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Open Networks for Culture and Education (ONCE): A Discussion Paper from the ALTO Project

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Abstract

Open cultural collections and open educational resources in the digital realm face many similar challenges and occupy the same problem space in terms of user needs and technical requirements. To meet these needs in a sustainable and scalable way a simple shared approach and technical architecture is proposed that moves away from the current narrow domination of technical concerns but leaves open the possibility of specialist services working in tandem with open user controlled systems. The paper is based on the experience of an open education project at the University of the Arts London and draws on the experience of establishing the proposed architecture in a real institutional setting.

Key Words: open education, open educational resources, culture, repositories, metadata, creative commons licences, socio-technical, ALTO, University of the Arts London.

Introduction

The number of digital cultural assets is rapidly increasing and both institutions and individuals are facing the problem of how these assets are stored and made available in easy to use and inviting interfaces. This situation has close parallels to the challenges that the open education movement faces in managing and sharing digital learning resources. This paper proposes that applying some of the insights gained from open education to the challenge of managing and sharing cultural artefacts may produce mutually beneficial solutions for the educational and cultural sectors that are also economically sustainable and socially resilient. This is particularly relevant to those educational institutions that are also responsible for digital collections of cultural significance, a common scenario in UK higher education and elsewhere.

This paper presents some of the relevant experiences and findings from an open education project at the University of the Arts London (UAL) that should be useful to others involved in developing open collections of cultural and educational artefacts to support collaboration in arts education. The ALTO (Arts Learning and Teaching Online) project has been funded by JISC, a UK government agency, as part of a national programme to encourage universities to engage with the growing global open education movement. The paper describes how the idea of 'the commons' is having a revitalizing effect on debates about education and culture, particularly relevant in a time of austerity. We describe how the project has moved away from a narrow techno-centric view of online education to a realization that resource sharing needs to be accompanied by a social online space to show and discuss practice. Finally, the paper presents a draft open socio-technical architecture that can work at both an institutional level (as exemplified by ALTO at the UAL) and as a shared online service that provides tools for institutions that are not able to install and support such tools locally.

A Digital Commons for Education and Culture

The idea of 'The Commons' as a shared space where resources are held for the common good is an enduring one in human history. After agitation and social conflict in the 13th century in England, the monarchy was forced to cede control of large parts of land for common use by the population under the *Carta de Foresta* (Charter of the Forest). This is the lesser-known companion to the more famous Magna Carta that is widely regarded as a milestone in the evolution of the legal articulation and protection of human rights. More recently, during the current global economic crisis various protest movements such as 'Occupy Wall Street' have been articulating the need for common ownership of resources for the benefit of society as a whole, including the banking system.

The debate about common ownership and/or access to resources has been recently been revitalised in the digital realm by developments to promote open access to research and open educational resources (OERs). Questions and issues raised include:

- What are the implications of The Commons for students, teachers, institutions and society? If The Commons are characterised by an economy of 'plenty' and open access, what is the future for an educational and cultural economy based on scarcity and restricted access?
- How might the growth of The Commons change the roles of; the creators of cultural artefacts, teachers, librarians, archivists, educational developers and technical staff?
- What kind of digital literacies are needed to navigate the Commons, both for individuals and institutions?
- Engagement with The Commons acts as a 'lightening rod' to raise debate about a broad range of issues such as; ownership, control, power and identity. How do we deal with this in our private and institutional roles, in a period where where neoliberal economics and ideology is in crisis?

Establishing a legal basis for The Commons

The ALTO project, in common with many other open education projects around the world is making use of the Creative Commons licensing system. This simple, but imaginative, application of existing copyright law has far reaching effects including, as we shall explain, the shape of the proposed technical architecture of ONCE.

In the UK the current institutional IPR (Intellectual Property Rights) policy picture is confused and represents pre-digital and traditional working methods where publishing technology was well beyond the means of many institutions. Given this cultural background any discussion of licensing of learning resources in a university, especially for open distribution, is likely to be a sensitive issue. However, we have found the Creative Commons Licence system very well suited to our purposes.

