Implementing a Repository for Research Practice in Postgraduate Art, Design, and Visual Communication

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Kultivate Project Case Study: Implementing a Repository for Research Practice in Postgraduate Art, Design, and Visual Communication

Background

The Royal College of Art (RCA) is an entirely postgraduate art and design university with around 1,000 full time MA students, 100 enrolled PhD/MPhil students, and 40 or so active research staff. About 70% of the Royal College of Art’s activity is design or visual communications, and the remaining 30% is Fine Art. 70% of the College’s research is by practice rather than by thesis.

As of 2010, the College had no research repository and used externally hosted gallery and blogging websites, and then a locally hosted Mahara (e-portfolio) instance to ‘showcase’ its research outputs, with no specific brief for the Research Assessment Exercise (RAE) or the Research Excellence Framework (REF). The presence of these systems and research profiles on the College web site inhibited development of a standard open access institutional repository, for the exclusive presentation of the College’s valid research outputs and evidence.

The College had previously contacted SHERPA and the Visual Arts Data Service (VADS) in 2007-8 regarding institutional repositories and has since maintained an active relationship with the Kultur project consortium. After a restructure of the College Research Office in 2009, and some internal advocacy from the Information and Learning Services (ILS) department, the Research Office became aware of the need for a standard repository and was willing to promote and support it as an aspect of the REF.

Expectations

The repository should initially support all remitted research staff who wish to self-publish valid and open access compliant research outputs. Researchers should be able to present evidence of their ongoing visual art and design processes and practice in an engaging way. The process must be lightweight and simple enough to become a natural part of research practice, but rigorous enough to provide standard metadata for easy discovery by the global research community. The repository should support outputs from ‘practice or project-based’ researchers with a variety of curated evidence for the REF, such as exhibitions, objects, data, and multimedia.

The repository should enable the College to embrace self-archiving from the start, where researchers can manage the entire publishing process end to end, with user-centred processes and presentation. The College will also use the repository to archive existing PhD theses and other valid legacy research outputs.

The College intends to launch its repository ‘fully loaded’, with a full constituency of existing students, researchers, editors, divisions and 2008 RAE data¹, and by implementing Kultur and MePrints extensions (see Fig. 1).

A new Project ‘Containers’ function was also planned, to allow any number of Items and depositors to be related to each other and managed as a whole. This could also allow collaborative ownership of ongoing Projects.

Milestones

- September 2010 - every current Royal College of Art researcher since the last RAE represented on the repository (milestone met in November 2010).

¹ Details of Royal College of Art staff who have previously submitted to the RAE 2008 are available at: http://www.rae.ac.uk/submissions/download.aspx?option=hei
• September 2011 - 40% of completed PhD theses and research staff outputs.
• REF 2013/14 - all research staff to have an official profile, metadata and abstracts, 60% with full text and/or supporting data.

Fig. 1 User Profile in EPrints utilising the MePrints extension.

**Approach**

The Royal College of Art worked with its researchers, Library, Digitisation Service staff, and Research Office staff to define an open access and self-service research repository. An internal bid was submitted for a small budget to evaluate and develop a service appropriate to the College’s culture. The bid for £15,000 for a completed repository was approved in 2010.

1. Evaluation

The College looked at systems that use the following digital repository platforms:

- Fedora Commons
- DSpace
- Digital Commons
- EPrints

The experience of using digital repositories at other institutions such as Imperial College London, University of the Arts London (UAL), and University for the Creative Arts (UCA) was also researched, and the reception and benefits of comparable repositories was researched on Google. EPrints was chosen partly due to their active partnership with London arts institutions, addressing issues around presenting visual and physical evidence. There was also the sense of EPrints being relatively local and UK-based. EPrints developers have expressed an informed interest in the
processes of visual arts research at past Kultur II group events, so the College is likely to see the evolution of EPrints in respect of these needs.

Tests were made using the EPrints sandbox with a selection of file types. Interface and performance were good, and the overall user interface, workflow, and help seemed easy to use and follow. It was decided to use EPrints Services to carry out customisations, as they offered this service at a low fixed price of £12,750.

2. EPrints Services Initial Meeting

Research Office staff, the developer from EPrints Services, and the College’s Computing Services staff attended a meeting convened by EPrints Services in September 2010 at the Royal College of Art. Discussion was based on a set of mandatory key questions and decisions, such as the repository name, start date, contacts required, and the website address. More detailed requirements then followed primarily using email.

