

## Open Educational Resources – anonymity vs. specificity

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### Abstracts

#### English

Open Educational Resources are a recent concept in regard of the organisation of world wide sharing of educational materials and tools. This concept is oriented at the model of OpenSource software production or Wikipedia. Also for institutions like the UNESCO or the OECD, which are interested in the development of OER, it is the main question how OER can be used on a scale as global as possible, and how relevant international co-operation and usage can be initiated. However OER are having some problems to reach a similar grade of effectiveness, because there are some crucial organisational and interactional differences to these successful open networks. One main problem is the tension between the openness and anonymity of digital information and the specificity of educational resources, which are usually made to fit into a specific teaching/learning context.

#### German

Open Educational Resources stellen ein neues Konzept des weltweiten Austauschs von Lehr-/Lernmaterialien und Hilfsmitteln hierfür dar. Dieses Konzept ist strukturell vom Modell der Produktion von OpenSource Software oder Wikipedia beeinflusst. Auch für Organisationen wie die UNESCO oder die OECD, die sich für die Entwicklung von OER interessieren, besteht eine Hauptfrage darin, wie OER möglichst global genutzt werden können, und wie diesbezügliche Kooperationen initiiert werden können. Allerdings erscheint es für OER problematischer, einen ähnliches Maß an Effektivität hervorzubringen wie die genannten offenen Netzwerke, da es hier erhebliche organisationale und interaktionale Unterschiede gibt. Ein Hauptproblem ist die Spannung zwischen der Offenheit und der Anonymität digitaler Informationsgüter einerseits sowie der notwendigen Spezifität von Lehr-/Lernmaterialien andererseits, insofern diese normalerweise für einen spezifischen Lehr-/Lernkontext generiert werden

### Keywords

Open learning, distance learning, organizational models, Web 2.0, peer production

### List of topics

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 Coordination/quality  
 Let it flow

### Introduction

Since the MIT started its OpenCourseWare initiative (OCW)<sup>[1]</sup> a few years ago intending to have all its courses online with an 'open' copyright status the term Open Educational Resources gained some interest. OCW is so influential not only because it is the MIT but also because of the width and depth of the content it provides. However there are also other institutions active in this field.<sup>[2]</sup> Now also less well known initiatives, which e.g. show other organisational structures, concentrate on educational software or metadata standards, or do not come from the North American continent, come into focus. As part of this process in 2002 the UNESCO defined Open Educational Resources (OER) as:

"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."<sup>[3]</sup>

This covers a multiplicity of resources, contents and tools for the digital production of learning materials; published by individual teachers and lecturers, by networks, as well as by established institutions. The OECD which is studying and fostering the phenomenon as well recently<sup>[4]</sup> uses a more technical definition:

"By 'open educational resources' we understand: open courseware and content; open software tools; open material for e-learning capacity building of faculty staff; repositories of learning objects; free educational courses."<sup>[5]</sup>

What is missing in this list is the direct appeal to a 'community'. Nevertheless, OER and the way they are perceived are part of the complex and varied process which has been labelled Web 2.0 (cf. Kerres 2006). This label integrates a variety of different projects in the Internet which have become possible due to the availability of data-storage and bandwidth and which focus on user (inter)action and the semantic enrichment of information on the Web. This also seems to be the difference to older initiatives working on the reusability of 'learning objects':

OER are seen in a different context of internet-technology and computer-based social interaction and cooperation than simple storage and retrieval procedures.

"The OER initiatives are a relatively new phenomenon in tertiary education largely made possible by the use of ICTs. The open sharing of one's educational resources implies that knowledge is made freely available on non-commercial terms sometimes in the framework of users and doers communities. In such

communities the innovation impact is greater when it is shared: the users are freely revealing their knowledge and, thus work cooperatively." (Larsen/Vincent-Lancrin 2005: 16)

Influential developments like OpenSource software or Wikipedia are prominent and successful examples of this ongoing development. So hopes linked to the developments and initiatives in field of OER are based on comparisons with the success of other 'open' structures in the Internet.<sup>[6]</sup> So some kind of moral or non self-interested motivation is presupposed as multiple starting points for the global OER avalanche. Johnstone (2005) who is one of the leading figures in the OER-'movement' states:

"A major reason for sharing resources created for local communities is individuals' desire to make a difference in the lives of those less fortunate. [...] The real vision for OER is the sharing in all directions of resources and approaches to teaching, not just North to South."

