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Changing Light: a plethora of digital tools as slides gasp their last?

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The title *Changing Light* reflects the enormous changeover from analogue slides to digital images, both a cultural shift and a physical shift down to the change in light from the smoky beams of dual slide projectors piercing the dark of a classroom, to the bright white classrooms of the digital age.

The evidence for the 'death of slides' has been mounting for a number of years and reported by visual resources curators in the US¹ and the UK². In 2005 JISC³ funded AHDS Visual Arts to report on 'the effects of the digital image revolution on the UK arts education community'; the Association of Curators of Art and Design Images (ACADI), the Association of Art Historians (AAH), and the Art Libraries Society (ARLIS/UK & Ireland) contributed significantly to *the Digital Picture* initiative.⁴ However some of the issues highlighted by the final report are yet to be addressed such as provision of copyright-cleared digital images for use in education.

This paper considers what arts education stands to lose from the 'death of slides' in the context of digital images and the plethora of digital presentation tools. As well as a change in light, there is a change from the physical tangible slide technology to the virtual digital image and computing in the cloud.

Research methodology

Putting pedagogy before technology, the research focused on how existing teaching practice could be enhanced through presentation technology; whether through best practice use of existing tools or the development of new tools better suited to the visual and creative arts. Data, including a literature review and investigation of presentation software, was gathered through two University for the Creative Arts Learning and Teaching Research Grants. During the first grant⁵ four one-hour interviews were recorded with participants, two academics from the University and two external participants, discussing the use of presentation tools from their experience as students to their current practice. An online questionnaire was also sent via direct emails to academics and support staff focusing on the UK Arts Higher Education sector; 58 responses were received. As part of the second grant⁶ a short *Slide Stats* survey was emailed to the ARLIS-LINK and ACADI JISCmail email lists. The survey aimed to provide an update from UK visual resources curators, since *the Digital Picture* report (2005), on the effect of the transition from slides to digital images. During October to November 2010, 30 responses were received, of which 29 were from Higher Education Institutes. All respondents completed all five questions; the responses have been anonymised and coded against key themes.

This paper discusses results arising from the 29 responses received from UK Higher Education Institutes.

Process and the physicality of slides

Without denying the benefits of technology it is important to consider the implications of the shift from analogue to digital and how this impacts on arts education. In the online questionnaire none of the 58 respondents reported using analogue slides; and only one person reported using non-digital presentation methods. One of the respondents to the *Slide Stats* survey stated that at a recent library induction 'one student asked me what a slide was!'.⁷

Slides are objects in their own right, they can be handled, and they have a patina of history created from accessioning to their use in teaching. Slides can be a documentation of an academic teaching staff's pedagogical idiosyncrasy⁸; and they can evoke strong emotions. Cohen (2008) mentions a member of staff who 'wanted to put his slides in his coffin and take them with him' rather than share his slides⁹. There is a drama to a slide show which is difficult to replicate in a PowerPoint presentation; and slides make noises:

'...the whirring motors of the slide machines, the soft feedback from the microphone, and, at intermittent intervals, the clack of popping and dropping slides.'¹⁰

In 2005 an exhibition titled *SlideShow*¹¹ was curated at the Baltimore Museum of Art, showcasing slide shows as an art form. The curator explained:

'Nearly every artist I interviewed [for the *SlideShow* book] remembers being fascinated by shadows on the wall as a kid, or lying in the dark using the beam of a flashlight to make patterns in the darkness.'¹²

Creating a slide show is a physical process with its own rituals and rules, from selecting the slides, to moving slides around on a light box and ordering them in one or more carousels, preparing a slide list, giving the lecture and returning the slides. The physical engagement with slide cabinets, pockets of slides, and other associated paraphernalia is no longer required with digital technology and whilst this saves valuable time it is also a fundamental change in practice.¹³ Harris and Zucker (2008) ponder whether tools such as Google, Flickr, ARTstor, YouTube and others, will 'adequately replace or compensate for the loss of the valuable social interaction of the slide library', such as serendipitous meetings and conversations.¹⁴ Twitter offers a chance to follow conversations and topics of interest, and to make connections, but this depends on relevant contacts being online and engaged.

