

Open Spaces for Arts Education - The ALTO Ecosystem

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Title: Open Spaces for Arts Education - The ALTO Ecosystem Model

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Abstract

Problem Area: The ALTO project (Arts Learning and Teaching Online) at the University of the Arts London has received funding in 2010 to engage the University with the rapidly growing global open education movement. This paper and multimedia prototype starts to explore the opportunities and challenges that the open agenda presents to art education institutions and those that study and work within them – as well as those outside the traditional ‘walled garden’ of formal education. We begin to identify and explore the intersecting topographies of the physical, social and technical spaces that are involved to discover possible sustainable paths forwards, this is especially relevant in the current climate of financial austerity.

Methodology: Our methodology is influenced by a number of approaches. Fieldworkers (as used in ethnographic and anthropological studies) are employed to understand cultures and their interactions with tools. Systems theory together with grounded theory is used to develop cohesive explanations of behaviors on which to base interventions. Our approach to technical systems design is guided by the socio-cognitive engineering methodology developed over the last 20 years or so.

Conclusions: The work of the project has involved critical engagement with current trends in diverse areas including education, e-learning, politics, informatics, knowledge engineering, economics and popular culture. As a result, we have sought to develop a simple and viable general socio-technical model for open arts education that can be adapted to fit local conditions, priorities and budgets.

Contents

1. Introduction and Overview	2
2. The ALTO Ecosystem Space	3
3. Methodological Spaces	8
1. Grounded Theory.....	8
2. Systems Theory.....	8
3. Benefits Realisation.....	9
4. Socio-Technical System Design.....	10
5. Agile Software Development.....	10
4. Physical and Political Spaces	10
5. Educational Spaces	13
6. Legal Spaces	14
7. Technical Spaces	15
8. Conclusions	17
9. References	17

1. Introduction and Overview

The ALTO project (Arts Learning and Teaching Online) at the University of the Arts London received funding in 2010 to engage the University with the rapidly growing global Open Education Resource (OER) movement¹. This paper and multimedia prototype starts to explore the opportunities and challenges that the open agenda presents to art education institutions and those that study and work within them – as well as those outside the traditional ‘walled garden’ of formal education. We begin to identify and explore the intersecting topographies of the physical, social and technical spaces that are involved to discover possible sustainable paths forwards, this is especially relevant in the current climate of cultural and financial austerity that is dominating public education in the UK in 2011.

This paper starts by describing the prototype in its current form with a breakdown of its components, their purposes and how they have been implemented. Next, we briefly outline the methods that we have used together with how their influences and rationales have helped in creating the prototype. After this we explore and describe the nature of some of the different spaces we have examined and traversed in the course of developing the prototype in the form of a series of reflective accounts. One of the discoveries of our work is that, of course, these spaces are really intersecting and interconnected ‘dimensions’

¹ See these reports from the Hewlett Foundation for an overview of the global OER movement; http://www.hewlett.org/uploads/files/OER_overview.pdf & http://www.hewlett.org/uploads/files/OER_overview.pdf and this JISC Infonet guide to get a UK perspective: <https://openeducationalresources.pbworks.com/w/page/24836480/Home>

that cannot be dealt with in isolation. These reflective accounts provide both a series of 'working sketches' in words and a kind of reverse engineering to uncover the rationales behind our various design decisions and to help us consider how to take our work forward in the next design and development cycle. Finally, we conclude with a summary of our work and how we think the prototype may be developed further for use in arts education and in other cognate fields.

2. The ALTO Ecosystem Space

We have been developing a rich model for publishing OERs in practice-based arts subjects, which we hope to take forwards in further research and development projects. The working title for this is the 'ALTO Ecosystem' – this has the ambitious goal of creating a reusable and adaptable model for providing appropriate IT, cultural and policy support for OER development and collaboration in the Art and Design sector.

The project started with a strong focus on acquiring and installing digital repository software² to handle the completed OERs, this had the secondary aim of enhancing the ability of UAL staff to manage their own learning resources internally. The repository software package 'EdShare' was chosen, a variant of the popular research paper repository 'Eprints' supplied by Southampton University. A design for the customised version of the EdShare system together with a metadata schema was developed (based on the Dublin Core metadata standard) and agreed. Repository software is optimized for storage and management and operates using a library paradigm - which is great for that particular purpose, but is not so good at presenting or publishing information. The presentational limitations of repository software 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. Similarly, in the wider world of OER the emphasis is much more on presentation, publication and communication. Hence, the leading initiatives do not use canonical repository software e.g. MIT OCW³ (previously Microsoft Content Management, now Plone), OpenLearn⁴ (Moodle), Merlot⁵ (An database driven central web site with distributed web 'feeder' sites), IRISS⁶, the Scottish Institution for Research and Innovation in Social Services, (Drupal).