Though it seems to exist a wide readiness to provide educational materials for world-wide sharing, this is only one side of the OER concept. There is another argument for the evolutionary success of OER:

"Open Educational Resources have one very important impact on the cost curves. They have the potential to bring down sharply the initial investment cost of technology-mediated learning. This is revolutionary because it means you can offer appropriate eLearning to low numbers and make it locally relevant. You no longer have to recoup a large initial investment through the high enrolments that are a feature of the open universities." (Daniel 2005)

With these two typical considerations we see OER clamped into a complex field of community values and institutionally specific cost models.

## Cost models

Though one has to be careful regarding the crowding-out effect, to be successful OER need at least partly some organizational backing in order to develop sustainable features.<sup>[7]</sup> This implies that the (potential) "impact on the cost curve" must be taken into account. Still these accounts are most frequently rather intuitive because systematic data on respective costs and cost structures is missing (cf. Larsen/Vincent-Lancrin 2005: 10f). Costs for the production and use of learning and teaching materials include a variety of different types: there are personal costs for teachers, distribution costs and overhead expenses.<sup>[8]</sup> These costs do not seem to make the big difference between traditional and open production/use of educational resources. Differences start in the field of royalties for authors and license fees when it is possible to integrate materials which are open, i.e., the costs may decrease with the position in the chain of (re)users.

However to be at the first position of the user chain an educational institution needs to develop a sustainable and sufficient funding scheme. Downes (2006) discusses different (existing) funding schemes in the field of OER, e.g. charitable endowments from different donors<sup>[9]</sup> to different institutional structures, fees for additional services, payments by the contributors, by advertising companies or of course the government. At least at the moment the idea seems so persuading that all these funding schemes are in action. These initiative represent however only a very small fraction of work done on educational resources which could be improved and facilitated by the work of others. If OER will reach such a critical mass (cf. Jelitto 2005) and if they are to deliver the different expectations, will depend on a set of other conditions we want to examine now.

## Open networks

Not only such obvious direct costs like royalties and personal costs for authors but also specific transaction costs can change dramatically when internet technology is used to establish open networks and coordinate complex projects. One question is however if OER, or the production process respectively, are such a complex projects that they can be organized in the same new way like the existing successful projects (cf. Remmele/Seeber 2006).

Whereas some coherent explanations regarding the specific effectiveness and success of open networks, like e.g. OpenSource/Free software, wikis, or in the beginnings the usenet, can be found (e.g. Benkler 2002, Demil/Lecocq 2003, Kollock 1999), such analysis is still scarce in relation to OER. Actually, OER might have some problems to reach a similar grade of effectiveness. To demonstrate these problems we want to compare the (possible) network structures of OER and of OpenSource-Software. The latter is economically most important open network and is therefore also the theoretically best described at the moment.

First we have to distinguish between the relation producers of a certain piece of information have among each other and the relation between the sponsoring producers and the adopters (in the case of OER: re-using teachers and self-learners). Both relations differ between the two forms of network in a way which is relevant for the success or failure of OER as a open but self-sustaining social network.

The word 'network' might be misleading here, because it does not refer to a network based on trust between a limited number of persons knowing each other but it refers to an anonymous kind of network (cf. Demil/Lecocq 2003). Such a network is regulated legally by the General Public Licence or one of its derivatives and equivalents, which implies the proactive self referentiality that a product may be used and advanced freely, if the advancements are also made open for public use under the same condition. The social relations created hereby is the backbone of the tremendous social and economical development of, e.g., OS/FS. Teachers could use, improve and republish materials without knowing the users/producers before and students could just study what seemed appropriate to them.

