

1 The Organisational Impact of Open Educational Resources

Niall Sclater

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1.1 Abstract

The open educational resource (OER) movement has been growing rapidly since 2001, stimulated by funding from benefactors such as the Hewlett Foundation and UNESCO, and providing educational content freely to institutions and learners across the World. Individuals and organisations are motivated by a variety of drivers to produce OERs, both altruistic and self-interested. There are parallels with the open source movement where authors and others combine their efforts to provide a product which they and others can use freely and adapt to their own purposes. There are many different ways in which OER initiatives are organised and an infinite range of possibilities for how the OERs themselves are constituted. If institutions are to develop sustainable OER initiatives they need to build successful change management initiatives, developing models for the production and quality assurance of OERs, licensing them through appropriate mechanisms such as the Creative Commons, and considering how the resources will be discovered and used by learners.

1.2 Introduction

Educational content is increasingly available for free on the Internet. Many organisations perceive benefits both for themselves and for learners elsewhere in distributing their learning resources in this way. The Massachusetts Institute of Technology's (MIT) OpenCourseWare initiative (OCW), set up in 2001, makes content available freely from most of MIT's courses and has provided the inspiration for many similar institutional projects. These initiatives form what is now known as the open educational resource movement which promotes "the open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes." (UNESCO 2002)

It has been suggested that OERs can include (UNESCO 2004):

- Learning resources

- Courseware, content modules, learning objects, learner support and assessment tools, online learning communities
- Resources to support teachers
- Tools for teachers and support materials to enable them to create, adapt and use OER; as well as training materials for teachers; and other teaching tools
- Resources to assure the quality of education and educational practices

Other definitions abound and there are widely differing perceptions of what constitutes an OER. What is clear though is that the very concept of providing an organisation's learning resources for anyone to use freely presents major challenges to conventional models of education. If an OER initiative is to be successful it will have significant impacts on the institution, requiring an accompanying change management programme, starting with defining and selling the vision of the project and ensuring that it is put on a sound financial basis for its long term sustainability. Models need to be developed for the production and quality assurance of OERs, and intellectual property rights (IPR) need to be considered, both in the content which may be incorporated within an OER and in the copyright model under which the OER itself is provided. It is also important to think about how the OERs will be discovered, how they are intended to be used, and what technologies will be required by the end user; these issues can have a major impact on take up of the OERs.

MIT's OCW project was inspired by the free and open source software movement (Caswell et al 2008). Open source projects make software freely available to users and the source code behind the product available to other developers who are free to enhance the code and distribute it on the basis of a particular licencing model. Well-known open source products include Apache, the software used for most web servers, the widely adopted operating system Linux and the learning management system, Moodle. In a successful open source project a community of developers, users and others with skills such as graphic design typically forms around a charismatic individual who may be partially altruistically motivated in sharing his or her products freely with others. A more calculated interest in building personal reputation which may lead to business opportunities or enhanced employment prospects may also be present. When the project reaches a critical mass, large commercial interests may become involved, pumping funding into the project in order to achieve enhanced robustness and functionality of the software. The external funders have greater aims such as the creation of competition in markets where an existing commercial product dominates. Sun's funding of the OpenOffice suite as a competitor to Microsoft is an example of this approach.

There are interesting parallels between open source software and the OER movement where projects are often initiated by one or two enthusiasts who believe in the benefits of making educational content freely available to learners and to other institutions under licensing conditions which allow the modification and re-use of that content. The enthusiasts are able to put a proposal to their organisa-

tions and to funding bodies making the case for an initiative to develop and promote OERs at their institution. The initiators may be driven by career-enhancement motivations as well as the desire to improve the lives of others by making educational resources freely available. Funding may be obtained for the initiative from an external agency with wider objectives such as the enhancement of higher educational provision in developing countries. A community is then formed within the institution of people such as project managers, authors, designers and testers. The intention is that this community ultimately encompasses other institutions who wish to use and enhance the OERs, and of course the ultimate consumers of OERs: the learners themselves.