We realized that while a repository might be a first step, it alone would not be enough, we came to understand that ALTO would need to be more than just one software tool - it would need to be a system of connected and related tools. The repository gave us a place to safely and reliably store resources in the long-term for which there was already a strong demand. But there was also a question of how ALTO might fit with other UAL information resources created by staff and

² For those readers who are new to the area this Wikipedia entry provides a useful introduction: http://en.wikipedia.org/wiki/Digital_library

³ <http://ocw.mit.edu/index.htm>

⁴ <http://openlearn.open.ac.uk/>

⁵ <http://www.merlot.org/merlot/index.htm>

⁶ <http://www.iriss.org.uk/>

projects that were being hosted on the open web outside of the official UAL infrastructure, which had been quickly blossoming over several years, often using Web 2.0 tools and services. We came to see that ALTO needed to fit into this wider and dynamic 'ecosystem' of online resources and associated communities. Two things became clear. First, was that resources in the repository would need to be easily 'surfaced' in other contexts in the wider UAL information ecosphere and beyond, in a variety of social media to aid dissemination and impact (not too hard technically). Second, that the other components of the UAL ecosystem might want to use the repository to deposit some of their outputs now that the possibility of a long term storage area was possible.

A good opportunity to explore this kind of connected systems approach became available through an existing UAL social media initiative called Process.Arts (<http://process.arts.ac.uk/>), which was the result of a staff teaching fellowship to produce an open online resource showing day-to-day arts practice of staff and students at UAL. This was set up to address the need for staff and students to display and discuss aspects of their practice as artists and designers by providing a collaborative space in an installation of the Drupal⁷ web content management system that included many common Web 2.0 features. This has 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. We realized that if the repository was the officially branded 'library' part of ALTO then UAL sites and communities such as Process.Arts would be the 'workshop' areas where knowledge and resources were created and shared. As a result, a decision to develop a socio-technical⁸ architecture for ALTO to fit into the wider UAL information ecosphere was accepted by the project board.

We think this approach represents a good path forwards for OER initiatives in Art and Design (and perhaps other cognate subjects) and recognizes the crucial importance of a contextually rich presentation layer, like MIT OpenCourseWare, with the addition of a social layer (like Process.Arts) that can also accommodate more granular resources. It's not enough to just provide a repository mechanism of storage or retrieval (important as that may be) – the presentation and social layers enable the important human factors of communication, collaboration, and participation that are needed for sustainable resource creation and sharing within community networks. There is an online video describing our approach to these matters recorded at a workshop session at the OCWC 2011 conference at this link <http://process.arts.ac.uk/content/introduction-alto-and-processarts-ocwcglobal>

As at August 2011 the system consists of 4 'layers'

1 – Storage layer – Repository

2 & 3 – Presentation and Social Network Layers - Process.Arts

⁷ For more info on Drupal see <http://en.wikipedia.org/wiki/Drupal>

⁸ Based on the work of Enid Mumford and colleagues see http://en.wikipedia.org/wiki/Enid_Mumford

4 – Associate Layer – existing UAL websites that have adopted Creative Commons Licensing and an ALTO logo incorporating a link to a record in the repository. A schematic representation of the first 3 layers can be found below in Figure 1. A working sketch that describes the relationship of the ALTO Ecosystem to the rest of the UAL can be found below in Figure 2.