3. Development

It was decided to ask EPrints Services to host the development system at their data centre. EPrints Services created an ‘ideal’ build, allowing rapid platform changes and customisations to be made. The College would access it remotely and securely as if it was a production system. It was also decided to implement MePrints and Kultur visualisation and personalisation extensions. Once the cycle of development was complete, it was migrated as a Virtual Appliance in its entirety and deployed directly into a Virtual Machine (VM). This approach created a durable and mobile instance from the start; built and configured by EPrints Services to their standards from the point of prototype delivery. EPrints Services pre-loaded the prototype with legacy RAE 2008 metadata and the College eventually linked these records to the relevant researchers.

4. Branding

Branding was based on the graphical framework of the Royal College of Art website (see Fig. 2), choosing the dominant colour from Research pages and specific graphic devices such as dividers, padding, font, and image/text ratio. This went through many iterations to evolve appealing citation and abstract styles (see Figs. 3 & 4), with preview rollovers and a large slideshow. A slim banner was used to contain the user and search menu, allowing sample content and latest items to dominate the home page (see Fig. 5). Left navigation consists of common shortcuts, using a design based on a secondary set of ‘official’ College website interfaces. The result is a synthesis of recognisable Royal College of Art styles ‘containing’ standard repository content, abstract and citations (see Figs. 6 & 7).

5. Search

Searches default to ‘any of’ rather than ‘all of’ so are more Google-like. Advanced search fields follow closely the order of the Abstracts so are more intuitive in use.
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Fig. 2 Sample web page from Royal College of Art website.

Last Orders is an exhibition of new work by jewellery students from the Royal College of Art, London, the Akademie der Bildenden Kunstete, Munich (Munich Academy) and Hikko Mizuno College, Tokyo, at the recently opened Gallery S O in London from 18-20 March 2010.

Last Orders shows the vastly differing approaches to jewellery from a contemporary group of young, international designer-makers. Many of the students have exhibited world wide and this will be the first time this new generation of jewellery artists will be showing work together in London. Several pieces are made from unconventional materials such as bread milk, beeswax, pig skin and cow intestines. These objects challenge the traditions of making and create new dialogues within language of jewellery, now it is worn and what it represents.

The exhibition is the final event in the 2009/10 Three Schools Project, which was founded in 1993 by world renowned jewellery designers, Professor Otto Küchli (Munich), President Takahiko Mizuno and Professor Kaoru Inoue (Hikko Mizuno) and Professor Joke Brakman (Gerit Rietveld Academie, Amsterdam).

The project aims to take the lead in shaping the field of contemporary jewellery design. Students are selected to participate by making work that shows conceptual ideas or technical skill, and to encourage future generations of makers to further push the boundaries of jewellery design. This is the first year that students from the RCA, Goldsmiths, Silversmithing, Metalwork and Jewellery MA course have been asked to participate. The other stages of the project took place in Tokyo in October 2009, followed by Munich in February 2010 at the Pinakothek der Moderne during Formex 2010.

The overarching theme of the 2009/10 Project is Living Treasures. A term selected by Professor Küchli, which refers to the Japanese practice of designating certain individuals who embodied intangible national cultural values as living human treasures, particularly in the field of the ancient protected crafts. The students chosen to participate this year are: Christopher Thompson Royle, Jason Ku and Martha Matteson from the RCA, Alexander Blank, Eunin Chan and

Fig. 3 Abstract Documents Tab.
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Fig. 4 Abstract Images Tab.

Fig. 5 Royal College of Art repository homepage.
6. Workflow

To encourage researchers to think carefully about the character and validity of their research output, ‘Type’ was placed before ‘Upload’ (see Fig. 8); this also encourages good metadata to be captured before files are added. The number of mandatory fields was reduced to the smallest number (see Fig. 9) and the ordering was made as logical and user friendly as possible and all non-mandatory fields were condensed and collapsed to keep the forms lean.
The Review process was also removed specifically for Research Staff allowing them to ‘Save’ or ‘Publish’ directly. In this case the Research Office is always notified of deposits by email. It was later thought that it would be even better to allow Research staff to act as Editors of their own records by having ‘Review’, ‘Edit’, and ‘Return’ functions and this may be implemented later.

EPrints Kultur's default workflow (see Fig. 10) allows for all possible media types with fields and abstracts, adapted to the requirements of many different approaches. For the Royal College of Art, the default workflow was too general, and it was felt that records demanded from depositors too much information over too many stages so the number of fields was reduced as far as possible from 58 to 40. ‘Details’ was also merged with ‘Subject’ fields (see Fig. 11) and the ‘Subjects’ pick list condensed to just 3 parent categories as the most likely subject areas.