1.3 Selling the vision of OERs

There may be many different reasons for an institution to launch an OER initiative. They can be categorised as *altruistic*, where there are benefits to individual learners (who are not paying fees to the institution), to other educational institutions (often in developing nations) and to the wider society; *commercial*, where the university increases its visibility through an OER initiative leading to increased student recruitment or other funding possibilities; and *transformational*, where there are positive impacts on the structure, processes and content of the institution carrying out the OER project.

1.3.1 Altruistic motivations

Many OER enthusiasts are motivated by the possibilities of providing educational content freely to people who would not otherwise have the opportunity to access it. There is a convincing moral argument that learning should be available to all and it is widely accepted that individuals' life chances can be enhanced through education. This belief is behind the involvement of the non-governmental institutions who are funding and promoting the OER movement such as The William and Flora Hewlett Foundation and UNESCO. OERs are considered to be particularly valuable in developing nations where university places are limited and the costs of journal subscriptions and books prohibitive. In many countries rural communities have little access to higher education but increasing access to the Internet. Women in some communities have limited educational opportunities but may have new possibilities to learn at home online.

There are claims that OERs have beneficial impacts on institutions in developing countries as well as on individuals. These include the demonstration of new forms of course structure and pedagogy (Stacey 2007) and could have impacts for example on the development of national public health initiatives where medical OERs are being provided. (Smith & Casserly 2006)

Institutions in the developed World do however need to be mindful of allegations of cultural imperialism by potential consumers of their OERs in less developed parts of the World which are for the most part post-colonial states. OERs

generally originate from a particular culture and use a specific language, pedagogy and institutional philosophy which may be resented elsewhere.

It has also been suggested that learners will benefit from OERs, not only by not having to purchase books and having a much greater number of resources available to them, but in encouraging habits of independent, self-regulated learning, autonomy and self-reliance. (Stacey 2007) Learners also may be able to benefit by connecting to others in networks organised around the resources.

1.3.2 Commercial motivations

Universities may heavily promote the benefits to learners of free content however their OER initiatives are more likely to be sustainable if there is evidence of financial benefits to the organisation. Drivers include the ability to raise the visibility of the institution, give its teaching materials higher exposure (Johnstone 2005) and enhance its branding. This can lead to possibilities for partnerships and further funding, and can directly impact on student recruitment. The Open University UK's OpenLearn project for example found that 7000 students registered on fee-paying courses immediately after viewing OER content. (McAndrew & Santos 2008)

A further commercial motivation, one which may have particular resonance with governmental funding bodies, is that OERs can potentially make better use of taxpayers' money (Geser 2007) allowing institutions to share the production costs of learning content. The problems of institutions collaborating in the development of curricula and using each others' content where a "not invented here syndrome" culture predominates cannot however be underestimated.

1.3.3 Transformational motivations

The OER movement has generated its own momentum which many institutions wish to be part of and experience a "feel-good factor" which can extend right across the organisation. (McAndrew 2006) One of the main claimed benefits of projects such as MIT OCW is that higher quality products are likely to result when authors know that their colleagues can potentially view their content. (Smith and Casserly 2006) There is then the possibility of noticing overlaps in topics which they teach and to consider potential collaborations between departments. (Johnstone 2005) At Tufts University, faculty use locally-produced OERs to help plan their curricula, prepare for their teaching and to learn themselves (Lee et al 2008) and in MIT the OCW site is used for advising students (Caswell et al 2008).

Another claimed benefit of OERs is that producers may receive them back enhanced by others and that the input of other experts from around the World could transform the way content is produced. Projects such as OpenLearn which encourages remixing of content have however demonstrated that users are often reluctant or unable to adapt OER content and normally unwilling to deposit their altered versions back in the central repository. It may also be logistically difficult and ex-

pensive to quality assure the revised versions and convince the original authors to use them in their teaching instead of their own versions.