An interview participant, Senior Lecturer in Digital Film and Screen Art, recollected her process-based experience as a student:

'I come from a background of splashing around with chemicals in a darkroom and...it has really made me think deeply about the whistles and bells and the

'too muchness' of digital technology...[maybe] we need to pare back really to see things simply, slowly and more contemplatively.¹⁵

Another respondent, a Library Assistant, noted that:

'some of our students are becoming interested in the 'hand-made' object and there is a small backlash against the digital image and its use in art'¹⁶

although at the moment this only amounts to about two students a year using slides for their presentations.

Learning and Teaching research conducted by Wainwright, Scott, and Kent at the University for the Creative Arts (2009–2010), whilst emphasising the benefits of digital formats, has also suggested that at least for the discipline of Photography:

'aspects of digital practice inhibit a questioning and exploratory approach, narrow the possible ways to creatively engage with a subject and deter the development of a practical understanding of the creative process and with it the ability to evolve truly independent practice'.¹⁷

The 'death of slides' should not prevent digital technology being challenged by analogue alternatives and processes; it is important to have those dialogues in order to facilitate a more holistic and enhanced arts education environment.

Dialogues with PowerPoint

Whilst the physicality of slides has not translated into digital presentation software, the linearity of the slide carousel has been subsumed into the experience of PowerPoint, Keynote, and other forms of digital slideware. Linearity is suitable for teaching didactically, but not in order to encourage engagement in a more participatory learning environment. McNaughton (1998) described the creation of a multi-media presentation programme for Undergraduate American Art History courses as:

'my lectures are fluid...I was constantly frustrated by the linearity imposed by having slides prearranged in projectors...[constraining] the atmosphere of imaginative exploration and constructive interaction in a classroom'¹⁸

Taylor (1998) writing about the use of multimedia in teaching, compares and contrasts different learning paths from a 'Feldweg', which could mean 'using the computer to do those things you have already been doing.', such as the direct and unaltered translation of slide images to digital slides in PowerPoint, to the 'Holzweg', the method preferred by the author, which can be described as:

'one finds oneself in new places and sometimes a little bit lost. This...opens places in which students and teachers are allowed to learn.'¹⁹

An interview participant, a Course Leader for Fashion Promotion and Imaging described that with PowerPoint:

'the students just go into PowerPoint mode, which actually turns them off learning. The students are passively listening to a PowerPoint presentation without really analysing or thinking through their learning. Our industry is vocational which includes tacit learning. Students learn more effectively with tangible outcomes, doing much more process. PowerPoint does not keep our students engaged.'²⁰

Tufte (2003) famously used the word 'evil' to describe PowerPoint²¹; he argues that the problem with PowerPoint is the tool itself, whether it is used in the hands of a good presenter or not.²² Kjeldsen (2006) also talks about the rhetoric of PowerPoint and why it should be banned.²³ 'Linear' and 'useful' were the two most frequent words used by the audiences at the CHArt annual conference and at a Research Seminar at the University for the Creative Arts to describe PowerPoint; other words included 'easy', 'helpful', 'confining', and 'hell'.²⁴

Despite the strong emotions generated by PowerPoint, it seems to remain ubiquitous within learning and teaching in the arts; in the online questionnaire 56 out of 58 respondents used PowerPoint. The respondents were primarily from UK Higher Education Institutions.²⁵ It has also been estimated that 'more than half of all e-learning is being created in PowerPoint'.²⁶

If PowerPoint is so widespread one approach would be to work with its limitations and draw out the benefits of the presentation technology. Leader (2007), an Assistant Professor of Art History, challenges Tufte's view of PowerPoint and shares her best practice for using PowerPoint in teaching, including: using black slide backgrounds, juxtaposing carefully chosen terminology with visuals, carefully selecting and positioning multiple images, and use of arrows and other drawing tools to highlight key aspects.²⁷ Another approach is to abandon PowerPoint in favour of alternative technologies and tools.

A plethora of digital presentation tools

Technology provides a flexible environment to create new presentation tools, as a result there are a plethora of digital presentation tools available; we are only constrained by the time it takes to learn or adopt new tools.