Besides the motivation to contribute to or participate in networks, these have to provide a communication infrastructure in order to make it viable as well as some kind of control mechanism which adjusts the contributions or intentions to relevant tasks or aims (Powell 1990). If one takes the communicational, motivational and control structure as a framework to make a structural comparison between the different forms of 'openness', substantial discrepancies appear in these interconnected fields.

## Communication/publication

On the (technical) level of the communication structure - regarding both the relation producer/producer and the relation producer/adopter - it is the absence of a centric form of communication and publication which makes the crucial difference between OSS and OER. OpenSource initiatives show a very centralistic attitude regarding the communication between the contributing 'hackers'. Responsibility for the coordination of one project is clearly given to one person and so called forking, i.e. looking for different

solutions to the same problem, is held as an exception and needs very good reasons to be accepted by the community (Raymond 1998). This feature is even more obvious in view of Wikipedia, where there is – except for very domain specific wikis and the like – one per language.

With such centric structures of communication the medial conditions of the Internet foster the production of common goods. In computer-mediated cooperation the information and transaction costs are very small (and almost independent of group size). Information about what has to be done is easily retrieved and communicating that one is doing it or has done it can be done at low cost and very fast. By this the chances for a single person to create a considerable contribution to the common good are very high, which is important for the motivation to contribute in a manner suitable for public use (Kollock 1999, Kollock/Smith 1996). Also the publication of software is structured in a way that makes it quite easy for possible (non-professional) users to distinguish the relevant features and the quality of it, e.g. looking for manuals, commentaries and other sorts of quality control.<sup>[10]</sup>

In contrast, the production of OER though based on the same Internet-technologies is highly dispersed. One can, e.g., find a set of different statistics manuals or introductions to electronic engineering; one can find varied materials which are in accordance with a specific institutional scheme or which are optimized for a certain search mechanism. Nevertheless educational resources are usually produced to fit to specific didactical contexts. Such contexts are rather complex as they include, e.g., age and experience of students, the wider course curriculum, the preferred didactical methods of the providing institution, and – last but not least - the personality of the teacher.

If made publicly accessible in the Internet (and not part of a wider initiative) educational resources are to be found on the website of the teacher's employing institution. And even if a server for exchange of materials exists resources will probably not be uploaded or referenced on this server in addition to the home server of the producer. With this it is very difficult for a self learner or re-user to find such OER and to estimate their quality and usefulness (we have to consider quality and usefulness as mainly relative because they are defined in relation to the context of the self learner or re-user). He needs time and has to 'use' it at least partly, to know the quality. This is of course demotivating for the contributor as well as the possible searcher.

## Individual motivation

As it has already become clear the division of the communicational and motivational infrastructure is mainly analytic. It is even a major condition for the success of open networks that the two dimensions interfere so much. However it is still one question, what is supporting or hampering motivations, and another, what is motivating in the first place. The success of the open networks in Internet can be seen in the amount of public (information) goods produced within these networks. This production is in contradiction with the dominant economic paradigm of the self-interested homo oeconomicus, as it provides competitive publicly accessible products without the contributors anticipating any reward. The potential users are not expected - and because of the medial conditions cannot be expected - to reciprocate the received good, i.e. free-riding does not bear a fairness problem and aversion of the contributors, it is even appreciated.

It has already been mentioned that motivation for educational institutions is not completely devoid of monetary considerations. Independent individual motivations for contributing to open networks can be related to different interests: a general philanthropic attitude, desire for reputation, play like and creative attitudes especially combined with computers, or the specific wish to create some online persona (cf. Remmele 2004). Though reputation was named as a possible aspect of individual motivation major incentive structures and mechanisms generating reputation and scientific excellence especially in the academic field do not sufficiently relate to the production of teaching materials.