Initiating a successful OER project at an institution involves high levels of commitment from senior management and is likely to require significant start-up funding. A vision will be required for why the institution should be making its educational resources freely available. It will help to define all the altruistic, commercial and transformational benefits expected from the initiative. Funding from an external organisation can give added impetus to the venture and pilot projects to develop OERs can then be used to demonstrate the production processes required and the potential uses.

Systems such as eduCommons, funded by the Hewlett Foundation, assist with the processes of placing materials into a repository, tagging them with appropriate metadata, copyright clearance, quality assurance and publication. Technical staff who can convert materials into appropriate OER formats will be required to assist faculty whom, as was noted earlier, will inevitably be concerned about time commitments. (Caswell et al 2008) Addressing such concerns should be a priority for institutional OER ventures. It has been found necessary to emphasise the altruistic nature of the venture, reinforcing this and the project's links with the worldwide OER movement continually through a variety of communications. Showing statistics which demonstrate global uptake and providing examples of positive user feedback can be particularly effective. (Lee et al 2008)

1.4 Determining the OER model

There is now a wide range of OER projects, each with its own distinctive model. MIT's OCW initiative was the first major such initiative, jointly funded in 2001 by the William and Flora Hewlett and the Andrew W. Mellon foundations. OCW not only aims to give content from virtually all of its curriculum away freely as widely as possible but to spread the vision of OpenCourseware. (Brown & Adler 2008), (Caswell et al 2008) Thus in the OCW concept the two primary institutional motivations are encapsulated: maximising publicity for the institution with spin-offs in the areas of improved branding, student recruitment and research opportunities; and, more altruistically, spreading the vision of OERs to other institutions so that the impact of the movement is maximised for individual learners.

OCW is a repository of resources based around courses, whereas MERLOT is a repository of learning objects. Both MERLOT and Connexions require users to develop and submit content themselves rather than have a central institutional body hand-holding them through the process. (Stacey 2007)

Resources in Connexions at Rice University tend to correspond to a page or so in a textbook and deal with a few concepts. Users can then combine the various resources into larger modules and publish these also in Connexions, allowing for maximum reusability. Activities such as assignments and exercises, as found in

OCW materials, are less common. Connexions also incorporates tools for authoring resources and combining them into larger modules. (Stacey 2007)

At Carnegie Mellon University the focus is very different to that in MIT or Connexions. In their Open Learning Initiative (OLI) entire courses are developed as collaborations between faculty and experts in human-computer interaction and cognitive science. The project is also attempting to build communities of users who are prepared to enhance the content and feed it back to the initiative. (Johnstone, 2005) Courses comprise a syllabus, texts, videos and virtual lab activities, and researchers examine the effectiveness and usability of the courses as they are being delivered with a view to enhancing the content and its underlying learning theory in its next iteration.

OLI courses are used in both instructor-led situations and by learners who wish to access them freely without registration on a formal course. The free versions of the courses do not include exams, access to the instructor or interaction with other students, thus potentially drastically limiting their value. While OCI's courses are praised for their use of multimedia and interaction the materials are designed to be accessed from the Carnegie Mellon website, requiring high bandwidth, thus potentially restricting the usefulness of the initiative in developing nations and increasing concerns about costs and sustainability. (Stacey, 2007)

Many OERs are produced by campus-based universities for classroom use and, while they may be of interest for educators elsewhere, they are less useful for individual learners. OpenLearn at the UK Open University overcomes some of these issues by making available content designed for distance education in the first place and, while it may be diminished in value by not being combined with assessments, accreditation and a cohort of fellow students, the OERs may make more sense in their own right than some of the OCW materials. OpenLearn is split into two websites. In LearningSpace the University has placed 5,400 hours of content for free use by students and educators, converted from its own distance learning materials. It also provides facilities such as forums, video conferencing and knowledge mapping tools for learners to manage their learning and form learning communities. The sister site, LabSpace, provides additional course materials from the University's archives and is designed for educators to download content, adapt it and upload enhanced versions, while also attempting to encourage communities of practice.