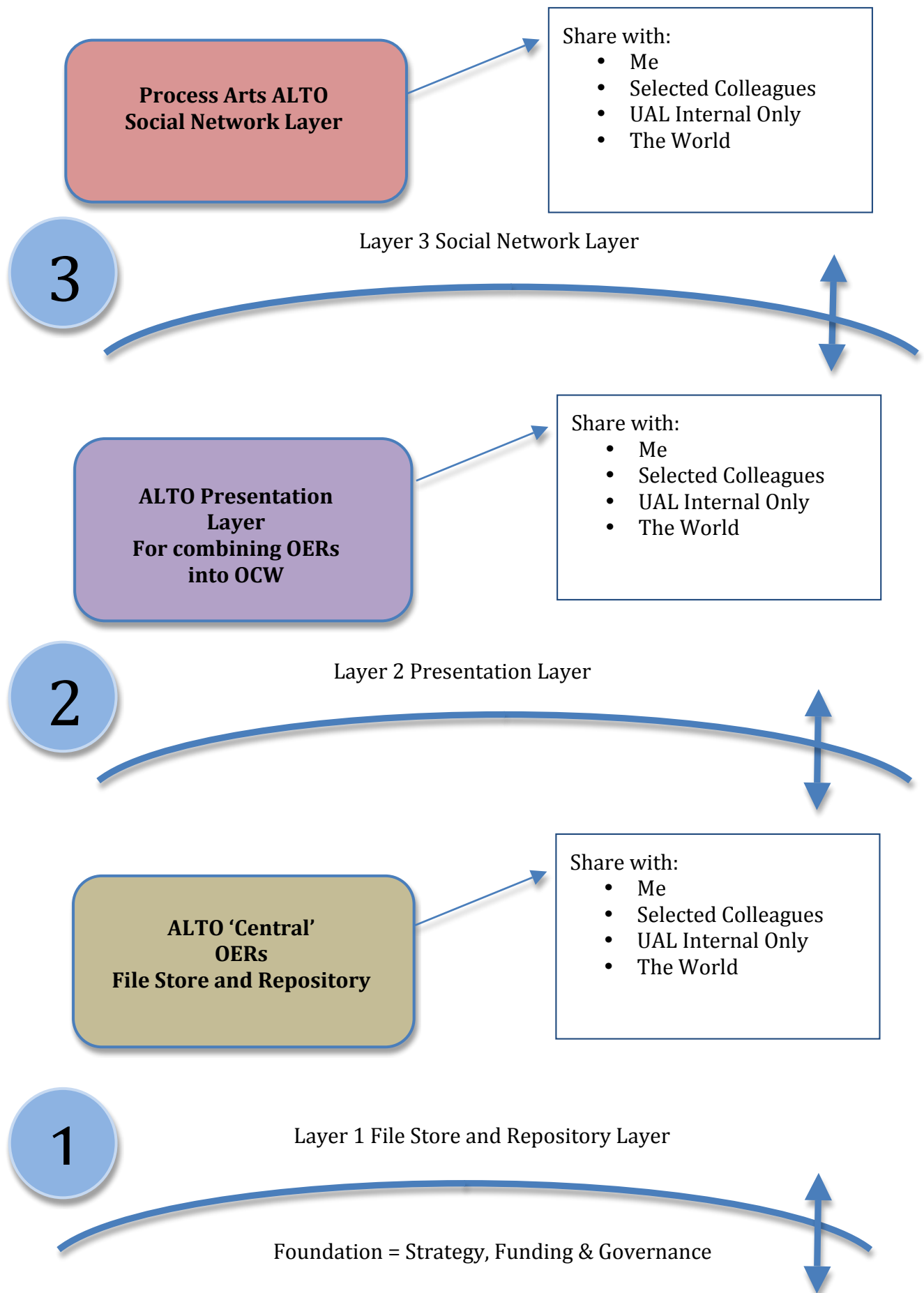


Fig 1 ALTO Ecosystem: Schematic Representation of the first 3 layers 6

A working sketch of the **ALTO** Ecosystem

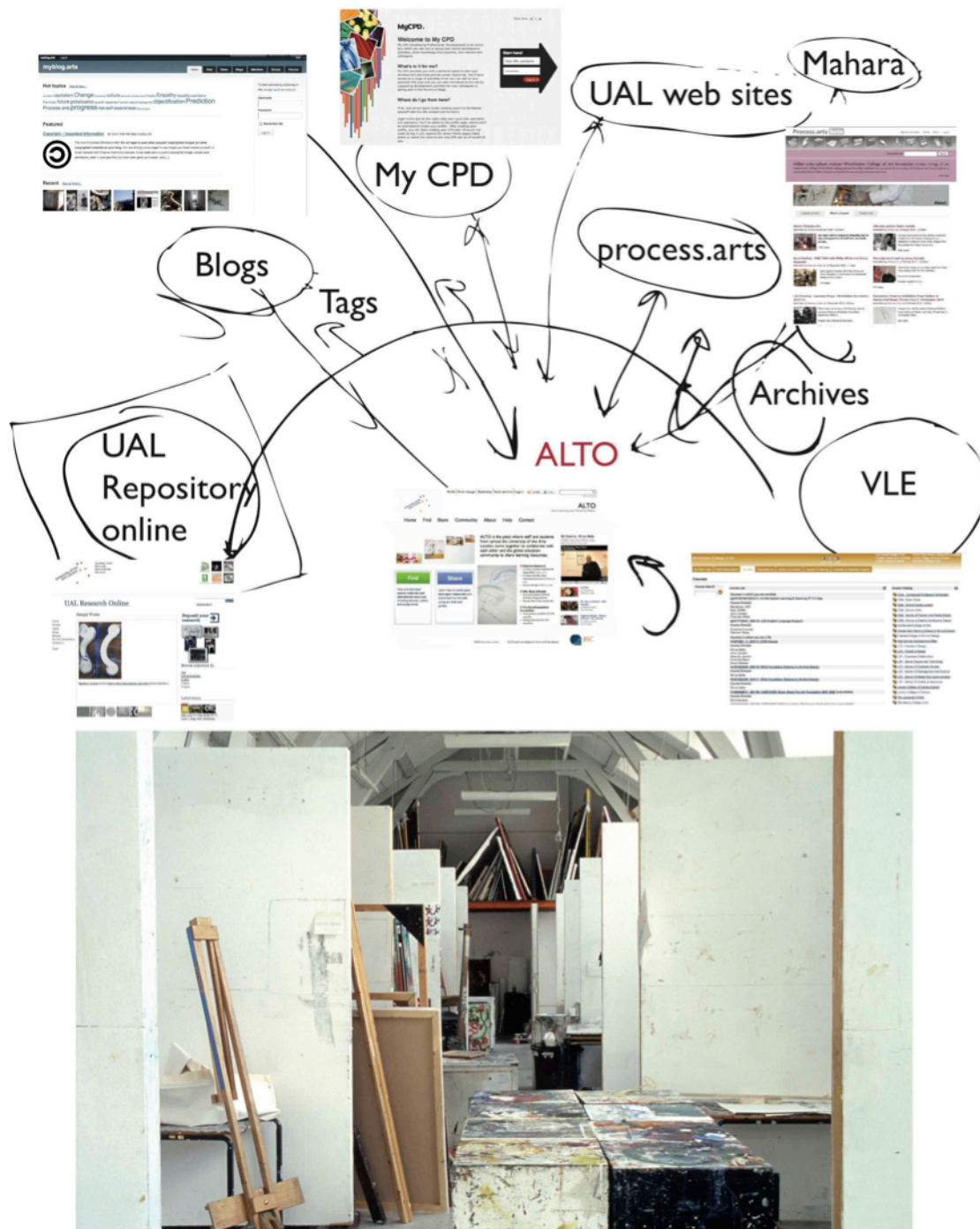


Figure 2: Working Sketch of the ALTO Ecosystem related to the rest of the UAL

3. Methodological Spaces

1. Grounded Theory

Grounded theory⁹ consists of looking for commonly recurring patterns of activity and behaviour in order to understand how people and organizations work ref. Our project did not have the time to carry out an organized in depth indexation and taxonomy of observed behaviours of UAL academics in relation to their activities in relation to the design, development, sharing and reuse of learning resources. It is worth noting that, to the best of our knowledge, this kind of study on any scale has not been done before. This is notable because in over 15 years of UK government expenditure on technology enhanced learning the emphasis has been on the creation of digital learning content but there has been little apparent basic 'market research' about existing user behaviours and attitudes to sharing and reuse of learning resources. Instead, policy and strategy seems to have been based on sweeping assumptions that users are already sharing and want to share resources, Pollock, & Cornford, (2000) provide a useful analysis of the trend for rhetoric to replace evidence in e-learning development.

We adopted a skeptical attitude to the claims made by the e-learning 'establishment' that sharing and reuse of learning resources was a common activity amongst university teachers. Our own experience and that of our networks of colleagues suggested that this assumption was not always well founded and highly dependent on context. This echoes recent discussions in the OER community (UNESCO 2005, Chow, 2010 that while many open resources are being created not that many people are actually reusing