Open Content

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The Universal Declaration of Human Rights sets the most broadly accepted international standard for rights that include social, economic, and cultural rights for everyone such as the right to well-being, education, participation in culture, and sharing of scientific advances and their benefits. For these rights to be truly meaningful, however, they need to be translated into practice. This requires the "human family" to determine, for example, what precisely is meant by "free education" and "share in scientific advancements." For instance, while free primary education is enshrined in the Universal Declaration of Human Rights, in some countries children leave primary school without being able to read a simple sentence or do elementary mathematics. We thus need to decide what quality of education is a common good, and what is available only to the few. We may also consider whether responsibility for this education lies just with formally designated teachers, or whether there is a broader responsibility to teach, and learn from, each other. In some scenarios education is delegated to specific institutions that provide education and create knowledge, while in other scenarios everybody participates in knowledge creation, organization, and diverse educational partnerships. Going back at least to the Middle Ages, our society has found different answers to this, sometimes relying more on learner organized education and sometimes on institutionally organized education (Peter & Deimann, 2013). The question of who owns education is linked to the question of who owns educational resources. Open content (including open educational resources and open access publishing) are aspects of this wider discourse regarding the rights to, ownership of, access to, and participation in quality education and scientific advances. Open content, and in particular sharing such content for the common good, resonates with the international commitment to Education for All, seeking to afford the benefits of education to "every citizen in every society."

The question of whether resources should either be open or need to be protected in some way goes back to the technological advance of book printing, and is expressed through the notion of copyright, dating back to the seventeenth century. The emergence of open content is linked to the technological advance of digital computers, networking, the internet, and subsequently the World Wide Web, which have all contributed to facilitating sharing of resources. Open content can be traced back to Project Gutenberg (during the 1970s and 1980s), the free and open source software movement, and early open source licenses such as GPL (1980s). Latin America made early progress toward open research content through a strong tradition of regional information networking to facilitate open access to its research results, starting with bibliographic records (in the 1980s), as well as journal portals (since the 1990s). A significant step in open publishing was the 1991 launch of ArXiv, a repository for preprints in physics (later expanded to cover astronomy, mathematics, computer science, nonlinear science, quantitative biology, and statistics). Despite limited availability of computers (including personal computers and laptops) in the early 1990s, ArXiv led to a major shift in the availability of research articles in those disciplines: Informal and distributed access to those research articles was now available, particularly for the academic community, and other early users of the internet. Returning to education, the introduction of the term *learning object* (in 1994) galvanized the idea that digital materials could be designed and packaged for easy reuse as discrete objects, including appropriate provision for metadata. The term *open content* was coined in 1998.

The beginning of the twenty-first century saw a number of significant developments in the area of

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open content. Creative Commons was founded in 2001, providing a common licensing framework for open content. Wikipedia, launched in the same year, is a collaboratively produced multilingual encyclopedia. The project invites volunteers worldwide to write and collaborate on articles. In Wikipedia's first 10 years, hundreds of thousands of people produced tens of millions of articles in nearly 300 languages, making it one of the most popular websites on the internet. In 2002, MIT became the first university to make content used by or created by its faculty available as OpenCourseWare (OCW). Also in 2002, the UNESCO forum Impact of OpenCourseWare for Higher Education in Developing Countries adopted the term *open educational resources* (OER; UNESCO, 2002), which, broadly speaking, are resources with licenses permitting reuse and sharing.

Open publishing evolved alongside OER, also taking major leaps in the early twenty-first century. In 2000, an online petition (associated with the Public Library of Science) called on scientists to pledge that they would discontinue submission of papers to closed journals. The Budapest Open Access Initiative (2001) and Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003) encouraged researchers and holders of cultural heritage to support open access through the internet, and expressed the value of the open access infrastructure and software development. The Public Library of Science (PLOS) was launched in 2003 as an open access publishing company, with the publication of a peer reviewed print and online scientific journal (*PLOS Biology*), followed by a number of other peer reviewed journals.