With a growing proliferation of OER projects, it will be increasingly important for institutions to differentiate their initiatives from the rest. Institutions such as MIT and Carnegie Mellon attract visitors to their OER sites through their worldwide academic reputations. Less well-known institutions may have to do something more novel.

1.5 Production issues

Many issues need to be addressed by institutions if OERs are to be produced on a large scale on a sustainable basis with maximum benefit to users. Andy Lane

(Lane 2006) reports that OpenLearn had a particular challenge in taking material designed to be part of larger distance courses which assumed tuition, support and assessment, and repurposing it for learners who would not necessarily be experiencing the wider context of formal learning. There was also a tension between making large amounts of existing, primarily text-based, materials available on the web while knowing that this was not the optimum medium for such content.

Lane identifies five different characteristics of the content which may need to be tackled in the transfer from standard distance learning to OERs: type, medium, structure, language and pedagogy. The type of content will include activities, text and video. The medium is how it is rendered; video content might for example move from CD-ROM to streaming video. Structural changes such as breaking the content up into smaller chunks will be necessary. There is also the language of instruction, which is not changed by the OpenLearn team, though translations have been made by users abroad. Finally there is the pedagogical model. Attempts to keep this as close to the original as possible were made but the other changes frequently impact on the pedagogical approach.

One of OpenLearn's biggest challenges has been attempting to retain the essential nature of the learning content while transforming it into OERs appropriate for online delivery with smaller chunks of text, more interactivity and greater use of multimedia. The approach of placing mainly text-based materials on OpenLearn as the starting point drew some criticism but meant that large amounts of content could be uploaded quickly, maintaining consistency with the original content, but able to be transformed into more engaging OERs later.

OERs will achieve much greater penetration, particularly in less affluent regions where they may have the most benefits, if they depend only on free or open source software for their usage. Providing materials in simple web pages will guarantee the greatest visibility. The incorporation of flash animations or video may enhance the content and be visible using a freely-downloadable plug-in for the web browser. However OER authors may not realise that such content is bandwidth-heavy and therefore difficult or costly for some users to download. (Smith & Casserly 2006) It is also of course likely to be more expensive to produce and much more difficult to edit by other teachers than text. Moreover it may be less accessible for users with some disabilities; there can be a trade-off between the engagement achieved with the use of multimedia in educational software and the accessibility of the materials.

The issues may be more acute with OERs than with educational software designed for distribution in affluent countries where more aspects of the supporting infrastructure such as bandwidth and the underlying software and hardware can be assured. A further issue with providing content such as video or flash files is that teachers may not have the skills to adapt more complex materials or access to the proprietary software required to do so. Alternative low bandwidth versions of content for areas with limited infrastructure may therefore be required.

The use of mobile phones is however growing massively in developing countries. Handheld devices can be charged from intermittent power supplies or solar

power, and the supporting infrastructure is easier to maintain than a network of cables to individual houses. The implication for OERs is that in order to prove of maximum benefit (in the developed world too) they will need to be accessible on devices with small screens and a variety of operating systems. This has major design implications and renders much of the content produced to date inaccessible without considerable re-engineering.

1.6 Dealing with IPR issues

Copyright and other intellectual property rights present some of the biggest barriers to the expansion of the OER movement. It can prove extremely difficult to obtain permission from publishers to make content available as OERs as this presents a challenge to their business models. Institutions and individuals are also rightfully concerned that their valuable intellectual property will be reused without acknowledgement or for commercial purposes. Complicating the situation the policies in many institutions as to who owns copyright, i.e. the author or the institution, are unclear.