At the University of California, San Diego, ARTstor's Offline Image Viewer was reported as 'a major turning point' for the faculty, and that even those dedicated to PowerPoint quickly changed allegiance because the Viewer had 'far more functionality than PowerPoint'.²⁸ However it should be noted that ARTstor's Offline Image Viewer in Slide Presentation mode is still a linear presentation tool; it enables the presenter to advance to the next or previous slide but not to view the images out of sequence. This is also a drawback with the Multi-Slides plugin²⁹ for PowerPoint, in which although multiple PowerPoint slides can be viewed simultaneously they can only be advanced forwards and backwards in sequence. Both tools rely on the lecturer to carefully consider and construct the sequence of images in advance of the lecture. For subscribers to ARTstor however it is possible to use their Image Presentation feature which uses an Image Selection list to enable images to be viewed out of sequence.³⁰ There are occasions when it is appropriate to use a linear

presentation tool³¹, but in the visual and creative arts we also need to consider how this frames teaching practice and the situations when non-linear tools or more interactive devices are more appropriate.

The Generative Learning Object (GLO) Maker tool,³² built by the Learning Technology Research Institute at London Metropolitan University has used the concept of pedagogy before technology, focusing on the quality of the learning design. This authoring tool is specifically aimed at users who want to create, and adapt or re-use GLOs. It would be useful to consider how the tool might work with images and what enhancements may be required, for example adding compatibility with more image and multimedia file formats. There is currently limited compatibility with file formats; sound must be MP3, video must be FLV, and images can only be JPEG or GIF.³³

Some of the range of digital tools considered during the research included classroom software and hardware, and mind mapping software or connectivity maps such as the Visual Understanding Environment tool (VUE). Hoffman and Cavalier (2008) suggest that concept mapping offers a 'perfect fit for the complex needs of a global survey course in art history' due to the flexible and context-driven nature of the tool.³⁴ Other more fluid frameworks include timeline tools such as Dipity. This was used by the San Jose Museum of Art in kiosk mode as part of their 'The Prints of Andy Warhol' exhibition.³⁵

Re-imagining the learning environment

Digital presentation tools should be set in the context of their environment, including the choice of hardware and the potential ways they may be re-used or accessed, whether online or in the classroom. The transition from slides to digital presentation technology has enabled a re-assessment of the learning environment. The new technology classroom, bright and light, allows the students to focus more clearly on the image and in a more inclusive accessible manner. The Association of Art Historians' response to the Special Educational Needs and Disability Act (2001) mentioned that the darkness required by slides for good projection was a disadvantage to disabled students as it makes 'lip-reading or signing particularly difficult', and that:

'All students experience some difficulty in simultaneously listening, looking, thinking and writing, especially when the room is blacked out for slides.'³⁶

Another advantage of technology is the ability to re-imagine the classroom environment with innovative hardware; examples of successful learning spaces include the Multi-Display Learning Space (MD-LS) at the University of Nottingham³⁷, the Student Personal Learning and Study Hub (SPLASH) at the University of Surrey³⁸, and the Centre for Inquiry-based Learning in the Arts and Social Sciences (CILASS) at the University of Sheffield.³⁹

An interview participant introduced whiteboard technology into the Fashion Promotion and Imaging department at the University for the Creative Arts as most of her students were brought up on interactive whiteboards since primary school, and

also because it can be used like a 'living Photoshop'. She uses it to ensure the students have to be pro-active, for example asking them to hide or reveal layers, getting students to draw on it, and using it in a review or revision session.⁴⁰

The learning environment is no longer confined to the classroom with the incorporation of online learning into courses and the accessibility of presentation software in the cloud. The rise of cloud computing⁴¹ has positive and negative perceptions: one questionnaire respondent liked the online presentation tool Prezi because 'you only have to update the presentation in one place'.⁴² However the EDUCAUSE Learning Initiative (2010) mention that there are also downsides to be considered with new generation presentation tools: many of these tools require an Internet connection; the special effects can distract viewers; they can be too flexible therefore not supporting a presentation that must be the same each time it is presented; and they also rely on the host service to remain in business.⁴³ One respondent commented that Web 2.0 technology can also make everything 'a bit seamless' so that there is a blurring of boundaries between home and work life. Without the solid base of the Slide Library, lecturers have to spend time searching for copyright-cleared digital images, and themselves maintaining multiple passwords to login to different online image databases.

