

Review Report

AHRC Research Review

Practice-Led Research in Art, Design and Architecture

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Appendices, including much of the data and other materials collected in the review, are provided in a separate document

1. Summary

You don't need to design in order to deliver high-quality research, for example, into other people's designing, into the efficacy and desirability of products, or into the effectiveness of newly devised design guidelines. But where's the continuity, sense, satisfaction, or empowerment in that for a design graduate?

Owain Pedgley

The logic comes after the event. After the rendezvous, as Duchamp would have it, the co-efficient of the gesture (object?) and its interpretation

Katy Macleod

This review report sets out the outcomes of a 10 month investigation to describe the landscape of practice-led research in Art, Design and Architecture (ADA) in the UK and beyond. We were asked for a qualitative review but of course it has been important to gather some numbers to check and illustrate our observations. We have consulted widely, both face to face and in the virtual world, with experts and novices in the UK and around the world. We have tried to strike a balance between the natural desire of our colleagues to debate the more contentious aspects of this territory (they were never going to forgo that opportunity) and the equally strong wish of the AHRC that we should provide a clear description of what is happening.

We have collected some diverse examples of research and subjected them to various examinations. We have also examined a selection of research projects funded by AHRC and other projects by creative practitioners, funded by a non-research organisation.

From all this we have been able to describe the landscape in a straightforward sense: We have measures of the proportions of ADA academics involved in practice-led research. We have clarified differences in the ways that the different ADA disciplines engage with practice-led research and identified some problems that indicate possible future support

strategies. We have discussed some problems with general definitions of research and identified issues that should be addressed to ensure that the AHRC definition can be applied to the full range of practice-led research.

We have picked out some specific case examples that illustrate the range of contexts, methods and contributions made by practice-led researchers, and more are described in detail in Appendix F. We have also sought to assess how this research relates to the wider international picture in which the UK appears to have a strong position in both volume and development of research

We have also set out some issues that affect this community of researchers: What strengths and weaknesses have we observed and where is there a need to support development? Do the AHRC definition of research and guidance on practice-led research provide an effective framework?

We have illustrated the state of development of research in ADA, and some reasons why it is less robust than might be expected from such long-established disciplines.

We recommend that the career path of researchers in ADA needs some attention and make some suggestions about how that could be achieved.

We have also indicated some areas of inquiry that might be supported to advance the theory and methods of practice-led research. In particular we have come to the conclusion that conventional ideas of contribution to knowledge or understanding may not be serving us well. This is significant to fine artists but we believe that it relevant across ADA and a shared effort to develop appropriate new models would be a constructive development.

The full set of recommendations can be found in chapter 5

Finally, this project has generated a great deal of data, far more than we can reasonably deal with in the time available and some of the questions that we had hoped to address remain unanswered. Given the strong interest and enthusiastic support we have received from the ADA community and the weight of material that people have provided, we will be looking at ways to sustain and continue to exploit this resource to support the development of practice led research in ADA and beyond.

2. Introduction

This section provides some background to the project and its subject matter.

It sets out the aims of the project commissioned by the AHRC.

It outlines the methods we have used and how they have contributed to the review

It describes the scope of the research that we have reviewed and some of the ways that practice-led research is defined and described.

It provides a short history of relevant aspects of the development of Art, Design & Architecture (ADA) as academic disciplines and describes some of the contemporary issues affecting the research.

2.1 **Aims of the Review**

The aims set out by AHRC in commissioning this review are:

- a) map in broad terms research being carried out across the specified subject areas, to identify likely future developments, and to situate this research in relation to AHRC-funded research in these areas
- b) contextualize the research being undertaken within the wider disciplinary matrix, for example with reference to practice-led research in music and the performing arts.
- c) contextualise the research currently being undertaken within an appropriate historical timeframe
- d) to assess the overall health of the subject areas in terms of the current capacity and capability for delivering research

2.2 **Methods**

The methods adopted include both gathering and analysing data from a variety of sources, and a wide range of consultations with members of the research community, including gathering and analysing case examples of practice-led research. The practical work has included:

Literature Review

There is a substantial body of published work on the subject although most is selective in attending to aspects of the picture or particular paradigms of research with the wider concept of practice-led research. This is balanced by some exceptional theoretical contributions although these tend to lack grounding in relevant practice of research. The literature review is not presented as a separate section, it informs the whole report and footnotes have been used to expand on the relevance of some sources. The bibliography includes sources that are of value as background material as well as those directly cited.

Data Review

We have consulted a range of sources including the AHRC's own project records. There are very few issues that can be resolved by attention to a single source or as precisely as one would hope, but we have been able to triangulate sources to arrive at a description of the institutional landscape and to identify some significant and relevant aspects of ADA research and practice-led research.

Workshops

We held a number of workshops of the wider project group in the earlier stages to refine the questions that we were addressing to the community and the case examples we gathered. We also held a concluding workshop in September 2006 to explore issues arising from the Fine Art community and this was productive in isolating a key issue for the future as well as gathering some informed reflections on issues identified in the review.

Town Meetings

We held two town meetings early on in the review to gather in experiences, issues and concerns and ask colleagues to help us identify the questions that might be applied to case examples. These meetings were very well attended by a full range of academics and produced a rich set of questions, informing the scalar questions applied to case examples as well as helping us understand the field more generally.

Case Examples

We have reviewed three sources. Case examples submitted by colleagues have allowed us to investigate the nature of practice led research and pick out some characteristics, including factors that differentiate the disciplines. Examples from AHRC have allowed us to observe some quality issues, see how approaches have matured in the period since 1998 and see the effects of the different AHRC funding schemes. They have also provided some statistical data to support the data analysis above.

Examples from NESTA, together with some examples observed informally through other work by members of the review group, have allowed us to look at the research aspect of advanced professional/creative practice undertaken outside the research arena.