"To establish a credible academic reward system that includes the production and use of OER might be the single most important policy issue for a large scale deployment of OER in teaching and learning." (Huyen 2006)

This is however a general problem of teaching not restricted to computer-based activities. Thus the motivational background can still be improved if the production of high standard OER is considered as a form of excellence.<sup>[11]</sup>

Anyway the basic motivation does not seem to be the major problem of a successful OER movement. On the one hand teachers are usually paid – meanwhile many OS programmers are often too – so they have to create teaching materials and learning objects in any case. And on the other hand teachers put often enough more effort in their materials than they are paid for. Maybe because they like to teach, maybe because they compete with colleagues in certain ways.

"The range of motivations will be diverse - from self-expression to love of knowledge, from participating in a community of teachers to frustration with the outputs of the tightly controlled textbook markets and a wish to have better materials to work with." (Benkler 2005)

The motivational potential of the producers is thus not the problem. Also the motivation of re-users and self-learners is obvious; but again the interference: only if they can realistically suspect to find something (good) in reasonable time.

Some motivational problems remain however. The motivation to produce and reuse does not imply the motivation to adhere to general standards of metadata and interoperability (in the case they existed) and to publicly and systematically review OER in order to generate more technical and interpretational transparency in the world wide thicket of learning objects like it would be done in the Web 2.0 paradise.<sup>[12]</sup> In addition, such an evaluative meta-OER would face a similar problem regarding the centrality of the publication structure.

## Coordination/quality

The structures of control we are concerned with relate to different tasks and can be of varied nature. On the one hand we have the problem of how to coordinate the adequacy of motivation and possible contributions with the demands of a certain project. On the other hand there is the problem of controlling the quality of the product in way that is transparent for a potential user.

Benkler (2002) provides an exhausting explanation of how open networks manage to coordinate the contributions to their common products. What he calls "commons-based peer production" is a mechanism that coordinates on the basis of information-technology large sums of individual work in a way that is

impossible for other governance structures, like markets or hierarchies, to handle, because a respective centralized representation of abilities, motivations, tasks, and decisions would be too ineffective and too expensive.

"Peer production provides a framework within which individuals who have the best information available about their own fit for a task can self-identify for the task. This provides an information gain over firms and markets ..."

Respectively a project based on peer production is not limited by its complexity, but by its possible modularity and granularity. Because the motivation to contribute might be rather small or very specific, the tasks have to be clearly identifiable and scalable to a respectively small size.

"The advantages of peer production are, then, improved identification and allocation of human creativity."

The decentralization of decision making is dependent on the centralized communication or publication structure mentioned above. But this centrality is (necessarily) missing in the field of educational resources. As long as OER are not a common project, i.e. as long as they mostly start with an initial contribution of an entire educational entity, there is no need for such a centralized publication structure. Thus also Benkler's (2005) analysis of OER is not too enthusiastic about the future of OER:

"The critical defining characteristic is that, in addition to being commons-based the activity involves at least concordant coordinated action of larger numbers of individuals, and, more often, actual cooperation among participants in a project or enterprise."

Because of that and because of the need of specific local adaptations the modularisation and the granularisation as well as the self-identification for appreciated tasks cannot be achieved in a way that the effective coordination mechanism of commons-based peer production will run like it does in the production of OpenSource software. In the progression of the Bologna process and the standardisation of degrees which it is involving there might be some cooperation between similar projects, that might benefit from the contributions of the others.

There is a basic tension inherent in the concept of OER, which is at the core of the quality problem of OER. On the one hand the Openness of digital information networks implies a rather anonymous relation between the involved persons, especially between the producer of the resource and its user. On the other hand educational resources are usually made to fit into specific social context of teaching and learning, i.e. the production implies a certain concept of its usage. This relates to all the different aspects of didactics, that cannot be applied without a clear vision of the social setting in which the intended teaching and learning takes place. It has to be noted, that this is a problem both for the producer, who does not know how to make his materials publicly available in suitable and most effective manner, and for the user, who cannot judge the relevance and quality of a learning object he found.