Type > Upload > Details > Subject > Deposit

Was changed to:

Type > Details > Upload > Deposit

It was also felt that media types were not really a ‘Type’ of published research, which meant that the number of Types could be reduced to a more manageable 12 from 18.
Fig. 9 Spreadsheets comparing default workflow and condensed Royal College of Art workflow.
Fig. 10 Spreadsheet showing EPrints default workflow.
7. Limiting Types Rationale

A repository Item can contain, recognise and represent any number and kind of document and sub files, so after consulting with research staff and the Research Office, it was decided to reduce Item Types just to those that best represent valid publishable research output, whatever their character or content.

The most radical change was to eliminate specific media ‘Types’ such as Video, Image and Audio. It was reasoned that a deposit Type should proscribe all the attributes of a published research output, rather than simply describe some media or technical characteristics.

The question in our minds was always ‘What is a valid research output?’ A file may form part of the record as data, evidence for an event or a print publication. But files and objects should only support the publication record with its metadata as a research output. It could be argued that video could be published, but it still has to be remitted research evidence and not simply a commercial DVD.

Similarly ‘Text’ would not be used as a Type to represent a published Journal Article. ‘Text’ is the wrong level of description, where the article is the primary research object. Elimination of ‘Artefact’ Type was even considered for similar reasons, but it was felt that this at least is a useful ‘catch-all’ category for visually inclined researchers who are makers of objects (See Fig. 12).
7. Uploads

Full document file name rather than just format was added to the file icon documents tabs. As mandatory fields are filled automatically, the ‘Details’ section does not need to be expanded unless the user wants to add a further Description or restriction. The file name also appears in the abstract; this is better as otherwise files are called ‘Untitled’ where they lack a description. A feature was also added which optionally allows multiple zipped files to be expanded as documents, rather than files, which is useful for uploading collections of images (See Figs. 13, 14, & 15).

Fig. 12 Spreadsheet showing Royal College of Art condensed workflow.
Fig. 13 Upload file.

Fig. 14 Upload file with preview.
8. Values, Vocabulary and Keywords

The Higher Education Statistics Agency (HESA) Joint Academic Coding System (JACS) Version 2.0 was chosen. It was decided not to use the ‘Keywords’ field, and instead to rely on fully defined fields, which include free text such as ‘Description’ to capture words in natural language, as well as from JACS controlled vocabulary for Subjects. It was also reasoned that although tagging may later be a feature of EPrints, even this should default to a similar controlled vocabulary as a way to create and sustain loose relationships between records.

More complex relationships could be managed if there were pre-defined ‘project’ containers, to which a number of Items could be related with common metadata such as name, creators, and subjects, thus avoiding repeated the entry of core data, and also ensuring consistency (see Appendix 1).

9. Users, Authors and Disambiguation

User logins were integrated with the College’s own directory. Users have other reusable attributes in their directory entries, such as departmental and research Hub membership (Divisions), email addresses, and even full names, which were not given on the RAE. The EPrints Services developer more or less insisted on using unique User ID numbers from the outset for all existing and potential users of EPrints. This was to ensure creator/author disambiguation. These were derived from the primary HESA ID combined with local, established sequence numbers.²

² RCA User ID was derived from the official HESA Unique Student Identifier (HUSID) and given a 6 digit internal ID from the College Registry's database and the HESA Institution identifier 003. The 13-digit HUSID is created according to the formula at: http://www.hesa.ac.uk/index.php/component/option,com_studrec/task,show_file/Itemid,233/mnl,10051/href,a%5E_%5EHUSID.html
The RCA User ID was then added to the College’s institutional directory to automatically populate new records and was retrospectively applied to previously imported RAE Items by the developers. Permissions-based Roles were also added to the directory, so any user logging in automatically receives their correct access level. EPrints Services added a feature allowing these default roles to be overridden or resynchronized with the directory at will. The effect of this data validation and linking is to associate current users with their own role, legacy records, email and Divisions. Some manual editing of records by users in respect of JACS Subject areas would further relate legacy records for improved discovery.

10. Roles

Local user roles would be acquired automatically at login based on their role within the institution. This was expressed in the directory as membership of a security group corresponding to:

- **Research Office**: Creators and Editors for any Item.
- **Research Staff**: Creators, (Reviewers) and Depositors and Publishers of Items they create.
- **Research Students**: Creators of Items for submission for Review by the Research Office.
- **Logged in Users**: Can save searches and be upgraded to any other role.