Online Workshop

Our three week online workshop, using a JISCmail list set up for the purpose, allowed us to investigate the attitudes and experience of the research community in the UK and around the world (59 people took an active part in the discussion and more than 200 joined the audience). We used a set of four over-arching questions and some invited contributions from experts to stimulate the moderated debate which resulted in a great volume of discursive material and a set of useful summaries by participants. This was an important source of opinions and experiences that informed our discussion of issues.

Questionnaires

Towards the end of the review we used online questionnaires to direct specific questions to individual researchers (Research Experience Questionnaire) and research leaders (Institutional survey) these were used to clarify and triangulate some of the data we had and to explore specific questions, such as the development of PhD studies. The research experience survey was very productive with 248 responses. The institutional survey received a relatively small response (19) but the results were sufficiently clear to triangulate other sources and there were a number of descriptions of experience which were valuable in illustrating the issues. Our perception is that both surveys represent the experience of the more active and experienced members of the academic community rather than the general picture.

2.3 Definitions & Descriptions

There are circumstances where the best or only way to shed light on a proposition, a principle, a material, a process or a function is to attempt to construct something, or to enact something, calculated to explore, embody or test it.

Bruce Archer (1995)

Their definition of Disegno covered "1: careful or diligent search [through sketching towards a solution] 2: studious inquiry or examination; especially: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws [through Pythagoric and Euclidean geometries] 3: the collecting of information about a particular subject [through thorough observation drawing of ruins, corpses, other academicians drawings, etc]

*Eduardo Corte-Real
describing the 16th Century design schools of Florence and Rome*

2.3.1 **Scope of Practice-Led Research**

The professional disciplines of art, design and architecture have many differences but all share a tradition of situating learning and scholarship in a professional practice setting. "Practice-led research" can be thought of as a natural extension of this principle since many academics in these fields see practice as the natural arena for inquiry and the methods of practice as methods of inquiry.

The expression, "practice-led", does not describe a single set of ideas about research. Its meaning varies with discipline, location and person and it varies with the questions that are investigated. Its value is to indicate research practices, emerging from Art, Design & Architecture (ADA) and other creative disciplines, that complement methods of inquiry adopted from the humanities and sciences. In time, as those practices become more widely understood and established, that labelling function may become redundant.

Because of this fluidity, this review has not been restricted to a particular sub-set of the research in our disciplines. There are few areas where practice does not have some part to play in methods of inquiry and relatively few inquiries by "practitioner" academics that do not employ or investigate some aspect of practice. In some respects, therefore, this review examines all research in our disciplines, although it attends mainly to the questions that arise from the emergence of practice-led research.

However there are some vexatious questions about the nature of practice-led research which are evident particularly in Fine Art, although they are

relevant to all disciplines. In 4.4 we have isolated an important issue, the nature of outcome or contribution in some work that leans heavily on creative practice, and discussed how methods and practices might be developed in response.

2.3.2 **Defining Practice-led Research**

We have not identified any established or accepted prior definition of practice-led research. Many commentators point to the difficulty of defining it¹ and some, including AHRC, set out some conditions to be met by practice-led research² without attempting a definition. Where we have encountered confident assertions of the nature of practice-led research these have often been quite specialised, describing only a part of the spectrum of work that we have observed across ADA.

Given this lack, and given the wide scope of the topic that we have indicated above, we have adopted a basic definition which says little but is inclusive and does set a boundary, albeit a wide one:

Research in which the professional and/or creative practices of art, design or architecture play an instrumental part in an inquiry.

This is not to say that practice is a method of research or, as some assert, a methodology³. Practice is an activity which can be employed in research, the method or methodology must always include an explicit understanding of how the practice contributes to the inquiry and research is distinguished from other forms of practice by that explicit understanding.

In 1993 Christopher Frayling adapted Herbert Read's model of education through art to describe different ways of thinking about research⁴. He noted that research could be FOR practice, where research aims are subservient to practice aims, THROUGH practice, where the practice serves a research purpose, or INTO practice, such as observing the working processes of others. That model has been widely cited by practice-led researchers although, like the equally widely quoted work of Donald Schön on reflective

¹ eg Durling (2002) points out that the term is widely used in art and design but has not been defined clearly, Jenkins et al (2005b) make a similar observation about architecture. There is some opposition to defining practice-led research arising from a fear that this would produce a "crypto-science" that would distance it from creative practice (Colford 2005).

² AHRC, in their guidance on Fellowships in the Creative and Performing Arts requires that creative practice must be accompanied by some form of critical written analysis, implying a reflective component to the research. Taken in isolation this may suggest to some that creative work might be "converted" to research by a suitable accompanying text.

³ The expression "practice as research" is widely used in some fields, notably performance, although it is not prevalent in Art, Design or Architecture.

⁴ Frayling (1993). Although Frayling is widely credited with this three-part model it has also been advanced by Bruce Archer who published it later (Archer 1995) but was reported as describing it to academic colleagues in the 1980s (Norman, Heath & Pedgley 2000)

practice, it has been easier to use it as a touchstone than to work through its theoretical implications for the individual researcher's project.

Within the very broad description we have adopted, it is possible to describe some forms of practice-led research. One approach is to propose that a design or artwork can provide new insights, leading to the principle that an exhibition or other public result of practice may have the same role as a journal article⁵. This approach has some characteristics in common with other research - there is a purposeful process of production, which may include experiments or other investigations, followed by a form of peer review. However it can become problematic, for example if it is not clear whether the peer reviewers (eg curators or critics) are party to the research agenda or assessing the work from some other standpoint entirely. There is also a difficulty if the results of the research are not recorded and transmitted in some relevant permanent form.

This leads us to the role of writing in practice-led research. A number of commentators have discussed the balance of weight or importance between practice and text⁶ but this kind of thinking is counter-productive as it deflects attention from the central issue of how the researcher can best resolve the research problem that they have taken on. Others argue that artefacts or practice should not necessarily require interpretation in text if they are understood by peers⁷ but these arguments also tend to sidestep the need for a researcher to take responsibility for work being understood and "read" appropriately. Most creative practice has the potential to be read in many ways and the location of an artefact (eg in an art gallery) can undermine the researcher's intentions.⁸

A more purposeful approach⁹, clearly making practice subservient to research, proposes that any definition of practice-led research should concentrate on how issues, concerns and interests can be examined and brought out by production of an artefact. In a research setting, the knowledge associated with the artefact is more significant than the artefact itself.¹⁰

⁵ eg Watanabe (2003) writing about practice-led doctoral research in Japan and Britain.