them. Rather, the pattern has been that OERs are created in the in the developed world and consumed in the developing world – the MIT OCW initiative being a classic example. However, with economic austerity being the rule in the developed world there are now strong economic reasons for advancing the OER agenda 'at home' – the open textbook movement in the USA being a classic example (Chow, 2010). But, for sharing and reuse to take off in the UK and elsewhere we think much more basic empirical research needs to be done into how teachers actually design, develop, use and share learning resources as well as into their attitudes and values in relation to sharing and reuse.

2. Systems Theory

Universities and Art Colleges are complicated organizations that can be both highly resistant to change and accepting any shareable representations of internal functionality. Modern systems theory can offer some help, to those engaged in these activities. It provides some useful analytical tools for identifying and understanding the dynamic relations between the different components of such organisations. Senge and Sterman (1994) develop this theme in the context of *Organisational Learning* - a concept, which is of growing in interest in the business world, it is worth briefly looking at some of their recommendations. They propose a 3-stage process for developing a better understanding of how an organisation actually works by the people within it:

⁹ http://en.wikipedia.org/wiki/Grounded_theory

“1/ *Mapping mental models* - explicating and structuring assumptions via systems models;
2/ *Challenging mental models* - revealing inconsistencies in assumptions;
3/ *Improving mental models* - continually extending and testing mental models.”
They make the important point that flaws in the understanding of how an organisation works cannot be corrected until they are made explicit, which is the purpose of the modeling exercise.