Images are the content

In arts education the content used is vital: 'When images ARE the content, they can't be just any images.'⁴⁴ One interview participant, a Curator, who was taught as an undergraduate at the Courtauld Institute of Art by Dr. Lorne Campbell, described:

[he] was so focused on the visual...[and he] always made us return to the image and base all our responses on the image and the sources...this also chimed in with my own feelings about how we should approach a work of art...⁴⁵

Colour information is an important component of teaching with images. An interview participant recollected that slides, produced for teaching Art History at the Courtauld Institute of Art in the 1970s, were strictly in black and white due to concerns over the misrepresentation of colours of the original artworks. Even though colour calibration software and hardware is readily available today, there are still questions regarding the authenticity of colour with digital images.

Whether the images are made available as analogue slides or digital images, in both cases they are surrogate images distinct from the works of art they represent. Codell (2010) recollects her experience of slide lectures comparing the reproductions with the original artworks; she was shocked at how dull the yellow robe of Bellini's Doge of Venice was in the actual painting, compared to the apparent luminosity of the projected slide⁴⁶. A reviewer of this paper, a Lecturer in Professional Development⁴⁷ mentioned an experience of viewing Brueghel's painting *Hunters in the Snow* in the Kunsthistorisches Museum, Vienna:

'it made me feel so *cold* [sic] even though the room was at a controlled temperature. Pictures can affect feelings and emotions through their physical presence in ways that slides, digital or analogue, have difficulty recording'

Ridley (2009) raised the issue that digital images displayed on the screen do not communicate information about the scale of the artwork represented⁴⁸; this becomes the responsibility of the teacher to communicate and discuss with the students. She was taught by Robert Ratcliffe at the Courtauld Institute of Art, and talked about his method for teaching with slides:

'he took his own photographs in situ in front of the paintings and he would take the whole painting and then he would take 10 inch details and photographs of 4 inch details...he would always remind you of what the sizes [of the different artworks] were...'⁴⁹

Whether the medium is a digital tool or a set of slides, teaching with images and visual content is intrinsic to arts education. Despite advances in technology we are still dealing with issues such as scale, colour reproduction, image quality, and provenance in the visual representation of the arts.

Copyright, the white elephant in the room

The impact of copyright in the transition from slides to digital images cannot be underestimated; it is key to the sourcing of authentic images at a suitable quality. As reported at the JISC Digitisation Conference (2007) there is concern within the community about the creation of 'digital silos'⁵⁰; individual digital collections being built up unconnected from each other. Anecdotal evidence collected during the course of both research grants indicate that digital collections are being built up from a variety of sources. The Hargreaves Review of Intellectual Property and Growth⁵¹ has recently published its recommendations; it is hoped that they will have a positive future impact on the provision of digital images for education. Korn (2011) writing about the Hargreaves Report considers the recommended exceptions to be 'future facing' and advises that:

'Active lobbying by organisations who will benefit from these exceptions, such as museums, libraries, universities, archives etc is essential to ensure that the recommendations are taken forward.'⁵²

In 2003 the arts education community began discussions with the Design Artists Copyright Society (DACS) regarding the need for a new licence to cover digital images.⁵³ The latest posting on the Association of Curators of Art and Design Images (ACADI) blog⁵⁴ notes that negotiations with DACS for a digital licence are still continuing.

The *Slide Stats* survey was circulated in order to uncover a snapshot of the current situation for visual resources curators and slide librarians in the UK. Six out of 29 institutions reported that their slide collections were either in storage, or had been moved somewhere that was inaccessible; an additional two institutions reported that their collections were in the process of being dispersed; and in one case the

collection had already been destroyed. In all but one case the delay over the DACS licence was cited as the reason for the destruction or putting into storage of the collection: 'it was very reliant [on the DACS licence] and in the end we couldn't wait'.⁵⁵ A further eight institutions reported that if the DACS licence wasn't forthcoming in the next year or next couple of years, that their collections would be destroyed or dispersed.