⁶ Hockey and Allen-Collinson (2000) suggest that text and artefact should reflect each other and be inter-related, implying that both have an independent life rather than serving the research. There are many examples of percentages being applied to the contribution of each element, generally 50% artefact and 50% text and we have heard doctoral students describe their work as 50% practice and 50% theory.

⁷ Candlin (2000a, 2000b) has argued that text should not be required to explain visual material and Evans and LeGrice (2001), among others, have pointed to mathematics as a discipline which uses its own "language". However Friedman (2006) has argued that mathematics is a different case since it has a shared unambiguous formal language.

⁸ Lyons (2006) has argued that it can be extremely difficult to conduct research in an art school setting dominated by the discourses and expectations of professional practice.

⁹ Makela (2005)

¹⁰ Scrivener (2000)

A set of requirements from another professional field, education, gives a fuller prescription: Research should be *believable, plausible and authentic; contribute to knowledge by, for example, adding to what is known by providing greater clarity to the field; being clear in design and dissemination through careful and systematic approaches; match legal and ethical criteria and use paradigm-dependent criteria*¹¹. For the "creative" disciplines such language can be problematic as it implies a degree of pre-determination and precision that does not sit comfortably with the uncertain and open-ended nature of creative practice. The expression "*The Science of Uncertainty*" has been used to describe design¹², expressing both the need to develop a rigorous framework for knowledge and the principle that designers deal with problems that do not have predictable or optimal solutions and may even resist description¹³. In creative disciplines, practice-led research methods must take account of this tension and allow for uncertainty and open-endedness if the practice in the research is to be valid.

¹¹ Furlong and Oancea (2005)

¹² Clive Dilnot (1998) used this as the title of a significant paper that launched an international debate on Doctoral Education in Design that continues, in both formal and informal arenas, today.

¹³ Horst Rittel's concept of the wicked problem (Rittel and Webber, 1973) provides a widely accepted framework for these issues, Jeff Conklin (2005) paraphrases one of Rittel's principles as, "you don't know the problem until you have found the solution"

2.4 History & Context

2.4.1 *Emergence*

We do not wish to engage in unreasonable special pleading for our disciplines, and we have noted the impatience expressed by some policy makers when they have perceived this to be happening. However there are some aspects of our history that help to explain why research in ADA is a relatively late developer despite our long history of professional education.

One of the distinguishing features of the Art and Design disciplines in the UK, paralleled in some other countries, is the particular institutional path they have followed until very recently. As shown in the timeline (Fig 2-1 overleaf) the great majority of Art and Design provision until 1992 took place outside universities and the academic culture that developed in universities during the 20th century had little impact on the “art school” sector¹⁴. Architecture was included in the subjects taught in universities from the 1840s onwards and has been part of the mainstream university sector since then although it has a more substantial presence in the “art school” environment as well.

Although many art schools became part of the Polytechnic system in the 1970s and developed CNAAs degrees, most other disciplines in the Polytechnics already had one foot in the university sector and for them, arguably, the shift to university status in 1992 was not a fundamental challenge to the way that academics worked or perceived their roles. For Art and Design the period following 1992 has brought some dramatic changes and in many ways Art and Design can still be seen as emergent academic disciplines despite their long history. This is less true for Architecture but it shares a number of problems and issues with Art and Design.

¹⁴ There are a small number of distinguished exceptions, particularly Fine Art Depts in some Universities, but these were not of a scale to influence the mainstream culture in Art and Design.