Introducing OER activity into a university involves encountering and dealing with different mental models of how the institution is structured and how it works. These models can be quite varied and even conflicting, our experience has been that this has caused us to create our own ‘meta model’ that is capable of containing other models as reference points. This is important, because much of the work involved in introducing OER activity into a university is in dealing with cultural issues.

3. Benefits Realisation

The ALTO project had as one of its high level aims to link engagement with OER to a process of educational culture change across the institution. Under the guidance of the project director, we were encouraged to look for opportunities to embed the benefits of OER engagement at the UAL and at the systemic nature of the obstacles to longer term change that were involved. To do this the project team engaged with the institutional context early by holding a benefits realisation¹⁰ workshop with key UAL stakeholders; this has resulted in a set of simple ‘statements of principle’, which provided a sound foundation for the project (<http://blogs.arts.ac.uk/alto/about/>). The underlying driver behind the benefits realization managerial philosophy is that past experience in implementing change shows that many projects succeed in meeting their objectives but fail in making a lasting change on the host organization. A tendency that might be described as ‘tactically correct but strategically wrong’ or more prosaically as the ‘tick-box approach’ where participants lose sight of the big picture and fail to seize opportunities for fear of deviating from the plan – a mind set that can be prevalent in a public sector dominated by central planning and target setting. In the context of IT projects this tends to manifest itself in a top-down linear narrative that becomes entrenched very early on, often articulated by external ‘experts’, quangos and consultants, resulting in a denial of the lived reality of the people for whom the system is being designed to help. This in turn, not surprisingly, tends to produce inflexible software development methods (epitomized by the classic ‘waterfall’¹¹ model of software development). These are well known problems in the software industry and the textbooks are full of case studies recounting famous project failures that met their objectives (Glass, 1997). The recent multibillion-pound UK NHS database system failure is a classic example of these trends combining¹².

¹⁰ [http://www.gowerpub.com/pdf/SamplePages/Benefit Realisation Management Ch4.pdf](http://www.gowerpub.com/pdf/SamplePages/Benefit%20Realisation%20Management%20Ch4.pdf)

¹¹ http://en.wikipedia.org/wiki/Waterfall_model

¹² <http://www.guardian.co.uk/commentisfree/2011/aug/03/nhs-database-digital-disaster>

4. Socio-Technical System Design

Another major methodological influence on the project came from the socio-technical systems¹³ design tradition originated by researchers at the Tavistock Institute in London and described by Enid Mumford (1995) in a number of studies involving the effective introduction of technology in the workplace, originally in the context of heavy industries like coal mining after the second world war. This approach has since been adapted successfully for application to the introduction and adaptation of information technologies into the modern knowledge-based workplace. Notably by, Sharples (2006) 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 that are tested with people to understand how the tools and system may be improved. One way of describing this approach is that it is investigative and human-centred as well as contextually and culturally sensitive. This does not mean, however, that it is neutral. Sharples (2006), is explicit about the interventionist nature of this methodology i.e. it has a strategic dimension that is aimed at changing the way people interact with each other and their tools in knowledge working. Thus, user accounts and 'official lines' are not taken at face value and the aim is to seek to understand how people and organisations really work and function in relation to their stated aims in order to improve them. These approaches also have a great deal in common with some of the classic approaches to product design as described by Don Norman (Norman, 1999) and Achille Castiglioni¹⁴ (Antonelli, 1997).

5. Agile Software Development

An important influence on our methodology was that of agile software development¹⁵, which developed in reaction to the failure of traditional top down methods of software system development and management in the software industry to deliver usable and successful solutions to peoples needs. In this approach basic assumptions are questioned, problem areas are targeted early on and rapid early prototyping is used, continuous user testing and evaluation are also features of this approach to system design.

4. Physical and Political Spaces

In *City of Quartz: Excavating the Future in Los Angeles*, Mike Davis (2006) (ref) describes the spatial politics and economics of modern Los Angeles and how architecture and city planning is used to control and influence the movement and congregation of individuals and groups to project and protect the power of ruling interest groups. In his analysis, Davis stresses the contested nature of 'public space' and the threat they pose to those in authority, resulting in the continual need to devise and implement means of observation and control over such spaces in order to respond to initiatives from below. But, of course, there is nothing new in the concept of public space representing contested social values

¹³ http://en.wikipedia.org/wiki/Socio-technical_systems

¹⁴ <http://designmuseum.org/design/achille-castiglioni>

¹⁵ http://en.wikipedia.org/wiki/Agile_software_development#Agile_Manifesto

and aspirations. After agitation and social conflict in the middle ages the feudal order in England was forced to cede control of large parts of land for common use by the population under the 'Charter of the Forest'¹⁶. In turn, centuries later, these common lands were later enclosed and appropriated by ruling elites in the English agrarian revolution that led to the early development of capitalism, forcing many people off the land into the growing cities.