A way to reduce the tension might be found in the development and usage of adequate meta-data and interoperability standards (including appropriate intellectual-property-rights-management). Baumgartner (2006) recommends to distinguish meta-data in regard to the informational and the educational part of an educational object. The educational part would thus provide the information about the didactical context for which the object is intended and useful. He considers the definition (e.g. by number of involved students or the organisation of the learning process) and the classification of different 'scenarios' as a viable strategy to solve the problem of the (unknown) specificity.

One might even think of the possibility of automatic classifications and evaluations. If producers stick to certain standards regarding meta-data and general structures (e.g. syllabus, reading list, mock examinations etc.), algorithms oriented at benchmarking user scenarios could be implemented in respective search engines. Or like in Google linking between resources could provide information about the specificity through peer usage without further effort.<sup>[13]</sup> And as such an automatic evaluation could even provide an equivalent to citation indexes, the motivation to adhere to relevant usability and quality standards would rise again.

Thus in general, personal or institutional accountability and responsibility seems rather desirable. Connecting searchability and interoperability (cf. Friesen 2001) with personally or institutionally accountable resources would probably also lead to the implementation of basic quality standards by the producers themselves, because more educational and scientific excellence could be attached to such resources.

There are strong search engines nowadays<sup>[14]</sup>, so the technical problem of finding relevant pieces of information in spite of the decentralized publication structure of educational resources might be negligible, if meta-data and interoperability standards provided sufficient transparency in the Internet.<sup>[15]</sup> It is a very remarkable feature of the creative-commons-licence, that it is machine-readable, also respective search engines already exist. Bound together with a search-mechanism on the meta-data-structure of OERs this could provide a capable infrastructure for an open educational bazaar, working with minimal transaction costs.

Regarding the relation between the contributor and the user one crucial moment in the field of (relative) quality control is language in a wider sense. Software 'speaks' a rather universal language because it speaks to computers, thus it is quite easy and generalisable to find out if the computer 'understands' it correctly: the software works properly or it does not, and if this test has been done by somebody else before it is not necessary to repeat it. Educational resources have to be provided in different human languages, i.e. single resources are not understandable for all possible users. But even if they are in a language understood by the user or re-user, how good and useful they are, has to be determined by each of them according to his or her own needs.

The problem which the variety of human languages creates for OER cannot be solved without further effort. Somebody has to do translations in order to make foreign OER usable. By CORE (China Open Resources for Education) it is tried to organise the translation of MIT OCW courses into Chinese as a commons-based peer production. Judging from the general outlook, this system does not seem suitable for liberal societies in general. An adequate local adaptation has to be done by re-users. If they understand the foreign language the problem is again at least partly reduced to finding relevant material and determining its quality. The translation of a greater part of MIT OCW into Spanish and Portuguese seems however not to be done by re-users, thus reading list and other parts which needed a specific adaptation to the local context remain partly useless.

"In order to be most effective, OER should be both culturally and linguistically "translated" so as to enhance greater understanding, relevance and adaptability within developing populations." (UNESCO Forum 2005)

## Let it flow

Moglen's (1999) 'Metaphorical Corollary to Faraday's law' states:

"if you wrap the Internet around every person on the planet and spin the planet, software flows in the network. It's an emergent property of connected human minds that they create things for one another's pleasure and to conquer their uneasy sense of being too alone"

The only question left is: "what's the resistance of the network?"

Whereas Moglen identifies the intellectual property rights system as the resistance to the OpenSource network, IPR is, as we have seen, not the main problem for OER. The main resistance to the flow of OER is rather to be found in their dispersedness and the need for adaptation to a new local context. Both in the field of their production and usage OER have to counterbalance this 'disadvantage' in relation to existing and successful open networks, because as long as the effort for finding suitable resources is expected to be higher than the expected effort to create them oneself, the network will not gain critical mass and the potential of OER for global learning is not used optimally. Neither institutional backing nor strong community attitudes will gain sustainable success otherwise.