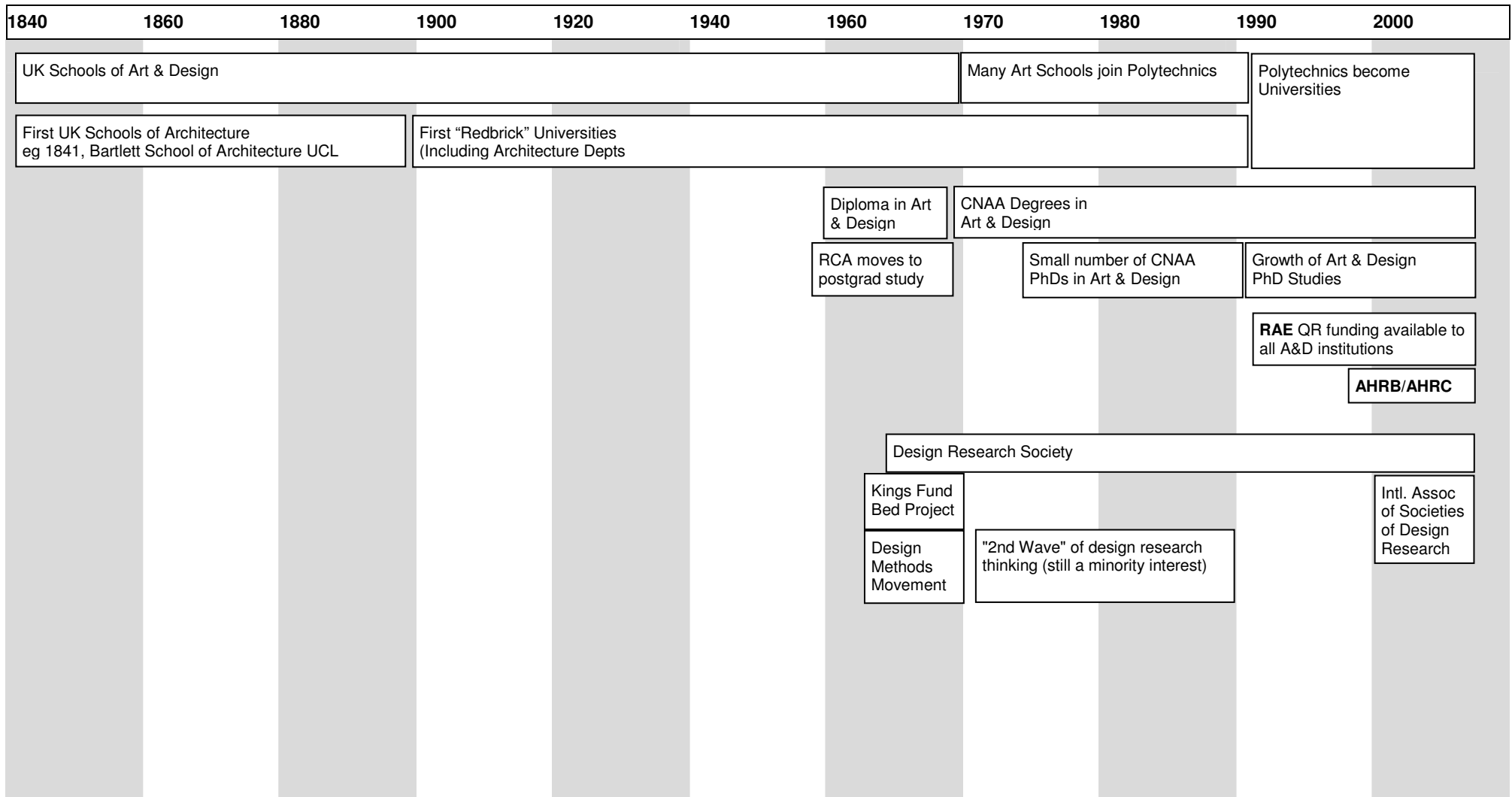


Fig 2-1. Separate development of Art and Design Disciplines

One aspect of this emergence is the relationship between the professions and the academy. The subjects have been focused on preparation for professional life¹⁵, many teachers are professional practitioners employed on the basis of professional achievements, and the dominant model for advancement of the disciplines is through the work of leading practitioners who are well-known personalities.

The idea that professionals might look to university academics for new ideas or knowledge is a novel one. For example the idea of post-modernism has been developed and debated widely across academia but many designers had their introduction to the term through the radical concept designs developed by the architect and product designer, Ettore Sottsass, and his "Memphis" design group in the 1980s. Equally, post-modernism in architecture has found its fullest expression in practice rather than in the academy.

Nevertheless we have a long history of formal research, especially in Architecture and Design, but this has been a minority activity until recently. The Design Research Society was founded in the 1960s as a result of the first attempts to provide a scientific foundation for designing. The most significant design research project of the 1960s, the development of the Kings Fund hospital bed specification by a team at the Royal College of Art led by Bruce Archer, had a strong practical design component to complement the scientific elements¹⁶.

In Architecture, the 1958 Oxford Conference set the agenda for a research-based approach to architecture following which Cambridge University's Martin Centre pioneered an approach that combined analytical methods with exemplary design proposals.

From that time there has been a sustained research effort to develop the theory of designing and architects have played an important role in that project during the second half of the 20th Century¹⁷. However in Art, formal enquiry into the discipline was largely the preserve of Art History, with theories of art-making taking a promotional role in the professional

¹⁵ The notion of professional life as an artist is more fluid than in other areas of life. Many artists continue to characterise themselves as such despite never making art practice their principle source of income. A longitudinal study of craft graduates (Press & Cusworth, 1998) demonstrated that they had complex careers taking on a diversity of roles but it could be seen that, over time, they developed work which was both at a level appropriate for graduates and exploited their education and skills as creative practitioners, although not usually in the discipline studied for their first degrees.

¹⁶ Ghislaine Lawrence (2003) has provided a full description of this project and discussed many aspects of the early developments in Design Research.

¹⁷ Leading figures include Christopher Alexander, Nigel Cross and Bryan Lawson. Henrik Gedenryd (1998, Chap2) describes several of the models of designing developed by the Design Methods movement and work done subsequently in the "2nd wave" of Design Methods research in the 1970s and 1980s.

arena as the preserve of the art critics or of the spokespeople of art's 'isms'.

However these developments involved a small minority of academics. Until 1992 most of their colleagues gave little thought to research and, even today, the concept of advanced research that contributes to the knowledge in the discipline is not widely understood, especially by practitioners who generally equate "research" with information gathering to support practice.

The first stimulus to the main body of ADA academics was the Research Assessment Exercise (RAE) and the funding which it released to some institutions to develop their research and this is the point where "practice-led" research became a significant issue. The debate on practice-led research has always been characterised by, on the one hand, a proper wish to develop appropriate forms of inquiry for ADA and other "creative" disciplines and, on the other hand, a more naïve set of concerns and ideas expressed by those with less experience.

We will return to the theme of emergence later when we examine the data we have collected and the issues that we have identified in the review.

2.4.2 ***The Institutional Landscape***

As already indicated, ADA departments operate in a variety of environments and the mix, as well as the numbers, is relevant.

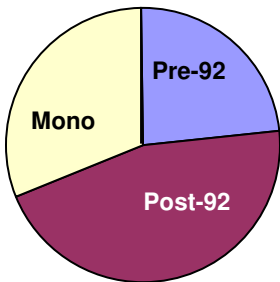
Before 1992, 12 Universities had Architecture departments. A small number included Fine Art or Design. Recently some pre-1992 universities have developed or incorporated art and design depts but these are still a small part of the UK total.

Specialist Art Colleges (monotechnics) form a significant part of the provision for Art and Design and some of them have Architecture Depts. These range in scale from small colleges with less than 500 students to the University of the Arts London, one of the largest HEIs in the UK with 28,000 students. There has been a general tendency for monotechnics to merge into larger units, the most recent being the merger of Kent and Surrey Institutes of Art and Design to form the University College for the Creative Arts.