In terms of physical space, university education over the last millennia or so has been conducted in closed spaces exemplified by traditional campuses and buildings with strong regional and national connections to ruling social groups and their values. The pattern has remained remarkably consistent in the recent expansion of the university system in the UK through the 1990's and 2000's. This political and physical organization of universities has tended to preserve and perpetuate certain modes of education and cultural forms that produce conservative attitudes and highly entropic (resistant to change) professional and institutional structures and cultures. One example of this is the continued dominance of the physical university lecture hall /studio as the location of teaching. As Laurillard (2002) observes, the university lecture format was devised as a medieval lecture tool to efficiently transmit information in an era when books were expensive and in short supply. Yet the lecture format continues to dominate and universities are building ever-larger 'mega' lecture halls to cope with the ever-increasing size of classes (Shmier, 2011). There are two powerful drivers for this:

- i) The commodification of UK education, where the cost of teaching is transferred from general social taxes to individual payment, makes change more difficult as students and their parents demand traditional lectures because that is what 'proper' higher education is popularly perceived to be.
- ii) The dominant educational philosophy supporting undergraduate education was developed to meet the needs of a small elite (the children of the medieval aristocracy).

Meeting the challenge posed by i) is difficult where the prospective students and their families see college education as a part of the socialization process for middle and upper class youth and those aiming to join these groups. This is much less of a problem for other demographic segments (to use the language of neo-liberalism) where students have more pragmatic aims. In that situation, branding and product development are capable breaking free of the lecture model. The open and distance learning sector as exemplified by the Open University in the UK and the University of Phoenix in the USA draw on a well established educational tradition going back to the correspondence courses of the 19th Century.

The challenge posed by ii) is a bit trickier. Laurillard (2002) approaches this by suggesting that the model of undergraduate education in the UK be changed

¹⁶ This was the lesser known companion to the more famous 'Magna Carta' that acted as a milestone in the development of human rights law – see http://en.wikipedia.org/wiki/Charter_of_the_forest

from the idea that students and teachers are jointly constructing new knowledge in a domain. Instead, she asserts, students are in fact learning knowledge that is new only to them, and that the aim of teaching is to bring student understanding up to a level where they can participate in a cognate community. In this educational model, new domain knowledge is only encountered and created in postgraduate education.

The underlying educational philosophy governs how technology may be used in the educational process. Peter Dicken (2010) provides a useful insight into how our different conceptions of knowledge affect how it can be shared; he splits knowledge into 2 types:

- *Codified* (or explicit): the kind that can be expressed formally in documents, plans, drawings, software and hardware etc
- *Tacit*: deeply personalized knowledge possessed by individuals is virtually impossible to make explicit and communicate to others

As Dickens observes, this distinction is fundamental to understanding the role of space and place in the technological diffusion of knowledge, with tacit knowledge having a very steep 'distance-decay' curve, while codified knowledge can be projected relatively easily across time and space. But, Dickens also cautions, this distinction can change in a number of ways that can make tacit knowledge more easily exchanged at a distance. One way that springs to mind that may be used to communicate tacit knowledge is the use of rich media, such as video or animations, that convey a sense of 'being there' and can have a persuasive rhetorical power to convey not just ideas and concepts but also affective and cultural factors (Laurillard, 2002). Another, more radical, observation is that in higher education much tacit knowledge perhaps isn't really tacit at all. Rather, the assertion that the knowledge involved is tacit may be a strategy to preserve the mystery and exclusiveness of the 'secret garden' of formal education. Jennifer Moon (2002) provides a good example of the latter in connection with her experiences as an educational developer in the UK, during the 1990s citing the anguish that the requirements to create clear learning outcomes caused to some university teachers.

"The ideas that learning [and by implication teaching] can be described at all can generate quite amazing angst....At the time, there were still lecturers who would say, 'I don't want to think in advance about what I am going to teach. I will decide when I get in with the class.' The same lecturers would also say that they would decide on the assessment when it came to the end of the term or semester, and that they did not to discuss levels or standards because they would know a good or bad piece of work when they saw it."

(Moon, 2002, p 9)

Engagement with OERS can be seen as both extending the reach of the traditional university and at the same time subverting it and, potentially, reforming it. In the process, institutions that are so place-based as universities

run the risk of exposing practices and values that make little sense to the outside world. But, as prestigious institutions they can also project their brand and values into an increasingly global education market. Sharing OERs can act as a valuable and low-threshold way of joining global collaboration networks as the Open University has found (Lane et al, 2009). Engagement with the open education agenda can also act as a powerful driver for cultural change in university teaching practice by reducing insularity and opening the door to innovation and collaboration with others, both internally and externally.