The two most prominent institutional advocates of OER in its early years were UNESCO's International Institute for Educational Planning, and the William and Flora Hewlett Foundation. Both have emphasized the importance of community building: UNESCO, for instance, convened the international OER community in 2005, aiming to raise awareness and strengthen the community (D'Antoni & Savage, 2009). The international OER community is one realization of the potential of digital technology to link people who would never normally be able to meet. Community members represent a wide range of organizations, including many from universities and distance teaching institutions. Importantly the community emphasizes participation and inclusivity. In particular, the organization of the interaction (including the choice of technology – email and mediawiki) takes into consideration especially those with unreliable or expensive connectivity. The community assembles both OER leaders and those who want to learn about OER, and interaction has often been intense. The strong engagement of the community allows effective reflection on the priorities for advancing the OER movement, including awareness raising, community building, networking, capacity building, removing barriers, and enabling sustainability. The community was recognized by the 2008 Leadership Award of the MERLOT African Network. It is clear that the global OER movement (seeking worldwide impact) can be strengthened through such international dialogue and collaboration. The most recent community project is the instigation of the development of a world map of open educational resources initiatives (similar to open access maps; D'Antoni, 2012).

The 2007 Cape Town Open Education Declaration, the 2009 Dakar Declaration on Open Educational Resources, and the 2012 Paris OER Declaration formally express the potential of OER to improve access to, and quality of, education, urging governments and other actors to embrace OER through use, awareness raising, policy, capacity building, promoting research in OER, facilitating sharing, and encouraging the open licensing of educational materials produced with public funds. There is good research evidence that OER can help lower costs in the area of open textbooks, as well as increasing evidence that open content can lead to higher-quality teaching and research.

As of 2014, openness has gained significant ground in education. At the end of 2011 a free course in artificial intelligence had over 160,000 learners enrolled (Weller, 2013). The UK government, as well as national bodies in the United States and Canada, has policies mandating that all articles resulting from publicly funded research should be made freely available in open access publications (Finch Group, 2012). Downloads from Apple's iTunesU site, which gives away free educational content, passed one billion in 2013. In 2012 British Columbia announced a policy to provide open, free textbooks for the

40 most popular courses. The G8 leaders signed a treaty on open data in June 2013, stating that all government data will be released openly by default. Open content is also gaining ground in areas not directly related to education, such as music and photography (on sites like Flickr and YouTube). Overall, it is estimated that there are now hundreds of millions of Creative Commons licensed objects available on the internet.

The Nature of Open Content

Copyright is a subset of intellectual property rights. An important distinction is between *copyright ownership* of a copyrighted work, and the *license to use* a copyrighted work: A license typically only allows particular uses of a copyrighted work, while copyright ownership grants comprehensive rights (including the right to license the work). It is important to note that societal ideas about copyright are not fixed, but are malleable. Copyright law changes over time (e.g., the duration of copyright has changed over time, from initially five or seven years to now several decades), and varies between different jurisdictions. The interpretation of copyright law also changes, for instance through being tested in court. For example, the dispute between the UK's National Portrait Gallery and the Wikimedia Foundation concerned the question of whether contemporary photographs of classical paintings acquire new copyright, or whether they constitute a "slavish copy" (i.e., a copy without originality or constructive interpretation, which does not acquire new copyright). There are also limitations and exceptions to copyright, which differ between jurisdictions, and variously include the use of copyrighted materials for the purpose of criticism, parody, news reporting, and examinations ("fair use").

Closed content is copyrighted content without a license granting permission for wider distribution or reuse. This contrasts with open content, which is content that has been licensed more permissively. The meaning of "open" depends on context. The most basic form of open content is "free" content, where "free" means "free to use," that is, at no cost to the user, with the content made available via the internet (also referred to as "gratis open access"). However, usually "open" goes beyond "free," in the sense that extra permissions are granted to users (also referred to as "libre open access"), or even that the owner has waived all rights.

The meaning of "open" has been extensively discussed in the context of open educational resources (OECD, 2007). One of the original (rights based) OER frameworks is the "4Rs framework" (Wiley, 2006), referring to *reuse* (the right to reuse the unaltered content), *revise* (the right to adapt and modify the content itself, including translation), *remix* (the right to combine the original content with other content to develop new content), and *redistribute* (the right to share copies, e.g., of the original content, revisions, or adaptations). Legally speaking OER are thus situated in the spectrum between *all rights reserved* and *all rights waived* (related to the notion of the public domain).