At Tufts University faculty are advised to use resources in the public domain if possible to avoid expensive copyright clearance. Where this is necessary administrative staff are responsible for contacting copyright holders or helping to locate alternative open content. (Lee et al 2008)

For producers of content the primary way this is being addressed is through the Creative Commons initiative (Creative Commons 2009) which provides easily understood licences that can be attached to OERs, making explicit the uses to which the OERs can be put and how authors should be attributed. These licences override the much more restrictive copyright legislation which is enacted by default in many countries. Creative Commons licences were first issued in 2002 are now available for fifty national jurisdictions with a further nine currently under development. They were inspired in part by the long-established free software movement's General Public License (GPL).

Six different licences can be attached to OERs. The basic license allows users to “copy, distribute, display and perform the work and make derivative works”. Other licences allow authors to forbid commercial exploitation or derivative works. The concept of “share alike” can also be incorporated requiring users to attach the same licence if they alter, transform or build upon the work and distribute the results. The key aspect of all six licences is that you must give the author original credit for the work.

Creative Commons licences are becoming increasingly easy to use. Creators of OERs can register the materials on the Creative Commons website and can then easily incorporate an icon on their website which links back to the Creative Commons licence they have chosen. Commercial websites have seen the value of the licences with Flickr for example allowing users to search for materials licensed under Creative Commons. YouTube is also investigating the possibility of allowing users to attach the licences to materials they upload to the site (Steuer 2009)

with various partner institutions providing lecture videos which can be downloaded to the learner's computer for viewing offline rather than depending on an internet connection for streamed video. (Campus 2009) Some institutions such as Utah State University actively target sites such as Flickr for images to incorporate in the OERs. (Caswell et al 2008)

The differences in the terms of the various Creative Commons licences can have significant implications for how OERs are used. It is not entirely clear for example what disallowing commercial exploitation actually means in an educational context. A commercial organisation could take the materials and simply build courses around them which it sells for the ultimate benefit of its shareholders. There is also of course no guarantee that users will understand or comply with the terms of the licences. (Caswell et al 2008) Connexions deliberately permits commercial exploitation of its content in the hope that cheap paper books and CD-ROMs may be produced for use in the developing world where Internet access is limited. (Stacey et al 2007) However as much as two thirds of Creative Commons content is licensed for non-commercial purposes only and the Commonwealth of Learning recommends the use of "share alike" licences to avoid negatively impacting on the update of OERs. (Geser et al 2007)

One limitation of Creative Commons which has been pointed out is that unlike open source software conventions it does not require all those who have subsequently made changes to be attributed. Nor does it require reference to the original repository in which it was published. (Stacey et al 2007) In Australia however the AShareNet has a "share and return" licence which requires anyone making a change to the content to return a copy to the original copyright holder. This aims to ensure that the materials are continually enhanced but also allows primary creators to integrate any improvements and obtain valuable feedback on the way in which their OERs are being adapted.

1.7 Strategies for the discovery and use of OERs

Locating OERs is of course essential before educators or learners can think about how best to use them. A growing number of institutional, collaborative and commercial repositories such as Flickr allow the searching for resources with attached Creative Commons licences. There has been much discussion about the necessity for high quality metadata associated with educational resources being necessary for their retrieval. However the creation of metadata is a skilled task, ideally a joint effort between experts in the subject and in classification, and is therefore difficult and expensive to organise. There are metadata schemas such as IMS Learning Object Metadata but there are wide variations in how the metadata fields are completed. The Open Archive Initiative allows institutions to expose the metadata of their open content for harvesting by indexes. However there are huge variations in the implementation of the metadata between and even within institutions with many of the fields left incomplete. (Geser 2007)

An easier approach than the development and population of complex metadata schema is to encourage the tagging of items by creators or users themselves with terms that they understand and to facilitate the building up of folksonomies. Sites can also allow users to review or rate the modules with star ratings, and list the most popular downloads.