It is important to emphasise that the main concern of respondents was to have a licence in order to be able to build up their digital image collections and in order to encourage staff and students to use legal images:

'we could fill in the very large gaps in teaching material...we will continue to try and source images from whatever legal sources we can and the staff and students will continue to use Google'⁵⁶

And another respondent noted that without a digital licence: 'at the moment we are stuck with slides'.⁵⁷ Although slide collections in the UK necessarily include a proportion of core images, there are also unique collections that have been carefully built up over time that are specific to individual institutions, faculties or staff; and it is hoped there could be a licence to cover the creation of new digital images for educational usage.⁵⁸ Whilst the 'death of slides' occurs with or without provision of a digital licence, there is a potential, as well as actual, loss of images for education if unique slide collections are destroyed prior to the creation of digital replacements. The Tate's Time-based Media Department, established in 1996, provides guidance on the conservation of 35mm slides⁵⁹ amongst other forms of Media Art. Institutions may not have the resources available to conserve slides, in which case the creation and curation of digital image collections can be viewed as even more significant. Although digitisation is not the same as preservation, it can enable the prioritisation of cleaning of slides and address the need for access to images for learning and teaching.

Conclusion

The light has not changed, only by a fraction, although there are many more options with digital technology, by focusing on what is important in arts education: good content and good teaching; and by maintaining the students' interest whether with traditional methods or digital innovation as appropriate, we can maximise the benefits of technology. Further research is needed to explore how students themselves view different technologies in the classroom and in order to evidence how they impact on students' learning and experience in Higher Education. It would also be useful to explore the reasons why PowerPoint is so prevalent in education.

This paper has considered the mounting evidence for the 'death of slides' and its relationship with the provision of digital images for learning and teaching in UK Higher Education. It is clear that we need a digital licence for educational purposes in order to avoid the destruction of unique image collections in the UK, and to more adequately address the requirements of teaching with images. Informed debate is also needed on the conservation and preservation of analogue slide collections, and their digital surrogates, due to the role of images in the study of History of Art pedagogy.

Dreams for the future include new technologies, those unthought-of, or in development, to be uncovered and created; with the visual and creative arts education community leading the way in the creation and best practice use of new presentation tools.

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CHArt editorial note

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Notes

¹ Fry, E. (2007), 'From Lantern Slides to Image Presentation Systems: A Discipline in Transition', *Indiana Libraries*, 26(2), pp. 15-19. <http://hdl.handle.net/1805/1551> (8 March 2011)

² Godfrey, J. (2004), 'A Digital Future for Slide Libraries?', *Art Libraries Journal*, 29/1, pp. 10-22.

³ JISC is historically known as the Joint Information Systems Committee

⁴ <http://thedigitalpicture.ac.uk/home.html>

⁵ Locating innovative image presentation technology within existing visual pedagogic practice, 1 February to 31 July 2010. <http://www.ariadne.ac.uk/issue65/gramstadt/> (8 March 2011)

⁶ Embedding innovative image presentation technology within existing visual pedagogic practice, 1 October 2010 to 31 July 2011

⁷ Anonymised data received by email 11 October 2010.

⁸ Fry, E. (2008), '35mm Slide Collections: Retention Criteria, Preservation issues, Donation Ideas', *VRA Bulletin*, Spring 2008, Volume 35, Number 1, p.7.

⁹ Cohen, K. (2008), 'Capturing Faculty Collections for a Common Database', *VRA Bulletin*, Spring 2008, Volume 35, Number 1, p. 99.

¹⁰ Williams, E. (2007), 'Missing Slides', *VRA Bulletin*, Summer 2007, Volume 34, Number 2, p. 51.