The Creative Commons licenses are a commonly used legal framework, and are, at this stage, usually considered to be an essential feature of OER. By using the same legal framework, different OER become interoperable, and can be remixed. Creative Commons licenses pose various conditions, such as attribution, permission to make commercial use, to share only without adaptation (no derivatives), or to share only under the same Creative Commons license ("share alike"). Each license is presented in formal legal language, with attention to legal jurisdictions around the world, and is also presented in a simple summary in nonspecialist language. Each license is represented by an icon, supporting easy recognition and uptake. There are some resources, however, that share the aspirations of OER, but fall short of one of the common formal definitions of OER (e.g., in terms of the license used). While these resources are thus not formally open, it is still useful to recognize the aspirations of the creators. We note that by licensing a work, the owner of the work retains copyright as such. However, if the license is very permissive, then this can become immaterial.

Over time, the definition of open has been extended, recognizing that a purely legal conception of OER is limited. It is possible to draw out three aspects of openness or freedom, namely *legal freedom*, *technological freedom* (including usability and accessibility), as well as freedom in terms of *education and participation* (inviting dialogue, rather than pure transmission).

Openness cannot be defined by a legal framework alone. For example, consider a resource that is in the public domain, but is available in only one file format, which can be accessed only with expensive and restrictive software. The resource is thus legally free, but not technologically free. Conversely, many resources on the internet are technologically free (and can be accessed), but they are not legally free: They can only be viewed, not reused. Technological freedom also relates to the notion of anticipatory provision or duty (e.g., in the 2010 UK Equality Act).

The third freedom above relates to the difference between open resources and open *educational* resources. Most resources could be used in a way that supports education, but in order to qualify as educational resources, they should connect more directly with a particular educational framework. For instance, a Creative Commons licensed image on Flickr is certainly an open resource (legal freedom through license, and technological freedom, e.g., through various image sizes being available). A sequence of images (e.g., on the developmental stages of an amphibian), together with teacher notes on potential classroom activities and the underlying pedagogies, makes it an educational resource. To look at another example, Wikipedia, seen as an immutable reference work, is still useful for education, and is an open resource (legal freedom, and a degree of technological freedom, such as PDF export and a mobile application). However, we can also easily envisage educational scenarios that make Wikipedia useful as an open *educational* resource. For instance, teachers can work with their students to comment on or contribute to Wikipedia articles. This kind of engagement with Wikipedia then furthers certain educational values, such as critical engagement, discussion, and reasoning. So Wikipedia invites participation, dialogue, and peer production: active participation in the co-construction of knowledge. This is the third freedom: a two-way engagement in the co-construction of knowledge.

Aspects of Openness, Freedom, and Participation

The section above discussed three freedoms inherent in OER (legal, technological, and educational). Expanding this, we may say that for OER, these freedoms build on each other: Legal freedom is needed to exercise technical freedom, but legal freedom is not sufficient to provide technological freedom. Of course, there are non-OER resources that are technologically free (such as music files), but are not legally free. Similarly, educational freedom can only be exercised once the conditions of legal and technological freedom have been met, at least to some extent.

Overall, this threefold freedoms based approach to OER enables users to fully participate and take ownership, in order to fully exercise the affordabilities of OER, and ultimately develop their own capabilities. This is particularly important in developing contexts, because there pedagogy is often still a "pedagogy of scarcity."

Indeed, technological freedom is a significant obstacle, especially in settings where it is difficult to access, download, and to use and disaggregate OER easily, which are often also settings characterized by a scarcity of educational resources. Awareness of poor and expensive connectivity, the cost of infrastructure, or the multiplicity of devices (whether these are used out of preference or due to need) has taken a long time to enter the open content discourse. Often it is argued that there is nothing wrong with the way open content is presented, but that the issue solely lies with the users: Once they have better connectivity, they will be able to access the resources. Clearly better connectivity is desirable, but often resources are many times the size they need be, simply due to careless formatting. Making resources available in a way that is suitable for poorly connected users can be compared with *anticipatory* provision, which requires measures being taken to ensure resources are accessible, without the user needing to make a special access request: It is not sufficient to just put a resource online and let users struggle. In the United Kingdom, anticipatory provision is a legal requirement, which of course is not the case for resource access from developing nations with poor connectivity. At the same time, the connection between open content and international development is often explicitly made in the OER discourse, but not translated into action, because the content falls short of the appropriate technological freedom.