The monotechnics generally have been successful in sustaining the "art school" identity and asserting the distinctiveness of their provision and they have a strong reputation outside the UK. Some have been particularly successful in developing postgraduate education and the Royal College of Art is a solely postgraduate institution.

Post-1992 universities are the largest component of the Art and Design sector and also include the majority of Architecture depts. For many of the former polytechnics, ADA depts have been important for both research and institutional esteem because they have an opportunity to take a leading position in their fields, and several have done so.

The 2001 RAE data gives an indication of the scale of activity and mix across the different types of institution:

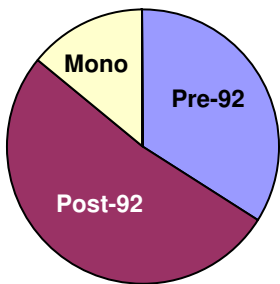


Research-active staff in 4 & 5 rated depts, UoA64 (Art and Design)

Pre-92 Univ. (FTE)	Post-92 Univ. (FTE)	Monotechnic (FTE)
256	489	341

Fig 2-2. Research activity by type of institution (A&D)

This group of higher rated departments is small compared to other AHRC disciplines. Panel 2 (Visual Arts and Media) has 62% of 4/5/5* departments (no art and design dept is rated 5*) while the average for all AHRC panels is 80%, The 5 highest rated panels of the 8 have 87%



The same data is not available for Architecture but we can indicate the spread by numbers of depts.

Distribution of Architecture depts 2006

Pre-92 Univ. (FTE)	Post-92 Univ. (FTE)	Monotechnic (FTE)
12	18	5

Fig 2-3. All Activity by type of institution (Architecture)

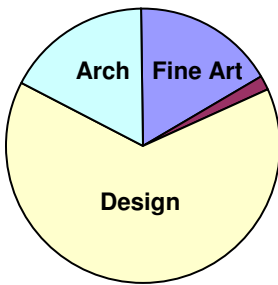
The RAE data also allows us to estimate the total number of academics in the Art and Design sector:

Research Active FTE	Research Active Individuals	All Academics FTE	All Academics Individuals
1669	2526	3563	5394

Fig 2-4. Numbers of UK Art and Design Academics

However the “research-active” figure should be treated with caution. Although the proportion looks healthy at 47% and indicates a vigorous community, the proportion of staff able to take full responsibility for their work as research is probably much lower, in the region of 20%¹⁸

¹⁸ See note to Fig 3-4



By comparison with HESA student numbers it is possible to arrive at a rough estimate of staff in the main areas of Art and Design. The Architecture staff number was found in the RIBA Education survey 2005

	Fine Art FTE	Crafts FTE	Design FTE	Architecture FTE
Staff	738	67	2,758	760

We have provided more detailed data in 3.1.1 (Scale of Academic Activity)

2.4.3 *The Doctoral Landscape*

We are in a period of rapid development of doctoral education, partly due to AHRC, and the picture is more robust today than even 5 years ago. However our observations indicate that there is a considerable way to go before Doctoral education has the same role in ADA that it has in the majority of academic disciplines and this may be an area for further intervention.

The period up to the 1939-45 war included important developments in ADA education, from the formation of the original UK art schools after 1840, to the innovations by the German Bauhaus in the 1920s. However the period since 1960 encompasses most of the developments relevant to the contemporary landscape of scholarship.

During the 1960s the Art Schools developed a national Diploma in Art & Design (DipAD) which was intended to be a degree-level qualification¹⁹ but they did not provide BA degrees until the advent of the Polytechnics and CNAA²⁰. The Coldstream Report of 1960²¹ had established the notional link between study of the history of art and design subjects and studio training. Scholarship within this model remained largely the preserve of the art and design historians who contributed to 20% of the teaching of students on art and design studio programmes. However the level of discussion stimulated in the post-Coldstream era, and increasing familiarity with the models of other subject domains, did give rise to the first doctoral studies in Art and Design.

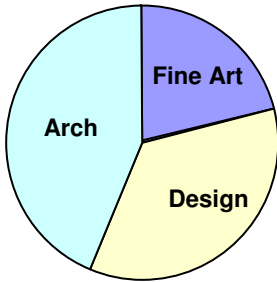
¹⁹ Woodfield (2004)

²⁰ Council for National Academic Awards, formed to validate degrees in the Polytechnic sector.

²¹ Produced by the National Advisory Council for Art Education chaired by Sir Henry Coldstream who was convinced that art education needed a strong independent voice free of the academic mainstream if it was to serve the education of young artists in the increasingly uncertain environment of the post-war period.

During 1957-75, according to the Art and Design Index to Theses (ADIT)²², the established universities awarded 38 Doctorates, the majority (26) in architectural subjects although the earliest award in the database was titled *Some recent British sculptors: a critical review*²³. Despite this start there were only 4 Fine Art theses in this first period and no evidence of practice in research.

PhDs 1975-1985 100 awards
No evidence of practice-led research



After 1975, (first CNA A thesis recorded in ADIT), PhD's started to become a part of the landscape within the Art and Design Schools. From 1976 to 1985, ADIT records 100 PhDs awarded. 44 of these were in architectural subjects, 21 in Art and 35 in Design. Among the 100 ADA PhDs in ADIT awarded between 1976 and 1985, only 23 were awarded by the CNA A²⁴.

1985-1995 saw a growing awareness of the opportunity to engage in doctoral study. From 1992 access improved when the former polytechnics gained the power to award their own degrees²⁵. The opportunity to include the outcomes of creative practice as part of a doctoral submission had been established by the CNA A in the late 1970's, and this became part of the regulations of many new universities after 1992.

During 1986 to 1995, the outcomes of practice were important components in only 2 PhDs in the Art field²⁶ but 7 of the 40 awards appear to fall within the Frayling notion of research 'through' practice with experimental methods providing the dominant strategy for investigation. Apart from these 7, all fit the model of research into practice. 5 investigate processes of making art or the media used, and the remaining 28 Art PhDs are historical, anthropological or education-orientated studies. The majority of these (21) continue to come from the 'old' universities that generally did not have established studio practice programmes within their portfolio.