5. Educational Spaces

Perhaps the biggest reason for teachers (and their institutions) to be involved in OER creation and sharing is the improvement in teaching quality that this may bring. Biggs (2006) and Ramsden (1992) both make the point that everyone has an implicit personal theory of teaching and learning and that the first step in the process of improving teaching is to start to externalise these internal conceptions in order to change them and learn from others. In his influential book, *Learning to Teach in Higher Education*, Ramsden (1992) outlines three theories of teaching in HE that co-exist and build upon each other in a hierarchical manner. They also nicely represent the stages a university teacher progresses through as their pedagogic expertise improves, as well as providing useful ways of analysing the proposed and actual uses of technology to support teaching. These three theories see teaching as concerned respectively with:

1. Delivering content
2. Organising and supervising student activity
3. Teaching as adapting to circumstances and context in order to make student learning possible

From this perspective much existing OER activity is currently to do with level 1. Addressing level 2 may be possible by developing sharable lesson plans or learning designs and design 'patterns' as developed in the field of architecture by Alexander (1979), the European E-Len project gives a nice introduction to this field¹⁷ and in the UK Laurillard and colleagues at the Institute of Education in London have been researching this area¹⁸. But, externalising and sharing knowledge at the third level of Ramsden's model can be particularly tricky in practice-based subjects like Art and Design that are often highly dependent on cultural context and teachers personalities. In many ways this is a classic example of the problems of dealing with tacit knowledge; how can we represent and share such knowledge and share it, and even assess it?

De Corte (1990) provides a useful general description of the nature of the knowledge needed to underpin expertise in a domain that is also useful to frame a discussion about how to share it:

¹⁷ <http://www2.tisip.no/E-LEN/info/e-len-leaf2.pdf>

¹⁸ Overview of learning design patterns from Diana Laurillard
<http://www.youtube.com/watch?v=97NjUUAdyq0>

- a. The flexible application of a well-organised domain-specific knowledge base, involving concepts, rules, principles, formulae and algorithms etc.
- b. Heuristic methods.
- c. Metacognitive skills
- d. Learning strategies that learners engage in to acquire the preceding types of skills.

The field of design studies may help us in developing ways to share the heuristic and metacognitive aspects of such expertise. Donald Norman (1999) has written a classic account about this in *The Design of Everyday Things*, there are some important ideas in his text quoted below in relation to understanding the nature of the pedagogical knowledge of teachers. Norman makes a strong and useful case for the understanding the situated nature of such knowledge:

A major argument [in this book] is that much of our everyday knowledge resides in the world, not in the head. This is an interesting argument and, for cognitive psychologists, a difficult one. What could it possibly mean for knowledge to be situated in the world? Knowledge is interpreted, the stuff that can only be in minds. Information, yes, that could be in the world, but knowledge, never. Well, yeah, the distinction between knowledge and information is not clear. If we are sloppy with terms, then perhaps you can see the issues better. People certainly do rely upon the placement and location of objects, upon written texts, upon the information contained within other people, upon the artefacts of society, and upon the information transmitted within and by a culture. (Norman, 1999, p. xi)

It is precisely this situated, embedded, tacit and ‘craft’ aspect of teaching in mainstream art and design that needs to be comprehended in order to both understand and improve it. By engaging with OER creation and sharing, especially with a combination of rich media and practice-based accounts as exemplified in Process.Arts, we effectively open a door into this hitherto secret garden of educational practice. There is plenty of research support for this approach; Wenger (1998) calls these accounts ‘boundary objects’ that enable different communities of practice in the same subject (and even between subjects) to communicate meaning across the boundaries of different contexts. More recently, Conole (2008) and colleagues in the UK Open University and elsewhere have called these kind of resources ‘mediating artefacts’ for their ability to carry pedagogic meanings across institutional and national boundaries. Lastly, Paivio (1986) makes a good case for the inclusion of rich media in such artefacts as a way of aiding understanding, as part of his ‘Dual Coding’ theory.

6. Legal Spaces

Levels of awareness about copyright and other Intellectual Property Rights (IPR) amongst academics are fairly low. Engagement with OER creation forces individuals and institutions to reexamine their attitudes and policies regarding the ownership of IPR in scholarly content. Traditionally, in the UK, ownership of such content has been passed over to commercial publishers in the form of articles for research journals and student textbooks.

The relationship with commercial academic publishers has become too unbalanced over the last two decades with the prices of research journals and textbooks rising far more rapidly than inflation. This has led to the common situation that university libraries can no longer afford to buy back their own research for their students to read. In many ways this sums up the progress of neoliberalism¹⁹ over the same period, with the rising dominance of property rights to the exclusion of other rights and increasingly severe laws to protect and extend the rights of property in the digital domain. There is a clear parallel here to property law development and enforcement in 18th century England (Corrigan & Sayer,1985).