Technological freedom does not only apply in international settings. Often organizations release

resources just as a PDF, which is a format purposefully designed to limit disaggregation or data extraction. Similarly, sometimes educational sites are archived, and while they are available under an Open Government Licence (first freedom), they are no longer effectively searchable, and thus lack the second freedom. This inspired the reuse of such content, for example as part of the ORBIT searchable resource bank.

However, it is often possible to overcome limitations (e.g., bandwidth) through the use of appropriate technologies, and there is an important role that open content can play in international development (see section on Africa below). In fact, there is a moral imperative to make content open that can be derived from the application of participatory principles. Informally "participation" means full engagement from all stakeholders (in mutually beneficial partnerships), including planning, deciding, and acting together, as well as developing future directions. More formally the "stances of participation" are invoked (Wilcox, 1994), and often presented discretely from lower to higher degrees of participation, such as information, consultation, deciding together, acting together, and empowerment.

Since the 1970s participatory methods have been shown to produce more sustainable development results (Chambers, 2007; Mansuri & Rao, 2013). Scholars point to the logical link between meaningful participation and open content because full participation also means being able to reuse, revise, remix, and redistribute – as needed and mandated by the circumstances. OER fulfill these requirements. Moreover, the moral argument of making publicly funded resources available to the public is evident. Some donors demand that the outputs of their funding should be available to as many people as possible, rather than artificially restricted to a selected group of people. Some scholars have argued that the issues facing developing regions are so grave that it is simply imperative to make all educational resources and research outcomes available without restrictions. For instance, the International Development Research Centre (IDRC) in Canada is one of the few development funders that have had a clear policy of access to research results and documents. Another example is the UK Department for International Development's open access policy for research programs.

Another important aspect of open content is that it is often delivered through digital technology (Haßler & McNeil Jackson, 2010). In some cases it is of course possible and desirable to print content, but in many circumstances at least some connectivity is available, through which (suitably formatted resources) can be used. The extremes of either being "fully online" contrasted with "completely disconnected" are no longer the case in many places in the global South, nor are they the case in wealthier regions and countries. Unfortunately, digital technology is often not treated participatorily, and technology (and technology use) decisions are made on behalf of rather than with the stakeholders. However, participatory principles can also be linked to a participatory use of digital technology. Moreover, if the delivery of OER depends on digital technology, it must be ensured that the relevant digital technologies are looked after. For this, local engagement, ownership, and participation are essential.

Participation in education is also related to educational principles like inclusivity and distributed leadership, as well as interactive pedagogy (including reasoning, dialogue, collaborative learning, and enquiry based learning). Where education systems are already struggling, often the emphasis on those principles falls by the wayside. It is thus important for OER also to exhibit the third (educational) freedom: promoting approaches to learning that are respectful and actually lead to learning. This does not just include pupil learning in the classroom, but also teacher (and student) learning, whether as part of professional development or in higher education. Open educational resources, interactive pedagogy, and digital technology can thus be linked through the principle of participation in international development.

Open Pedagogy and Participatory Education

The focus on open content alone is a limited view, and this entry now broadens its focus to the wider developments around ownership of, access to, and participation in education. Content is clearly not the same as learning, and receiving

credit for that learning. Initially OER engagement happened primarily through educators. However, there is now a shift in focus to OER as part of open educational practices. The idea of open education (also open teaching and learning and open pedagogy) blurs the formerly clear roles of teacher, student, and educator, and instead creates dynamic learning relationships between individuals. New learning approaches allow individuals to create and shape knowledge openly together. They offer a test bed for concepts such as open accreditation, through the use of open badges and open assessment. The open attributes of OER enable learners to reuse such content as they become educators, mentors, and facilitators.

Part of open education practice is to offer credit for study. The OER university initiative (OERu) seeks to provide learning opportunities with OER, including pathways to qualifications from recognized educational institutions. The Peer-2-Peer University (P2PU), founded in 2009, is a community led, volunteer run open education project, organizing learning outside established institutions. P2PU utilizes the internet and open educational materials to enable high-quality, low-cost education opportunities. The university aims to create a model for lifelong learning alongside traditional formal higher education, similar in intent to OERu. P2PU demonstrates what a full commitment to open education could look like: the P2PU community is open to any participants; its content can be accessed and used by anyone; the P2PU model, processes, and technology are open and accountable. The P2PU School of Data, a collaboration between P2PU and the Open Knowledge Foundation, focuses on using data effectively, with a view to creating more equitable and effective societies.