²² The ADIT data does not include every PhD awarded but, more important, it is the only source which describes and categorises Doctorates in a reliable and consistent way. By contrast HESA data appears to indicate a greater number of awards in recent years but HESA subject boundaries do not fit this review.

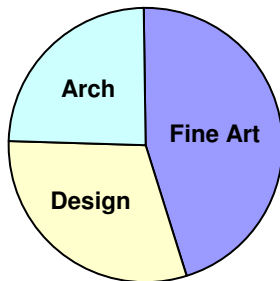
²³ Chew, B. A., *Some recent British sculptors: a critical review* (University of Manchester, 1957)

²⁴ This account draws on the analysis undertaken by Mottram & Fisher as described in the forthcoming paper: *Researching Research in Art & Design, Wonderground*, November 2006.

²⁵ Previously, under the CNA A system, approval of projects and supervisors was conducted by the CNA A.

²⁶ A visual record of the creative practice forms a central part of Douglas', 'Structure and Improvisation: The Making Aspect of Sculpture', undertaken at the University of Sunderland. Gilhespy's 'appraisal and artistic response' to Soviet sculpture, while indicating in the abstract that one chapter documents his own artistic practices, does not make it clear whether the sculptures produced formed part of the actual submission.

PhDs 1996-2005
406 awards
Growing proportion of
practice-led research



From 1996 to 2005, the largest subject in the 406 PhD completions was Art, (148) followed by Design (99) and Architecture (81)

There has been some growth in the role of practice in research, 20% of the Art PhDs in this period appear to be investigations into the processes of making or apprehending contemporary art practice. These include descriptive works and those written to accompany studio work.

The ADIT abstracts are not sufficiently clear to allow accurate judgements on the role of practice in most projects but this evidence indicates that practice led doctoral research has grown within an expanding field of study. The evidence from questionnaires (3.2.5) and other consultations indicates that the proportion of practice-led doctoral work under way today is greater than the estimate for the past 10 years.

2.4.4 *The Research Landscape*

Post 1945 development

As indicated earlier, UK academics took a lead in developing Design Research from the 1960s, starting with the assertively modernist Design Methods movement but moving quickly into a wider agenda. Bruce Archer's work, described earlier²⁷, provided an early example of design practice playing a part in a programme of inquiry, reflecting the interests of ADA academics, who then as now, were primarily drawn from practitioners within the field.

From 1975 to 1992, the CNAA Research Committee for Art & Design considered the range of research and staff development activities they would expect within Art and Design Schools. They sponsored a series of conferences that reported on early research degrees in the field and explored emerging issues of infrastructure and scope²⁸. In 1984, they noted that it was important for lecturers to be involved in research and related activities which infused teaching with a sense of critical enquiry. They saw such activities as including the following:

²⁷ As well as developing the specification for the Kings Fund bed using techniques drawn from operational research, Archer's group built and tested (in a live ward) a set of beds designed to meet their specification. This became the basis of a standard type of bed in use throughout the NHS to the present day (Lawrence 2003). The RCA bed was both a testbed and demonstration for the specification and a product in its own right, licensed to several manufacturers, demonstrating the tension between product and knowledge seen today in research that results in artefacts.

²⁸ The CNAA organised a series of conferences in the 1980s in conjunction with Middlesex Polytechnic, 1984, Manchester Polytechnic, 1987, and the London Institute in 1988. The conclusions from the two earlier events are reprinted in the publication of the proceedings of the 1988 event.

*Academic research, applied research, consultancy, professional practice, scholarship, creative work, curriculum and pedagogic research, and the development of applied, interdisciplinary and collaborative activities that are responsive to industrial and community needs*²⁹

The 1988 Matrix conference publication included a (1989) statement from the CNAA Art & Design Committee, stating that they did not accept creative work as legitimate scholarly activity, but recognised rapid growth in the reporting of such activity³⁰. The Committee distinguished between advanced creative work, important to the teaching of the creative arts, and the growing interest in research degrees. There was concern that the sector might be starting to confuse research with creative practice but the conference revealed some sensitive consideration of how approaches to research might develop.

The papers stressed the need to look at what we could usefully investigate within the discipline, rather than leaving it up to people from other disciplines to tell us about our activities.

1992

When the Polytechnics became universities, the creative work formerly reported under the research and related activities performance indicator of the CNAA was entered into the 1992 Research Assessment Exercise. Brown, Gough & Roddis³¹ state that a lot of the activity reported at the 1992 RAE was applied work undertaken within professional or industrial contexts, and note that it was the sort of activity described mostly as 'professional practice'. They considered that this work 'had been imprecisely expressed as research', as it was in fact:

...the result of applied research that had been undertaken within professional and industrial contexts,...[that] had not, until that time, been understood or articulated within an appropriate typology that located it within the academy alongside other forms of knowledge.

During the 1990's discussion about the appropriate typology for locating research and creative professional practice in ADA continued through occasional papers, conferences, and journal articles including the three-part model proposed by Frayling and Archer described in 2.3.2.

Susan Tebby, in a response to proposals for the 1996 RAE, provided a clear description of the elements of art and design practice that correlate with research³². She set out the ways in which practice is distinct from

²⁹ Bourgoird, et al (1989) Appendix 4

³⁰ Reporting of such activity would under one of the sub-headings within the report prepared for quinquennial departmental review by the CNAA

³¹ Brown, Gough & Roddis (2004) is a review of "applied research" by three art and design research leaders who were all members of the 2001 RAE panel for Art and Design.

³² Tebby (1994)

research, differentiating between research generally being understood in terms of goal and route and creative practice as about context & process. What was seen to lift aspects of practice to research was its interrogation by analysis and evaluation. She noted, but discounted, the belief that the *'principles and procedures of research are those that are likely to stifle creativity, to standardize the approach to new discoveries....'* and reiterated similarities between the practices of the creative artist and creative scientist commented upon by Frayling.