Where the above roles could view and or modify fields and interface elements like buttons, fields, and tabs was also specified.

11. Pilots

Home visits were made to seven researchers to listen, learn, and gain feedback, which was directly incorporated into the repository build. The researchers were shown the repository, and shown how to decide what material constitutes research outputs and how to add Items. The researchers were later prompted to add and expand items. This user testing should also provide a pool of experienced advocates for the repository. The researchers were able to use the repository to add ‘complex’ Items and feedback was positive with useful suggestions, such as Item Types and interface improvements, which were incorporated into the build. Around 100 records were added by these researchers to the repository.

Through discourse with the researchers who were piloting the system, it was found that most staff research is ‘in progress’, and part of their practice, rather than a series of discrete outputs and publications. It is about doing and reflecting, rather than just producing and publishing. The repository strapline was therefore changed to read: ‘Archive of research processes and output produced by RCA.’ The ‘About’ section of the repository states: ‘The RCA Research Repository is designed to support the collection, archive, and publication of the College’s research practice, processes, and outputs.’

The workflow was modified to support this idea by enabling easy upload and curation of multiple documents and objects into repository records. Following a large scale presentation to the College’s research staff, the presenter was also approached by three researchers who said they preferred this approach, and could see how the repository supported the practice of research and not just the ‘big heave’ for the REF.
12. Guide

An online guide for collecting data, preparing files, clearing content for publication, deposit workflow and options is being prepared based on feedback by researchers and good practice from other institutions.

Conclusions and Recommendations

The repository will be an open access academic resource, to which anyone at the College has access, and to which all research staff will be able to manage and publish their research, work-in-progress, bibliographic records and data to the world.

It remains to be seen how effective this approach has been, as at the time of writing, the repository is in pilot mode. But the critical reception has been very good on the basis of its appearance and usage.

- Emphasising how a repository can support the research process, not just the outputs, has proved popular.
- Populating with existing RAE data and institutional user data is a great way to backfill with valid content, so new users automatically inherit records, access rights, and other attributes.
- MePrints provides an editable profile as the user’s first point of entry; which is appealing to researchers.
- Careful thought needs to be given as to how valid research for publication is defined in order to maintain quality and integrity.
- A personal portfolio of items in the repository, owned by users and available for their own Items may help researchers collect ‘stuff’, which may later be curated into specific Items of research.
- In future the College may allow Research Staff to act as Editors of their own records by having ‘Review’, ‘Edit’ and ‘Return’ functions.
- The idea for Project Containers was not taken forward in this development as it was anticipated that the Kultivate project may take this on as a feature and create an extension for the benefit all users of EPrints. See Appendix 1.
- Some improvements that the College has made could be generally applied to the EPrints core.

Key Points

- Kultur and MePrints extensions are of universal benefit.
- A simple spreadsheet can be used to design and describe most aspects and options when developing a custom workflow.
- User feedback is the most important asset when implementing a repository.
- Integrate logins with your directory and many user attributes can be managed from here.
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- Re-use any institutional user data or attributes to populate repository records from the local directory, or any relevant official source such as HESA and the RAE.

- Visit as many researchers as possible in their natural habitat.

- All researchers who have been invited to test the system have managed the deposit process themselves with minimal help.

- Research Office staff and other staff who are developing a repository should interrogate what is defined as a ‘research output’ and make the information design fit the expectations and practice of real researchers.

- Give guidance on Subject categories to researchers.

- Test the repository, as much as possible (i.e. even more than described in this case study), from a researcher’s perspective.

References

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MePrints Demonstrator
http://allaboutme.eprints.org

UAL Research Online
http://ualresearchonline.arts.ac.uk

UCA Research Online
http://www.research.ucreative.ac.uk
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Appendix 1

Project Containers

The EPrints workflow could be much simplified particularly for depositors by setting up re-usable pro forma Project ‘containers’. Projects could allow any number of Items to be related to each other and managed as a whole by defining common data, and even enable collaborative ownership of Projects. This would also allow users to browse, join and even add their own items to Projects. All ‘contained’ Items then relate to the same research project, making repeating deposits quicker, more manageable and consistent. The container is a defined set of attributes including Project name, description, subjects, author(s), and divisions(s). Users could then browse, join, make Projects and add their own items to them.

In use, a depositor saves and names their document, logs into the repository, chooses one of their Projects and uploads the document, giving a brief description. Other attributes and metadata are then automatically associated with the new Item including abstract and related documents. The project ID can then be used in relation to other non-digitised materials.