In terms of research, it is not quite clear yet what the precise educational affordances of OER are. Certainly they enable new ways of teaching and learning that can be less expensive and of at least equally high quality. At least in English speaking well-connected areas, we have shifted from a scarcity of resources to an abundance of resources; which in turn should give rise to a "pedagogy of abundance" (Weller, 2011), connected to learner centered, resource based learning. The move to open educational practices is an active process, involving a broad range of stakeholders across sectors (including practitioners, managers, administrators, and government), brought together by initiatives like the Open Knowledge Foundation's Open Education Working Group. Organizations like the Open Educational Quality (OPAL) Initiative similarly advocate a shift in focus from (open educational) resources to actual open educational practice. There are also synergies with the open development movement (Smith, Elder, & Emdon, 2011).

Open Content in Higher Education

This entry now turns to open content in two different settings: first higher education (Glennie et al., 2012), and then a regional setting. OpenCourseWare (OCW) is a globally significant, well documented movement in the area of open content in higher education. OCW is a particular type of OER, organized as higher education courses. OCW started with the MIT OCW project in 2002, and was soon joined by many other higher education institutions, to form the global OpenCourseWare Consortium (which in 2014 evolved into the Open Education Consortium). While OCW does not typically provide certification (or any kind of teaching), MIT and Harvard University launched edX in 2012, offering courses as part of a massively open online course (MOOC), moving from OCW toward online learning.

Another aspect of open content in higher education is open textbooks, specifically seeking to widen access to education by providing high-quality, peer reviewed textbooks (both digitally and available for print) to students at the lowest possible cost, particularly in the US community college setting. The states of Illinois and Minnesota introduced the Affordable College Textbook Act, encouraging the creation and review of open college textbooks.

Open textbooks are available from an increasing number of sources (particularly in higher education), across a wide range of topics. Some open textbooks, such as those available from Saylor, are also linked to open course programs of study. Some open textbooks are simply available as HTML or PDF, and sometimes also available via low cost "print on demand." Others produced in more flexible formats (or on more flexible

platforms) allow users to adapt, combine, and personalize, before exporting to PDF, editable formats (such as ODF), or to eBook. Open textbooks thus can have greater flexibility and freedom (in use and distribution), and offer a viable and affordable alternative to traditional textbooks, while also creating competition and driving prices for traditional textbooks down.

The range and quality of open textbooks vary between providers with some, such as Merlot, offering a wide range of open peer reviewed textbooks, gathered from various institutions, societies, and industries, subject to a range of different types of open licenses. Others, such as Openstax, have far fewer materials available but their format is consistent, peer reviewed, and educator developed. There are fewer school-level open textbooks available, such as CK-12 and Siyavula. Outside education, open textbooks are also available, such as the FLOSS manuals and research monographs.

Research on open textbooks has tended to focus on issues of affordability, with some research demonstrating considerable cost savings in the adoption of open textbooks. Research has also pointed to improvements in quality, flexibility, currency, and professional collaboration as well as the increased potential for active learning and use of technology to improve the learning experience. While cost savings can be demonstrated, and there is a moral argument for public ownership of textbooks, more work remains to be done on the pedagogical affordances of open textbooks. Often open textbooks are modeled on traditional textbooks, which is likely to be a limiting factor: The opportunity of open content allows for remixing, re-arranging, and multiple devices (technological freedom), as well as increasing participation and discussion during development and use (educational freedom).

Another significant open development in higher education is the sharing of video lectures (and other video content). Perhaps the earliest systematic lecture webcasting originated with TIMMS (Tübinger Internet Multimedia Server) in 1998, while other early adopters include the very widely known webcast.berkeley. With increasing internet connectivity, and against the backdrop of the "media convergence" discourse in the 2000s, the potential role of academic video needed to be defined. Given the financial resources available, it seemed impossible that academic video could compete with prime-time TV productions for a "market" share. However, some argued that the long tail (Anderson, 2006) paradigm could be readily applied: As long as the cost of the entire production cycle (from planning to delivery) is low enough, even specialist lectures find enough viewers worldwide to make the process worthwhile. A number of initiatives recognized the value of such academic video at the time, and gave rise to international projects like OpenCast (including Berkeley and ETH Zurich) and national projects (such as the Steeple project in the UK) that facilitated the production and distribution of academic video, including distribution to iTunesU and YouTube Edu, as well as initiatives like the Khan Academy.