¹¹ SlideShow exhibition website <http://www.artbma.org/exhibitions/special/slideshow/introduction.html> (8 March 2011)

¹² The Penn State University Press (2004), Interview with Darsie Alexander, Curator, BMA, August 2004 <http://www.psupress.org/books/titles/0-271-02541-7.html> (8 March 2011)

¹³ Notes on the experience of giving a slide lecture <http://teachingwithimages.wordpress.com/2010/12/01/experience-of-giving-a-slide-lecture/> (8 March 2011)

¹⁴ Harris, B., and Zucker, S. (2008), 'The Slide Library: a Posthumous Assessment for our Digital Future', *Teaching Art History with New Technologies: Reflections and Case Studies*, Donahue-Wallace, K., La Follette, L., and Pappas, A. (eds.), Newcastle: Cambridge Scholars Publishing, p. 37.

¹⁵ Quoted with permission from recorded and transcribed interview given on 30 March 2010 at University for the Creative Arts, Farnham.

¹⁶ Quoted with permission from email communication with Rebecca Lowe, Library Assistant, Leeds College of Art, 19 October 2010.

¹⁷ Wainwright, J., Scott, C., and Kent, A. (2010), 'Thinking Digital: Developing independent creative practice in the digital age', in: University for the Creative Arts Learning and Teaching Conference 'Enhancing student learning: employability and entrepreneurship', 22 January 2010, British Library, London. (Unpublished)

¹⁸ McNaughton, P. (1998), 'Collaborative Software: The Creation of a Multi-media Presentation Program for Undergraduate American Art History Courses', *Computers and the History of Art*, Vol. 8 (1), pp. 49-68.

¹⁹ Taylor, C.S. (1998), 'Holzwege and Feldwege in Cyberwald: The Multimedia Philosophy Lecture', *EJournal*, Volume 8, Number 1 <http://www.ucalgary.ca/ejournal/archive/v8/hfc.html> (19 July 2011)

²⁰ Quoted with permission from recorded and transcribed interview given on 24 March 2010 at University for the Creative Arts, Epsom.

²¹ WIRED, September 2003. PowerPoint is Evil <http://www.wired.com/wired/archive/11.09/ppt2.html>

²² Lousy PowerPoint presentations: The fault of PP users? http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg_id=0002PP (8 March 2011)

²³ Kjeldsen, J.E. (2006), 'The Rhetoric of PowerPoint', *Seminar.net*, Volume 2, Issue 1 http://seminar.net/files/Kjeldsen_powerpoint.pdf (8 March 2011)

²⁴ One word to describe PowerPoint <http://teachingwithimages.wordpress.com/2010/12/03/one-word-to-describe-powerpoint-tag-cloud/> (8 March 2011).

²⁵ The Institution field was optional, but 43 out of the 46 answers were UK Higher Education Institutes.

²⁶ Bozarth, J. (2008), *Better Than Bullet Points: Creating Engaging eLearning with PowerPoint*. Pfeiffer: San Francisco.

²⁷ Leader, A. (2007), 'Technology and the Teaching of Art History', *VRA Bulletin*, Summer 2007, Volume 34, Number 2, pp. 8-11.

²⁸ O'Riordan, V. (2007), 'This is the Modern World: Collaborating with ARTstor', *Futures Past: Thirty Years of Arts Computing*, Bentkowska-Kafel, A., Cashen, T. and Gardiner, H. (eds.), Bristol and Chicago: Intellect, pp. 103-108.

²⁹ <http://www.multi-slides.com/>

³⁰ ARTstor Help - OIV Presenting http://help.artstor.org/wiki/index.php/OIV_Presenting (8 March 2011)

³¹ Presentation technology is horses for courses <http://teachingwithimages.wordpress.com/2010/07/15/presentation-technology-horses-for-courses/>

³² GLO Maker User Guide <http://www.glomaker.org/guides.html> (8 March 2011)

³³ Boyle, T. and Bradley, C. (2009), File formats compatible with GLO Maker http://www.glomaker.org/guides/GLO_Maker_2_File_Formats_v2.0.pdf (8 March 2011)

³⁴ Hoffman, E.R., and Cavalier, C. (2008), 'ARTIFACT: Mapping a Global Survey of the History of Art', *Teaching Art History with New Technologies: Reflections and Case Studies*, Donahue-Wallace, K., La Follette, L., and Pappas, A. (eds.), Newcastle: Cambridge Scholars Publishing, pp. 79-96.