The 1996 RAE saw a greater number of Art and Design departments submitting outputs, working with the following definition of research:

Research for the purposes of the RAE is to be understood as original investigation undertaken in order to gain knowledge and understanding. It includes...the invention and generation of ideas, images, performances and artefacts including design, where these lead to new or substantially improved materials, devices, products and processes, including design and construction...

During the late 1990's, research student numbers and research activity increased, funded by the 1996 RAE and the new AHRB, which increased understanding of peer review. Questions of how far practice might be part of or lead the research process was widely debated, and notable conferences drew on contributions by Scrivener, Douglas, MacLeod, Durling and others, several of whom had been among the early doctoral completions in the late 1970's and the 1980's. There was a growing literature in the field, some of which is represented in our bibliography.

Impact of the RAE

By 2001, the importance of the RAE for institutions was well-understood, but many Art and Design academics were still uncertain about how their professional practice might become eligible as research and so provided unclear or inappropriate evidence or claims to support their outputs.

A notable feature of RAE 2001 was the strong presence of Fine Art. Fine Art academics make up 20% of the Art and Design population but 40% of submitted staff in the RAE. Exhibition-type outputs were the most significant element of Fine Art submissions (80%). (A fuller analysis of the RAE data will be found in section 3)

The RAE has had a profound effect on the research landscape in ADA but the effects are not uniform. In art and design, and some architecture departments within art and design faculties of monotechnics, the opportunity to propose diverse forms of research has been taken up with enthusiasm and has fostered a growth in interest in research and practice-led methods. The price has been that less experienced academics have formed some naïve assumptions about what constitutes

advanced research and the core of academics with a robust understanding of the problems is small as indicated in 2.4.2.

By contrast, many architecture departments, submitted to the RAE Built Environment panel, have been discouraged from submitting practice-led research and this has suppressed interest in, and development of, practice-led methods in architecture.

The debate on validity of practice-led research tends to be dominated by the question of outputs, characterised by arguments about the admissibility of artefacts in place of conventional texts. While some of this debate is irrelevant and promoted by relatively inexperienced individuals, it does appear that the nature of output, or rather contribution, may be a core issue for Fine Art in particular but also for design and architecture to some degree. We were able to develop this question in one of our workshops and this is reported in 4.4. (*The Nature of Contribution*).

Research in Professional Practice

While the ADA academic community may have difficulties, from time to time, in unpicking research practices from professional activities, some leading professionals are undertaking work which can stand up to critical examination as research. We have given the example of Ettore Sotsass and others (2.4.2.) who set out to demonstrate the concepts of post-modernism to both their peers and the public³³, earning recognition for the originality of their thinking and provoking debate and a shift in direction across their disciplines. There are many less visible examples, some concealed because of the necessity for commercial confidentiality.

In the USA, in the 1990s, leading design organisations were borrowing research techniques from ethnography to understand the lives and needs of their end users long before most design academics were aware that industry was looking for a more considered approach to the new generation of “system” or interactive products. As well as being a new aspect of professional practice, this work is frequently practice-led in the sense that some designers’ working practices move freely back and forth between the creative practices of making and refining concepts and working products and social observation practices used to investigate the consequences of putting their developing concepts into the hands of stakeholders.

³³ Arguably Sotsass overcomes the objections posed to other leading practitioners being awarded the status of researchers (the Picasso’s PhD debate) because he developed his work with an explicit intention to explore post-modernism in design and he made his work public in that context.

Examples of these approaches can be found in the work of the IDEO group³⁴ who are unusual in their willingness to publicise their methods. Designers in the evidence-driven field of medical products and pharmaceuticals are also developing “designerly” research practices. Karel van der Waarde, a designer of drug packaging in Belgium, used his (UK) PhD studies to analyse the “life-cycle” of a medicine in use and has developed an approach to professional work that combines creative designing and making with studies of effectiveness which turn his professional work into exemplary practice³⁵. Team Consulting, a British company designing drug dispensing products such as inhalers, describe their practice as combining playfulness and rigour³⁶. They use the full repertoire of the creative designer to invent and refine design ideas but balance that traditional practice with continuing engagement with users within their design environment. Both of these examples come from designers who must convince their clients that their approach to usability and effectiveness is as appropriate as the clinical trial methods used to develop the medicines they package.

In Architecture there is a long tradition in the UK of carrying out research in practice. Indeed to maintain a distinctive profile in the marketplace, it is almost a requirement for the most innovative practices to develop new ideas and methods through research. At one end of the scale, groups such as Foster and Associates maintain research departments, in Foster’s case concentrating on new materials and complex geometries. At the other end of the scale smaller emerging practices such as dRMM (de Rijke, Marsh Morgan) or FLUID define themselves through their original research, the former into materials, the latter into issues of participation. However, much of this research remains tacit; it is either, for commercial reasons, not shared with the rest of the community or else, in its dissemination through the press, is not communicated with the rigour it deserves. For the leading practices intellectual property is what defines them and sustains them, and understandably they are loath to give it away. Research goes on, but silently.

Fine Art, as the third leg of ADA, has a different character for the reason that the great majority of Fine Art academics cross freely between the professional and academic settings³⁷ and many seek to produce work that has relevance as creative practice and also serves the academic

³⁴ www.ideo.com

³⁵ Email conversations with C.Rust during 2006

³⁶ Interview with C.Rust 31/10/05

³⁷ It is argued, for example by Johannes Birringer in his summary of our online workshop, (**Error! Reference source not found.**) that this is absolutely necessary for research since the resources and public engagement of the professional practice environment cannot be reproduced in most academic settings.

agenda. This is both a pragmatic approach (life is too short to maintain two separate practices) and an expression of the artist’s motivation to produce art whatever the circumstance. It is also an opportunity that has been taken by some academics to develop new practices in the professional environment but, with the alternative peer review framework provided by research, free of the limitations of the market system.