Open content, open data, and open educational practices also play an important role in research (Manyika et al., 2013). Open access has a long tradition in some areas (e.g., Latin America), and from the mid-2000s open access policies were initially implemented on a departmental basis in various universities worldwide, but have increasingly entered into the national policy discourse. Potential benefits are that government funded university based education research (published in open journals) is freely available to education practitioners, including teachers and local education agencies (Davis, 2010). Open access is also gaining ground in developing regions, partially supported by organizations like INASP, an international development charity working with a global network of partners to improve access, production, and use of research information and knowledge, and thereby supporting countries to meet their development challenges. An important aspect of open academic practice is also opening up the research process itself, for instance through opening up early access to data or through "unconferences."

Open Content in Africa

While the open content movement is a global movement with shared values, there are specific regional needs, challenges, and opportunities. As an example of one such region, this section discusses the open content movement in Africa. Overall, engagement with open content and OER

is still fairly nascent in Africa. This is partly due to the legacy of digital divide(s) – most OER are shared digitally, and digital access and connectivity are still severely constrained in many parts of Africa. It is also partly due to some ideological reservations: Initially engagement with open content and OER was associated with a handful of wealthy Anglophone universities in the global North and a natural concern was that an uncritical engagement with OER would result in continuing interference with the curriculum (associated with curriculum control during colonization). However, in reality most higher education institutions in Africa already make extensive use of prescribed textbooks and journals developed or based outside of Africa – albeit that at current exchange rates, and with increasing student enrollment and declining real per capita investment, it has proved difficult for institutions to purchase such resources in sufficient numbers and to stay up to date. However, as digital access and connectivity improve, it has become easier for African institutions to access content from elsewhere, as well as to share their own content. Nevertheless, it is important to raise questions about "appropriateness," the need for localization, translation, and actual creation of suitable resources within the respective educational systems.

To encourage and support the engagement with OER in Africa, OER Africa was established by the South African Institute for Distance Education (SAIDE) with funding from the Hewlett Foundation. Working in four key areas – health, agriculture, teacher education, and foundation studies – OER Africa seeks to support African higher education institutions to access, adapt, and share back content, both content sourced from elsewhere, as well as original open content created by African institutions such as the African Virtual University (OER@AVU). In addition, an increasing number of African higher education institutions are opening up access both to their research outputs and to their teaching materials, a move encouraged by other bodies such as the African Council on Distance Education.

In the process of African engagement with open content, the challenges arising in African countries are similar to those in other countries: the need to develop supporting policy frameworks, the need to clarify intellectual property and copyright issues, and the need to build capacity in resource development and ICT skills. Small private or church based institutions often have shorter decision-making processes and are able to engage with OER more quickly – for example, Africa Nazarene University began sourcing and sharing teacher education content with its teacher education students within days of an initial OER orientation workshop in August 2013. In other institutions, engagement at a small (program or faculty) level was quickly scaled to the institutional level. For example, Kwame Nkrumah National University of Science and Technology (KNUST) has an institutional policy and OER repository that originated from initial discussions with just one faculty within KNUST during the period 2008 to 2010. Engagements with other institutions have opened up possibilities to develop much wider sharing and networking. For example, OER Africa has supported the development of OER policies for the faculties, as well as the creation of the "AfriVIP" portal, a tool for supporting all future studies at the Faculty of Veterinary Science (Ondesterpoort) at the University of Pretoria, enabling the sharing of its vast wealth of intellectual capital under an open license. The portal launched in 2014 and is initially used as a vehicle for offering continuous professional development (CPD) courses. During the next period, with support from OER Africa, the objective is to drive use of the portal into all faculty educational practices and to build a regional OER network of veterinary sciences faculties through AfriVIP and other networks with which the faculty has engaged. This activity is seen by the university as a faculty pilot, which will then also inform and influence wider institutional policy.

With the massive expansion of open, distance, and e-learning (ODeL) provision in the postschooling arena to help transform African economies into knowledge economies, we foresee the mainstreaming of engagement with open content and OER, increasingly in various forms of collaborative partnerships between institutions within Africa, as well as in collaboration with institutions and organizations outside Africa. One such example is the well established Teacher Education in Sub-Saharan Africa initiative which has facilitated the development, sharing, remixing, and reuse of resources to support school

classroom practice across institutional, country, and language boundaries.