The background to the development of the Creative Commons licence system is well described on their website. In essence the founders were dissatisfied with the effects of the application of

traditional restrictive copyright law being applied in the digital realm of the World Wide Web. The underlying vision was the realisation that the traditional economy of 'pay per copy or view' of older media such as books and films that had created the basis of current copyright law was not going to suit everyone who publishes their work on the web. While big business has sought to take advantage of the web as a new distribution medium it has also tended to try and enforce the old model of restricted access and lobbied for tougher legislation to protect their IPR. At the other end of the economic spectrum individuals, public bodies and small companies, especially those in the creative industries, cannot easily afford to hire lawyers to handcraft licenses to stipulate how their IPR may be used.

The Creative Commons licence system was developed to meet the needs of people who wanted to publish their content the World Wide Web openly and freely and yet retain some legal control and protection for their work. Whereas, traditional copyright reserves all rights to the owner, the Creative Commons licence system uses existing law to adopt a 'some rights reserved' approach to support open publishing to the web. It is also important to understand that Creative Commons licence system is actually based on existing copyright and contract law. There was, and is, a social and political agenda attached to this – the broad aim is to lower the legal barriers to sharing and reuse. The Creative Commons licensing system was envisaged as a means to provide a shared common space on the web where people could publish their works under simple, easily understood licence terms in a way that helps them take advantage of the networking properties of web technologies. This vision is simply summed up by this statement from the organisation's website:

"Our vision is nothing less than realising the full potential of the Internet — universal access to research and education, full participation in culture — to drive a new era of development, growth, and productivity."

The use of Creative Commons licences for content and metadata has the considerable advantage of greatly lowering the transactional costs involved in sharing, reuse and adaption. As we shall see, this has a considerable potential to simplify technical systems design to support open education and cultural practices.

The Open Education Movement – a brief overview

The best known UK example of open education in the UK is the Open University (OU), set up in the 1960's to make university education more accessible and open to students without the formal qualifications normally required by traditional universities or the ability to attend full time education. In addition the OU aimed to deliver its programmes of study using distance learning techniques to offer study opportunities that were flexible in terms of the place and time of study, so that students could fit learning around their personal and working lives. The OU was (and is) an example of 'official' and certificated education delivered via innovative means to overcome the barriers of time, place, work and family commitments and the lack of formal qualifications.

More recently, interest has grown in taking this model a step further by providing open access to the course study materials of universities on the web so that 'independent learners' can use them. The acknowledged pioneer in this area has been MIT in the USA who, with the help of large charitable grants, has made all its undergraduate course materials openly and freely available under the terms of a Creative Commons licence. A useful overview about OERs has been produced by JISC (2008), entitled *Open Educational Resources – Opportunities and Challenges for Higher Education*:

"The term Open Educational Resources (OER) was first introduced at a conference hosted by UNESCO in 2000 and was promoted in the context of providing free access to educational resources on a global scale. There is no authoritatively accredited definition for the term OER at present; the most often used definition of OER is, 'digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research' (OECD, 2007). With regard to this working definition, it is important to note that "resources" are not limited to content but can include software, and legal licences etc.

Theoretical and Methodological Perspectives on using ICT

In the UK, activity and discourse in the area of sharing and reusing learning resources has been dominated by narrow technological concerns with interoperability standards, learning objects, metadata and the creation of specialist repository software – sometimes becoming an end in itself rather than linked to real human needs (Barker, 2010). As a result, things have not worked out as expected, Fini describes it this way:

"This way of interpreting e-learning is running into a crisis: the promised economic effectiveness of content re-use is often hard to demonstrate or it is limited to specific contexts, while a general feeling of discontent is arising. (Fini, 2007, p. 5)"