Left to its own devices neoliberalism tends to strangle the sources of its own wealth – the creative ability of individuals and society. In reaction to the unbalanced use of IPR law by commercial publishers the Creative Commons organization (<http://creativecommons.org/>) proposed a simple set of legal tools to empower individuals and organizations across a wide range of activities to manage the IPR in their own creative outputs. This initiative has been extraordinarily successful and has been adopted around the world, showing evidence of a common need. The ALTO project has been using the licences developed by the Creative Commons, without which, it is fair to say, much of our work would have been practically impossible.

A legal innovation that the project has implemented has been the use of a customized version of a Creative Commons licence to support sharing just within the UAL, which has also introduced the valuable concept of the ‘UAL Commons’. Modelled on earlier work in Canada in the state of British Columbia (<https://creativecommons.org/weblog/entry/26963>) this licence was based on the Creative Commons BY-NC-SA licence with additional restrictions to restrict use to within the UAL. This addresses the issue of building trust between the staff from the six highly autonomous individual colleges that constitute the UAL to support inter-college sharing.

7. Technical Spaces

Pioneering work about introducing technology into workplaces by Mumford (1995) and others has long since shown that successful innovation always has to address the contextual and social aspects of using the new technologies. This applies especially to HE organisational and teaching cultures, which can be notoriously resistant to change, with and without technology. Until recently in the UK work in the area of sharing and reusing learning resources has been dominated by technological concerns with interoperability standards, learning

¹⁹ For those readers who are new to the subject of neoliberalism this entry in Wikipedia gives a good start: <http://en.wikipedia.org/wiki/Neoliberalism>. The A Short History of Neoliberalism by David Harvey, Oxford, University Press, give an excellent introduction to the economics and politics of the subject especially covering the globalisation phase. For those readers interested in the current and future trajectory of neoliberalism then this entry in Wikipedia is the place to start: <http://en.wikipedia.org/wiki/Financialisation> the book Meltdown: The End of the Age of Greed (Verso) by the BBC economics editor Paul Mason give a highly accessible introduction to current trends.

objects, metadata and the creation of specialist repository software – sometimes becoming an end in itself rather than linked to real users (Barker, 2010). There was a genuine belief that if this were done according to the technical specifications then everything else would work. But, things have not worked out as expected and Fini (2007) 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 is in the proposition that interoperability standards and techniques developed in the military and aviation sectors can 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 there has not been wide adoption. In retrospect it is not surprising that standards and approaches that developed in the last century and 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. Wilson (2009), who has been involved closely in the standardization development process, reflects on this state of affairs and suggests that there is a need for a more lightweight approach such as epitomized in web standards. Elsewhere, Hoel (2010) who has also been involved in developing educational interoperability standards is bleaker in his assessment stating “the interoperability standards in the LET [Learning Education and Training] domain failed miserably”. Although the mood swings in the educational technology community can sometimes resemble those in the merchant banking community (from ‘master of the universe’ to deep despair) we need to remember that innovation is often a dialectical process and rarely proceeds in a straight line – especially once people are factored in. Casey and Greller (2007) provide a more sanguine longer-term view of these developments in interoperability standards and suggest that some of these technologies may yet be adopted in unanticipated ways.

Whatever the technical solutions are provided they should help not hinder the activities relating to the design development and sharing of OERs. The guiding design principle for these socio-technical systems need to have a clearer philosophical basis rather than the currently dominant technocentric abstractions, which disguise a rather impoverished view of education and society. We think the guiding principles for system design should be based on the concepts of *conviviality* (Illich, 1973, Hardt & Negri 2009) and *stewardship*

(Wenger et al, 2009). The tools developed should be based on truly free and open source software that is robust, easy to use, and is well documented²⁰.

8. Conclusions

The work of the project has involved critical engagement with current trends in diverse areas including education, e-learning, politics, informatics, knowledge engineering, economics and popular culture. As a result, we have begun to develop a simple and viable general socio-technical model for making tools to support open arts education that can be adapted to fit local conditions, priorities and budgets. Developing this paper has given the project team an opportunity to reflect on their work so far and begin planning for future developments.

ALTO, in many ways, represents a nexus between the traditional secret garden approach to arts education regulated by national authorities and more open forms of educational practice. In many ways there is nothing new in the concept of open arts education, the academy has always been influenced by external developments and movements – sometimes resisting and sometimes embracing change.

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²⁰ NB not all software that claims to be free and open source actually is, often used as a feel good marketing ploy.

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