Future Directions for Open Content

Openness has been accepted as an approach in education and widely adopted as standard practice: There are movements for the release of open content, data, courses, publications, and textbooks. As a mode of operation, open scholarship is now an integral part of practice for most academics, maintaining an online identity, publishing through open access, and conducting research using open methods. There are now more nuanced and detailed areas to be addressed: After the initial success of openness as a general ethos, the question is no longer *whether* education or scholarship should be open, so much as what *kind* of openness should be adopted. Determining the nature of openness in a range of contexts so that it retains its key benefits as an approach is likely to be the next major focus for the open education movement. Having moved from the periphery to the mainstream of educational practice, the future directions of openness will be shaped by this new role, which brings a host of different opportunities and challenges.

One area that will see increased attention is that of open education policy. Whether at the national, regional, or institutional level, guidelines, policies, and legislation regarding open content will shape its direction. The Creative Commons policy network lists a number of policies, and as open practice moves from being an individual preference to one mandated by research funders, more of these are likely to arise.

Another consequence of the mainstreaming of open approaches is the increased commercial interest in adopting open approaches or service provision around open products, which has parallels to service provision around open source software. Indeed, an environment rooted in openness may give rise to new entrepreneurial opportunities that did not exist under the earlier, more closed paradigms.

This leads to a third significant direction, what might be termed the "battle for open." As openness becomes an accepted term and practice, the direction it takes becomes an area of contention, including misuse of the term open (e.g., for marketing), known as "openwashing" (Wiley, 2013). For example, many MOOCs are open in terms of being free (gratis), but not in terms of being openly licensed for reuse. Open access publishing models vary, with some publishers charging for publication or placing an embargo on self-archiving. Some publishers have been slow to embrace open content, and are resisting what is arguably inevitable change. Perhaps this can be compared to similar dynamics in the music industry, with certain actors attempting to maintain a status quo for as long as possible, while others are actively seeking out new opportunities and business models. A number of publishers have sparked controversy, for instance by requesting take-down of papers from non-journal websites, and in turn some university departments are boycotting those publishers. These tensions in all aspects of open content are likely to become more public and intense as openness moves further and further into the mainstream (e.g., the MIT ReclaimOpen project).

Lastly, as the value of openness becomes more established in the mainstream, new opportunities for innovation arise. The Public Library of Science (PLOS), for instance, has experimented with new approaches to peer review, and new categories of articles. *PLOS Currents* provides rapid peer review around focused topics. Many MOOCs are leveraging open, networked approaches to pedagogy and community development, for example in the digital storytelling course DS106.

Open approaches complement the ethos of education, and also provide the means to produce innovation in a range of its central practices. Such innovation is both necessary and desirable to maintain the role and function of educational institutions as they adapt. It is essential therefore that both educational institutions and practitioners have ownership of these changes and an appreciation of what openness means. As society, as the "human family," we need to decide what form these open practices should take, and the future direction of education.

Colophon and Acknowledgments

Open content and open educational resources is a rapidly evolving area, and this entry (written in early 2014) necessarily presents only a partial

overview of the area of open content. The authors negotiated that this entry is available as a free download from the publisher's website, and, from January 1, 2016, under Creative Commons Attribution, from the authors. As with almost all works, this entry draws on a large number of sources, including academic publications and Wikipedia. While licensing arrangements prevented us from using Creative Commons Attribution Share Alike materials, we are nevertheless indebted to such sources. We have drawn on the *Journal of Interactive Media* (licensed under Creative Commons Attribution), including Weller (2013) for the last paragraph of the introduction, and Haßler et al. (2014). Some notes about the development and licensing of this entry, as well as a more detailed list of references, are available at http://www.bjohas.de/wiki/OCEE. In particular we highlight that this entry was developed by openly inviting contributions (e.g., via Twitter, blogs, and other social networking), and we would like to acknowledge the contributions of Martin Weller (Open University), Pete Forsyth (Wiki Strategies), Helen Neo (ACFE), Simon Knight (KMI, Open University), Susan d'Antoni (Athabasca University), Lou Woodley, Marieke Guy (OKFN), Martin Belcher (Aptivate), Josie Stewart, Tim McNamara, and Anna Gruszczynska (Sheffield Hallam University).

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