To understand this apparent impasse Friesen (2004a) and Friesen & Cressman (2006) helpfully point out there is a set of important political and economic sub-texts connected to the proposed uses of technical standards and technologies in education that still need to be explored. Neglecting such 'soft' issues is a major cause of the problems cited above by Fini (2007). While Harvey (2007) notes a prevailing belief in neo-liberal thinking that there can be a technological fix for any problem and that products and solutions are often developed for problems that do not yet exist. In education, one of the materializations of this tendency was the proposition that interoperability standards and techniques developed in the military and aviation sectors could be adopted in the mainstream public education system (Friesen, 2004a). But, despite the large amounts of money spent by public bodies in this area, Friesen (2004b) notes that this has largely failed. In retrospect it is not surprising that technologies and approaches originating in the military and industrial sectors have not taken root in mainstream public education systems. Here, teaching and learning is inevitably a far more messy, less controlled and contingent enterprise. Influenced by these experiences, the ALTO project has sought to move away from such technical determinism.

Pioneering work about introducing technology into workplaces by Mumford (1995) and others has shown that successful innovation has to address the contextual and social aspects of using new technologies. This applies especially to HE organisational and teaching cultures, which can be notoriously resistant to change. This approach has been adapted successfully for the introduction and integration of information technologies into modern knowledge-based workplaces, notably by, Sharples (2002) as 'Socio-Cognitive Engineering' and Wenger (1995 & 2009) as 'Communities of Practice' and 'Technology Stewards'. These approaches draw on traditional ethnographical approaches, where project fieldworkers interact with the groups under study to understand better how they work and live. This information is then used in the iterative construction of prototypes and systems that are tested with people to understand how both the tools and human systems may be improved. One way of describing this approach is that it is investigative and human-centred, as well as being contextually and culturally sensitive.

Putting the Social into Socio-Technical System Development

To begin with, and in accordance with the existing technological hegemony in education, the ALTO project initially started out by committing to acquire and install a repository software package. Repository software is optimized for storage and management and operates using a library paradigm, but is not good at presenting or publishing information. These limitations rapidly became apparent in the context of ALTO and the Art and Design academic community, who traditionally place a high importance on 'look and feel' i.e. affective and usability issues.

We realized that while a repository might be a solution for meeting institutional storage requirements, it alone would not be enough for open education development. We came to understand that ALTO needed to be more than just one software tool – it would need to be a system of connected and related tools. A repository gave us a place to safely and reliably store resources in the long-term for which there was already a strong institutional need. We came to see that ALTO needed to fit into and be a part of a wider and dynamic 'ecosystem' for creating open online resources and supporting their associated communities of practice. Two things became clear. First, was that resources in the repository would need to be easily 'surfaced', in a variety of social media to

aid dissemination and impact. Second, that the other components of such a UAL ecosystem would want to use the repository to deposit some of their outputs now that the a long term storage service was possible.

Fortunately, a communal social media platform was available through an existing UAL initiative called Process.Arts; "an open online resource showing day-to-day arts practice of staff and students at UAL" (Follows, 2011)**.** This originated as a small personal project to address the need for staff and students to show and discuss aspects of their practice as artists and designers by providing a collaborative space using the Drupal web content management system, which includes many common Web 2.0 features. The ALTO project decided to support this initiative and it has since been very successful in a short time, with users uploading images and videos and discussing each other's work, user numbers and interactions are high and growing with considerable interest from abroad. Through this experience, we came to understand that if the repository was to be the officially branded 'library' part of ALTO then Process.Arts would provide the 'open studio and workshop' where knowledge and resources are created and shared. As a result, the project board took a decision to redesign the initial architecture of ALTO to add a 'social layer' to the initial repository, which incorporated Process.Arts. As at 2012, the evolving institutional infrastructure can be viewed at this web site http://alto.arts.ac.uk/. The digital library component can be viewed at this web site http://alto.arts.ac.uk/filestore/, and the social layer which provides an open collaborative studio/workshop space can be viewed at this web site http://process.arts.ac.uk/.