A more radical solution is proposed by the TENCompetence project which has experimented with latent semantic analysis techniques to analyse the content of student work in order to assess their prior knowledge of the subject. Users are then recommended personalised learning paths through the OERs. (Kalz et al 2008) However this approach is limited to textual materials, relies on access to a portfolio of the learner's prior work, and is unlikely to function well except in highly controlled environments where not only is the knowledge of the learner in an analysable format but the metadata attached to the OERs is accurate and standardised.

More straightforwardly the Open University's OpenLearn materials are discovered by many learners through simple Google searches which match the users' search terms with the learning content.

A UNESCO meeting in Paris in 2002 ambitiously proposed that a global index for OERs be developed, giving access to the resources and providing a full history of the provenance and use of the resources, incorporating comments from users. (UNESCO 2002) The list was indeed developed, and OERs were categorised as portals and gateways, publishing initiatives, repositories, tools and papers about OERs. Such an index requires ongoing maintenance and to reduce the costs and increase currency a wiki-based version was created. (Stacey 2007)

Being able to mix OERs in different combinations so that they can be matched to the curriculum of the local institution is essential but extremely difficult to achieve. OERs are often therefore most useful to help teachers learn and plan out their own courses, and as supplementary materials for students. (Johnstone 2005)

OERs can either be brought into and embedded within locally-produced content or linked to from the local site. If they are incorporated locally and the original OERs are updated, the new content will not be present. Providing links instead to the original materials however runs the risk that the OERs may change markedly, with the local materials no longer providing an appropriate context. Alternatively the OERs may not be updated often enough to keep up with advances in the local materials. Even more concerning of course is that the OERs might vanish completely. Keeping copies of the OERs locally would mitigate that risk and this could be combined by regular automatic checking that links are still active. (Yue et al 2004)

1.8 Conclusions

One of the main conclusions from commentators such as Smith & Casserly (2006) is that if OER initiatives are to be sustainable they must be fully integrated into the processes of the institution and not be seen as an additional responsibility for faculty. If the production of OERs is recognised in promotion and tenure pro-

cesses then the initiative is also more likely to be successful in the long term. (Stacey 2007)

Apart from maintaining ongoing high levels of commitment and motivation amongst faculty and staff there needs to be a viable financial model to sustain OER projects in the long term. Many OERs become outdated quickly and need to be updated from time to time. It is also important to add new content on a regular basis in order to add dynamism, attract new users and to bring learners back to the site. Funding can come from a range of sources, though many of these are under threat during the world economic crisis.

Downes (2007) has listed nine potential funding models for OER projects. However the primary funders continue to be agencies such as the Hewlett and Mellon Foundations. They recognise the importance of the OER movement they have helped to bring about by offering further project funding for the creation and dissemination of OERs and the fostering of communities and research networks around free educational content. There is arguably an over-dependence on these funding bodies, Hewlett in particular, and it is not clear that the movement has yet got to the point where it can be self-sustaining. Funding may also be increasingly obtainable from government agencies, with the rationale that returns from the investment of taxpayers' monies are being maximised. However while funds are often available as part of particular initiatives there is sometimes less thought given to how the content will be made available, maintained and updated indefinitely.

Public donations are a minor source of income for most OER initiatives but these are likely to dry up during the economic downturn. There is some potential for OER initiatives to raise funding from sponsorship, the use of logos and advertisements on their websites but this is likely to bring in limited income, irritate some users and be ignored by anyone reusing the content and making it available locally. An alternative model is where several organisations join together to share resources, expertise or increase visibility of their OERs and hence their institutions in higher profile websites such as the Open Courseware Consortium.

The reality is that none of these funding models on their own will be able to maintain the majority of OER initiatives. Sustainable ventures will draw on a range of internal and external funding sources while embedding the production and maintenance of open content into institutional processes.

