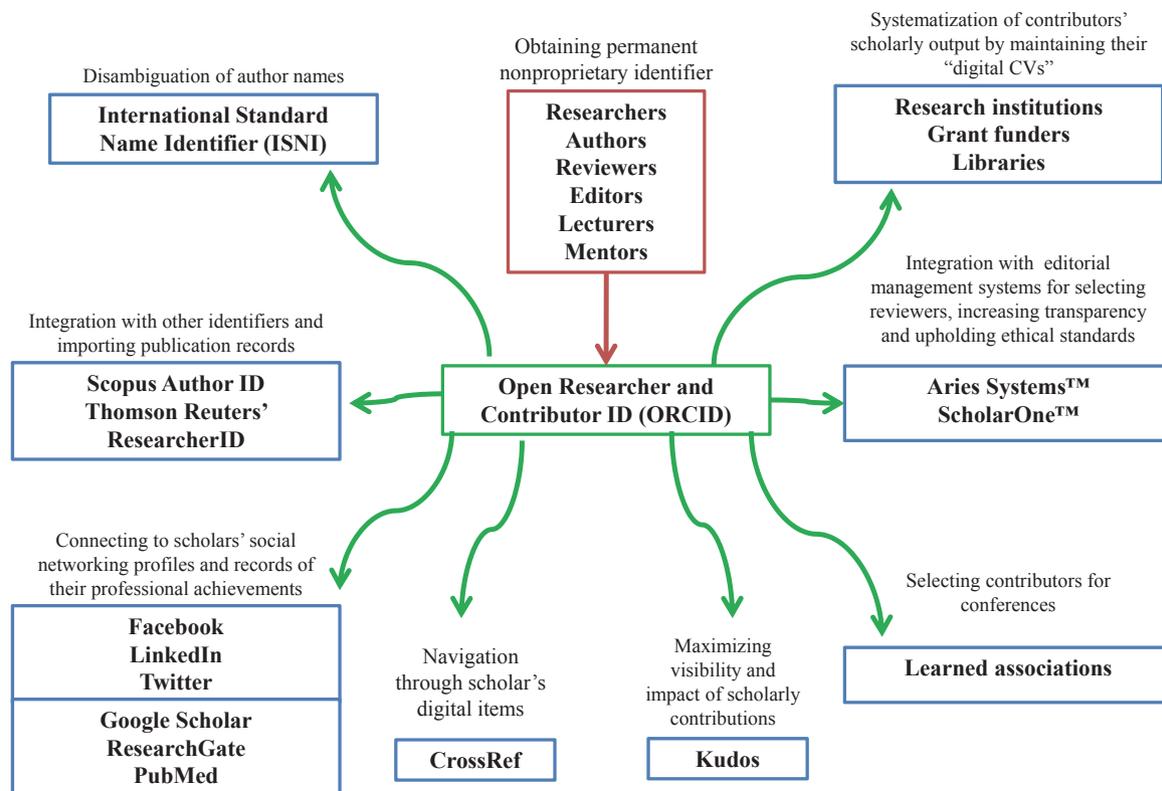
Fig. 1. The functionality of the integration of the ORCID identifiers with some of the current networks, databases, and platforms for scholarly communication.

of Knowledge, Google Scholar and other platforms externally linked to the editorial management systems (15). Subsequently, selected reviewers enter the editorial system and navigate through the authors' profiles on the same platforms to familiarize with their publication records and avoid processing of plagiarized or duplicated manuscripts. With the use of ORCID identifiers, both reviewers' and authors' profiles will become more functional and instrumental for improving the quality of and scrutiny of the peer review.

With the ORCID initiative now becoming global and aiming at comprehensive recording of information about researchers and authors, it is envisaged that some of the persistent problems with publication ethics, such as inappropriate scientific authorship and nondisclosure of conflicts of interests, will be also curbed. ORCID IDs can be integrated with information about all scholarly activities of the registrants, which can increase the transparency and decrease the rate of guest authorship in multiauthored papers. Knowing that their background and relationships with competing organizations is under scrutiny, authors, reviewers and editors will take an extra effort to properly declare secondary interests or refrain from publishing conflicting data. Publishers, in turn, can help their contributors, and primarily corresponding authors, responsible editors and reviewers by advising them to register with ORCID and to keep their accounts updated. And revising journal instructions by adding

a relevant point on researcher and author identifiers can perhaps be the best option.

In conclusion, the open access movement is gradually transforming tools and platforms for science communication. Wide visibility of scholarly periodicals and achievements of the contributors are becoming the driving forces of scientific progress. Opening access to publication records and other scholarly achievements of researchers, authors, reviewers, and editors may increase the transparency and quality of science publishing and communication. With the launch of the ORCID registry, which is open to all scholars and interconnected with indexing services, registries and communication networks (Fig. 1), hopes are high that it will become a universally acceptable scheme for crediting scholars from all language and professional backgrounds and benefiting from their future contributions. Research institutions, publishing organizations, learned associations, and libraries across the world may aid in expanding the registry by increasing awareness about its functionality and opportunities for all stakeholders of science communication.

AUTHORS' CONTRIBUTIONS

All authors contributed equally. All authors read and approved the final manuscript for publication.

DISCLOSURE

ORCID

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