ONCE: A Draft Socio-Technical Architecture

Simply put, the proposal is to make available a set of simple free and open source tools that build on the experience of the ALTO project. These tools would support both engagement with open education in the arts and also meet existing institutional needs to manage collections of cultural artefacts, this would encourage adoption. At an institutional level this would include a simple digital gallery and filestore management tool together with a social media platform. At a national or regional level there could be a shared hosted service option for those institutions and departments that lack the ability to install and support such tools locally but still need the ability to project their distinct identity online. In addition, there could be an aggregation service that combined feeds from institutionally based content together with content from the shared system. This aggregation service would allow users to browse and search through the service by topic, subject, institution, community, person, region etc.

Figure 1 provides a simple illustrated conceptual model that describes the main components and data flows. The term open data is used here as an umbrella term to include both content and metadata. The metadata generated in the user-controlled area will be of a simple and lightweight nature. The emphasis on simple metadata is based on the experience gained by the author's involvement in the national UK learning resource repository project Jorum http://www.jorum.ac.uk/ and other repository projects at the UAL and the University of the Highlands and Islands in Scotland. Because the content and metadata of ONCE is licensed under Creative Commons, external specialists and experts are free to add any services or enhancements they choose. Figure 2 describes how a mix of institutionally hosted and shared systems might interact with a national aggregation service and, potentially Europeana.

We think the free and open source software Drupal will serve as the basis for both the social platform and potentially the national aggregation service. A solution to the simple gallery and filestore component of the system is not so obvious at the moment

Simple Gallery and Filestore Options

As already observed, specialist repository software (simply, systems to store and retrieve stuff) in the UK has been the presumed solution to this need. This has resulted in a range of both commercial and free and open source repository software tools being made available, with varying degrees of success. The development of the free and open source repository tools (e.g. Eprints, Dspace and Fedora) has, to date, been dominated by a focus on the needs of the research and archive communities with a

development paradigm that has concentrated on the information science aspects of resource management. As a result, the usability and widespread take up of these systems has been quite limited, especially when applied to the field of learning resources, while commercial solutions have made little progress due to their cost factor. The currently available free and open source repository tools, require a high degree of specialised technical expertise to deploy, maintain and customize, while suffering from poor usability. Another important problem with these tools is that the associated developer communities are very small, raising issues of sustainability, resilience and lock-in to specialist suppliers and developers. More fundamentally, these tools were not designed for learning resources which have a very different user community to those of research respositories Combined, these factors make these systems unsuitable for large-scale adoption in mainstream public education.

There are other, concerns about trying to use these kinds of repository platforms. It is important to remember that storage and retrieval (i.e. finding a resource) are not the same problem and using one solution for both results in a solution that may not be ideal. The modern internet places great emphasis on social networking, vibrant user interfaces, high performance, usability and growing support for usage via mobile devices. This raises the question - is the ideal solution to manage educational and cultural collections a software platform that was designed for a different purpose and at a different time, without features which modern users expect? A fresh and more modern approach is required, building on experiences learnt over time in the wider software industry to produce solutions which users are more likely to find acceptable:

- Simple metadata profiles that are kept to the bare minimum
- Tight integration with a social media space (the social layer)
- Solid software architectural design which separates out functionality clearly i.e. separate the storage layer from the user interface layer
- Rich user interface
- Low technical barrier of entry i.e. easy install, minimum effort required to maintain
- Support for modern browsing environments e.g. smart phones, tablets etc.

In addition, there already exists many well-used software components in the modern internet ecosystem, perhaps the solution is not a wholly new product but includes a fusion of these products e.g. YouTube, Drupal, FaceBook, Amazon Web Services & S3.