[1] <http://ocw.mit.edu/index.html>

[2] E.g. Connexions of the Rice University (<http://cnx.rice.edu>) or the OpenKnowledgeInitiative (<http://www.okproject.org>); also the African Virtual University (<http://www.avu.org>), the European Ariadne network (<http://www.ariadne.eu.org>), the French Network University Surf (<http://economie.u-bourgogne.fr/elearning>) or the Learning Objects Metadata network (e.g. <http://www.cancore.ca>) ...

[3] [http://www.unesco.org/iiep/virtualuniversity/forumsfiche.php?queryforumspages\\_id=13](http://www.unesco.org/iiep/virtualuniversity/forumsfiche.php?queryforumspages_id=13)

[4] Current reflections on OER can be found on: [http://www.oecd.org/document/32/0,2340,en\\_2649\\_33723\\_36224352\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/32/0,2340,en_2649_33723_36224352_1_1_1_1,00.html)

[5] [http://www.oecd.org/document/26/0,2340,de\\_2649\\_33717\\_35733402\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/26/0,2340,de_2649_33717_35733402_1_1_1_1,00.html)

Also Hylan (2006):

"Learning Content: Full courses, courseware, content modules, learning objects, collections and journals. Tools: Software to support the development, use, re-use and delivery of learning content including searching and organization of content, content and learning management systems, content development tools, and on-line learning communities. Implementation Resources: Intellectual property licenses to promote open publishing of materials, design principles of best practice, and localization of content."

[6] "What's in a Name? By analogy to the free and open source software development site, sourceforge, schoolforge is conceived of as a site where schools can be developed." <http://www.schoolforge.net/what>

[7] For the relation between the institutional and community model cf. Hylan 2006.

[8] Of course the general cost structure changes fundamentally, e.g. regarding the ancillary costs, when an educational organisation is changing to a multimedia strategy, but these changes seem to be necessary independently of the usage of an open or proprietary copyright strategy.

"Although ICT investments are expensive, they can then generally be used at near-zero marginal cost." (Larsen/Vincent-Lancrin 2005: 6).

[9] There are supportive philanthropic funding schemes for the development of OER, especially by the Hewlett Foundation (<http://www.hewlett.org/Default.htm>).

[10] In addition, the GPL "can generate transaction costs that are lower than those of other governance structures", and because under the GPL governance

"the uncertainty attached to a given transaction with a given adopter is counterbalanced by the potentially high number of adopters able to produce the expected output." (Demil/Lecocq 2003)

This implies a specific change of perspective regarding transaction costs, because it is not the single (improbable) transaction but the sum of transactions, which makes the difference. Even if the sponsor has no idea who might ever use his piece of work, he knows that there are so many possible adopters, that he might consider it worthwhile.

[11] In a recent survey the OECD found out that

"the most commonly reported motive was to gain access to the best possible resources and to have more flexible materials. More altruistic ambitions, such as assisting developing countries, outreach to disadvantage communities or bringing down costs for students seems somewhat less important. At the same time the least important factor was to personally be financially rewarded." (Hylan 2006)

[12] "The more difficult task is to create a system for filtering and accreditation that would separate the wheat from the chaff. The sheer magnitude of the universe of materials that are and will likely be produced in an open network, particularly as the cultural habits of creative engagement diffuse in the population, suggests that the problem of accreditation and filtration will be a very large one." (Benkler 2005)

[13] The information generated by automatic classification and evaluation can be based on unintended information like the Google page rank or on intended information generated, e.g. through 'social tagging' which is one of the frequently discussed features of the Web 2.0.

[14] E.g. there Google machines for creative commons (<http://search.creativecommons.org/>) or OCW (<http://opencontent.org/googleocw/>).

[15] There are different initiatives to improve the searchability like the coupling of existing repositories or the development of specific referatories, cf. Jelitto 2005.

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