³⁵ The History of Dipity <http://www.dipity.com/about/history> (8 March 2011)

³⁶ Association of Art Historians. (2003), *Teaching Art & Design History: Working with Students with Disabilities*, London: Association of Art Historians, p. 10. <http://www.aah.org.uk/photos/file/Working%20with%20Students%20with%20Disabilities.pdf> (8 March 2011)

³⁷ Bligh, B. and Lorenz, K. (2010), 'The Rhetoric of Multi-Display Learning Spaces: exploratory experiences in visual art disciplines', *Seminar.net*, Volume 6, Issue 1 <http://seminar.net/index.php/volume-6-issue-1-2010/141-the-rhetoric-of-multi-display-learning-spaces-exploratory-experiences-in-visual-art-disciplines> (8 March 2011)

³⁸ Teaching with Images blog post <http://teachingwithimages.wordpress.com/2010/08/06/splash-university-of-surrey/>

³⁹ University of Sheffield <http://www.sheffield.ac.uk/cilass/learning-spaces/huddleboards.html>

⁴⁰ Quoted with permission from recorded and transcribed interview given on 24 March 2010 at University for the Creative Arts, Epsom.

⁴¹ HEFCE (7 February 2011), Shared services in cloud computing to be funded by HEFCE <http://www.hefce.ac.uk/news/hefce/2011/cloud.htm> (8 March 2011)

⁴² Anonymised data submitted via the online questionnaire on 25 June 2010.

⁴³ EDUCAUSE Learning Initiative. (2010), '7 Things You Should Know About Next-Generation Presentation Tools' <http://www.educause.edu/Resources/7ThingsYouShouldKnowAboutNextG/194558> (8 March 2011)

⁴⁴ Fry, E. (2007), 'From Lantern Slides to Image Presentation Systems: A Discipline in Transition', *Indiana Libraries*, 26(2), p.18. <http://hdl.handle.net/1805/1551> (8 March 2011)

⁴⁵ Quoted with permission from recorded and transcribed interview given on 26 March 2010 at the National Gallery, London.

⁴⁶ Codell, J.F., (2010), "Second Hand Images": On Art's Surrogate Means and Media, *Visual Resources*, Volume XXVI, No. 3, September 2010, pp. 214-225.

⁴⁷ Quoted with permission from CHART reviewer's comments, received in July 2011, from Simon Rae, Lecturer in Professional Development, The Open University, United Kingdom.

⁴⁸ Ridley, P. (2009), 'Teaching with Images', in: VADS Seminar 'Digital Imagery: creation and importance in the visual arts', 22 September 2009, London College of Fashion, 20 John Princes Street, London. (Unpublished)

⁴⁹ Quoted with permission from recorded and transcribed interview given on 1 April 2010 at the University of the Arts London, 272 High Holborn.

⁵⁰ Report on the JISC Digitisation Conference, Cardiff, 20–21 July 2007
http://www.jisc.ac.uk/media/documents/publications/digi_conference_report-v1-final.pdf (8 March 2011)

⁵¹ Independent Review of IP and Growth <http://www.ipo.gov.uk/ipreview.htm> (8 March 2011)

⁵² Naomi Korn, 'Hargreaves Review of IP: Why is this review different from all other reviews?' 23rd May 2011
<http://www.naomikorn.com/blog/?p=17>

⁵³ ARLIS Visual Resources Committee Copyright Guidelines Seminar on Tuesday 24th June 2003 at the School of Oriental and African Studies at which representatives from the Design Artists Copyright Society (DACS) were present.

⁵⁴ Association of Curators of Art and Design Images (ACADI) blog <http://acadi.wordpress.com/2011/02/09/acadi-meeting-summary-january-2011/> (8 March 2011)

⁵⁵ Anonymised data received by email 18 October 2010.

⁵⁶ Anonymised data received by email 28 October 2010.

⁵⁷ Anonymised data received by email 18 October 2010.

⁵⁸ ACADI blog post, 21 January 2011 <http://acadi.wordpress.com/2011/01/21/the-wishlist/>

⁵⁹ Tate - About Time-based Media Conservation - Slide Based Works, February 2007
<http://www.tate.org.uk/conservation/time/about.htm#slide>