Conclusions

The ALTO project has found It's simply not enough to provide a repository mechanism of storage (important as that may be), this needs to be accompanied by a 'social layer' that enables the important human factors of communication, collaboration, and participation that are needed for sustainable resource creation and sharing within community networks. The technical solutions provided should help not hinder these activities; the guiding design principle for these socio-technical systems should be that of the concept of *conviviality* (Illich, 1973, Hardt & Negri 2009) and *stewardship* (Wenger et al, 2009). This simply means that such systems are responsive to users real needs. Achieving this involves changing the current power relations between the developers and users of such systems in academia. The proposed ONCE architecture aims to meet these requirements in a simple and scalable manner by supplying components that meet different user needs, rather than by building monolithic systems dominated by specialist concerns. This paper has described how the perspective of The Commons has enabled the project to move away from narrow technical determinism to articulate more realistic solutions based on the real-life context of the UAL. The system described in this paper currently being implemented at the UAL and it is becoming clear that it has the capability to host and support the significant cultural collections that the university is responsible. Previously, such collections have had to be hosted and supported externally, resulting in lost opportunities and unsustainable costs and with the danger of losing the intellectual capital of the university. Looking forwards, the project would like to continue this development work in collaboration with external partners. One of the aims of such work would be to create a 'living laboratory' of users to support future joint research and development opportunities.

Illustrations

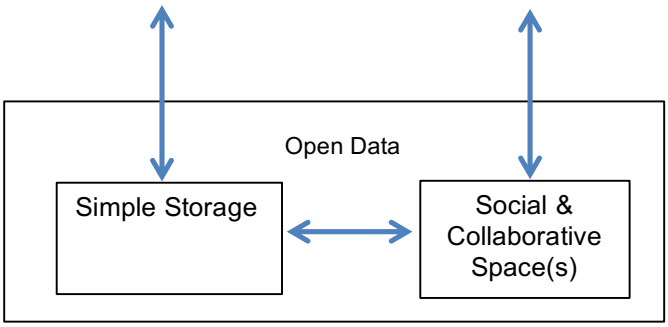

Fig 1 ONCE Conceptual Model with Data Flows

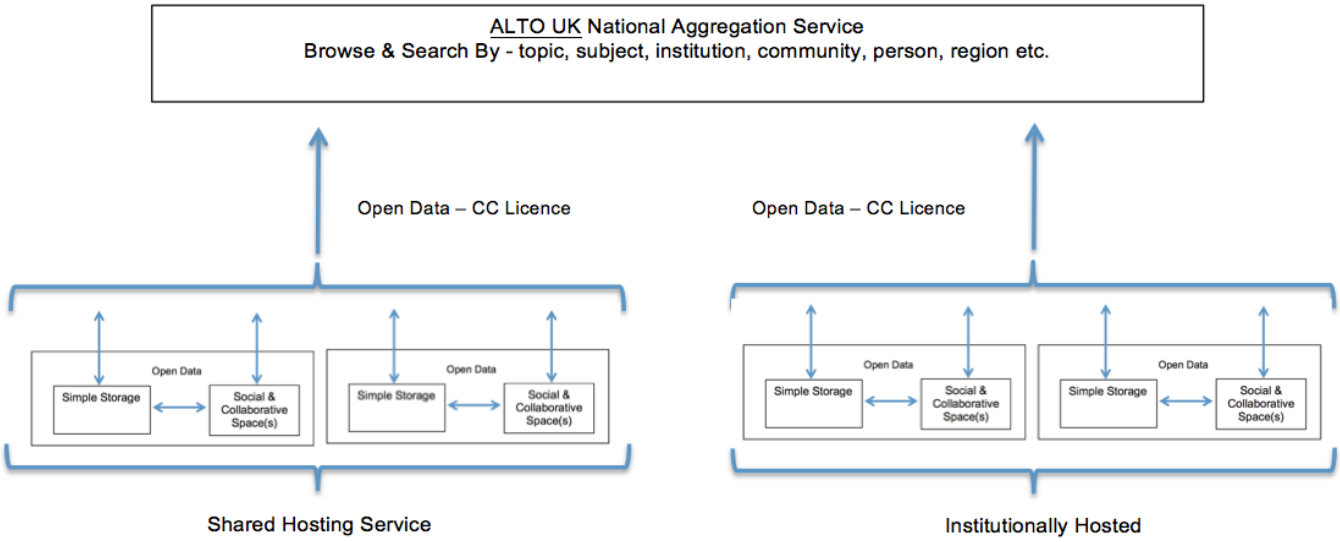

Fig 2 how a mix of institutionally hosted and shared systems might interact with a national aggregation service

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