One major concern for educational institutions is that content which is delivered in an environment isolated from some of the key attributes of formal learning including a cohort of fellow learners, tutorial support, assessment and accreditation is likely to be less engaging and effective. Assessment is of particular importance in driving learning, and while OERs may encapsulate quizzes and formative assessment, there is no penalty for non-participation or failure in such exercises attached to OERs freely accessed by learners outside of formal courses. Some initiatives are therefore looking to build these attributes of formal learning around OERs and to charge students for tutorial support or examinations.

Individual motivation is a key factor in the uptake of OERs; those with a strong interest in a subject or requirement to learn about a topic, together with well-

developed study skills, may find OERs delivered in isolation are perfectly adequate for their immediate requirements. However that is if they can access them in the first place. The digital divide remains a major obstacle to the adoption of open content. In many parts of the World, particularly in Sub-Saharan Africa and South Asia, the infrastructure for electricity supplies and internet connectivity is unavailable, intermittent or simply too expensive for individuals or institutions to afford. Ironically these are precisely the areas which could benefit the most from free and open educational resources and therefore fulfil the humanitarian aims at the heart of the OER movement.

Another issue for the OER movement is the move away from high-cost broadcast materials and textual content to user-generated content and social software. There is a decline in television viewing, particularly amongst younger people, and a corresponding increase in the time spent in web 2.0 environments. Content itself has been devalued with the invention of the digital camera and websites such as Flickr and YouTube where millions of images and videos can be viewed freely. Meanwhile music, software and other digital resources are copied at no cost (though often illegally) through peer-sharing networks. (Sclater 2006) Open educational content has arrived at the same time as this broader devaluation of content in general which may have adverse impacts on its perceived value by potential users.

Efforts have been made by various initiatives such as OpenLearn to build communities around the learning content in an attempt to offer peer support. Where learning activities involve web-based forums, wikis, blogging and commenting on blogs, there are likely to be greater opportunities for reflection and the deepening of understanding than when OERs are provided in isolation. So far, most of these efforts have met with limited success; many of the visitors discover the resources through Google, visit briefly to obtain a few facts and then disappear. Others make their way systematically through a course but because of the lack of an obvious peer group studying the course at the same time see little point in contributing to the forums situated alongside each unit of study. Finding ways to create such learning communities remains one of the major challenges for the OER movement.

The outstanding success of Wikipedia in harnessing the efforts of thousands of contributors to produce millions of articles accessed at some stage by most frequent Internet users has not gone unnoticed in the OER community. For the time being it appears to be a sustainable venture, funded entirely by donations and employing a handful of staff. Wikiversity takes the Wikipedia model one step further to provide course materials in wiki format, editable by all. This model could be further developed to incorporate some of the elements such as tuition which are missing from most current OER projects. Staley (2009) proposes that teachers who wish to share their knowledge with others could form their own school or department around a particular subject area when a critical mass of participants has emerged. The schools would form and unform as fields of interest emerged and coalesced. This could happen much more quickly than the laborious course ap-

proval and production processes at existing universities, and professors' longevity would be determined by the community rather than by tenure. It would be managed by administrators who would emerge from the community in the way that they do in Wikipedia. Protocols and community values would prevail rather than administrative rules and top-down direction. Authors might be like the amateur scholar of the eighteenth century who makes money elsewhere but teaches and researches for their own satisfaction.

One major problem with this approach is that it would be hard to assess and accredit learning in a credible way, so any qualification awarded by such a body would have limited value. That could be potentially overcome by the provision of low cost examination centres by an accrediting organisation. Most OER initiatives remain firmly under the control of higher education institutions which can assess on an ongoing basis whether making their content available freely threatens their business models. The emergence of a new institution however where content is built entirely by volunteers on the scale of Wikipedia, where teachers come together with students as appropriate, where critical mass ensures that there are always others at the same level to communicate with, and where learning pathways are under the control of the learner, could present a direct challenge to the traditional university model.

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