Infrastructure – Dissemination

In this climate, where professionals choose to play down the research they do or disseminate it in professional settings that lack the particular critical rigour of an academic journal, it is not surprising that the ADA subjects suffer from a lack of the kind of scholarly publishing infrastructure that is taken for granted in most disciplines and this is very clear from the RAE 2001 data for three “synthetic” disciplines:

Refereed Journal Outputs in RAE 2001		
General Engineering	Built Environment	Art & Design
93%	60%	9%

This situation is underscored by analysis of journal articles submitted in Art and Design - 820 papers were submitted from almost 500 journals. In one way this underscores the interdisciplinarity of the research, since these journals represent a great diversity of subject domains where designers, in particular, had contributed to research. But from the perspective of building a scholarly infrastructure it indicates that Art and Design academics, and those architects who seek to develop practice-led research, are not in control of their own destiny, especially as the gatekeepers for other forms of output - exhibitions, products in manufacture, buildings etc - are rarely motivated by research criteria.

This problem cannot be wished away, interdisciplinarity puts a limit on the proportion of discipline-specific publishing that can be developed³⁸ and artists are determined to use modes of dissemination that do not compromise their creative practice. However design and architecture are developing some new research publications and we indicate (4.4) an agenda for considering the problem of contribution in Fine Art research.

2.4.5 **Conclusions**

The landscape of research in ADA has seen considerable development in recent years including growth in doctoral research and practice-led research. There is some thoughtful engagement in mapping typologies

³⁸ One leading design theorist, Richard Buchanan (1992), has suggested that design is the “last liberal art” implying that we need to sustain its breadth and applicability to many contexts, rather than seeking to close it into a disciplinary ghetto.

to describe approaches to activity and some ongoing confusion about the point at which creative practice becomes valid as a research activity, despite a number of models for locating creative practice within a research context. In Fine Art some still see the outcome of artistic practice as the prime objective of creative 'research'. Art outputs via exhibition dissemination continue to dominate the field, but it is uncertain to what extent these are then entering into the cycle of reference and citation that forms the bedrock of scholarly activity. Professional practitioners engage in some valid research but do not tend to share their inquiries with their peers and they do not, generally, recognise the role of the academy in developing the field. ADA Academics lack a coherent publishing infrastructure but interdisciplinarity sets a limit on the degree to which such an infrastructure might develop.

3. **Data**

This section provides an overview of the data collected, including statistics from existing sources, results from our own surveys, experts' experience and opinions and observations from our engagement with the academic community. It also describes the main data-gathering activities.

It includes key statistical data and outlines of the qualitative data that is covered in more detail in the appendices

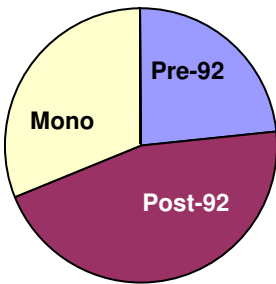
3.1 Measures of Activity

3.1.1 Scale of Academic Activity

RAE 2001 provides a guide to the number of staff in Art and Design and, to some extent, in Architecture³⁹. We have assumed that numbers today will be broadly the same, although there is some growth in these subjects this may be offset by changes in staff/student ratios.

Types of Institution

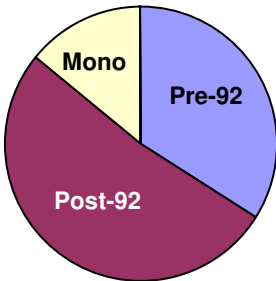
The first chart indicates the spread in research activity between the three types of art and design institution discussed in 2.4.2. (The Institutional Landscape). It is based on staff numbers in leading research depts.



Research-active staff in 4 & 5 rated depts, UoA64 (Art and Design) 2001

Pre-92 Univ. (FTE)	Post-92 Univ. (FTE)	Monotechnic (FTE)
256	489	341

Fig 3-1. Research activity by type of institution (A&D)



The same data is not available for Architecture but it is possible to indicate the distribution by numbers of depts.

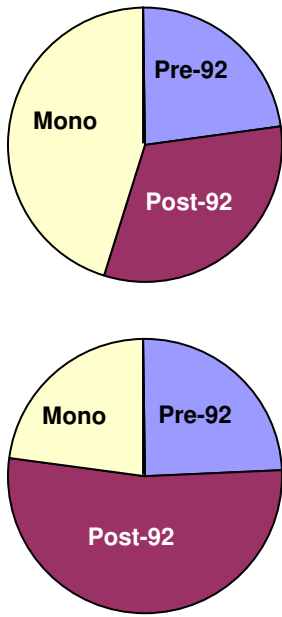
Distribution of Architecture depts 2006

Pre-92 Univ. (FTE)	Post-92 Univ. (FTE)	Monotechnic (FTE)
12	18	5

Fig 3-2. All Activity by type of institution (Architecture)

³⁹ it is difficult to isolate Architecture from Built Environment in in the RAE and some other sources

Here is the Art and Design data in more detail



Rating	Pre-92 University (FTE)	Post-92 University (FTE)	Monotechnic (FTE)
5	Goldsmiths College (49)	Bournemouth (7)	The London Institute (141)
	Open University (14)	Brighton (54)	Royal College of Art (48)
	Reading (Typography) (9)	City University (3)	
	UCL (23)	Sheffield Hallam (26)	
		University of Wales College, Newport (7)	
		Ulster (33)	
4	Brunel (30)	UCE (40)	Wimbledon (40)
	Loughborough (35)	Coventry (Design) (8)	Edinburgh (46)
	Newcastle (9)	De Montfort (54)	Glasgow (66)
	Oxford (8)	East London (14)	
	Southampton (21)	Manchester Met (28)	
	Dundee (58) ⁴⁰	Northumbria (45)	
		Kingston (16)	
		Staffordshire (26)	
		Sunderland (29)	
		UWE (22)	
		Westminster (32)	
		University of Wales ⁴¹ Institute, Cardiff (35)	

Fig 3-3. 4 and 5 rated institutions in RAE 2001 - Art and Design

Numbers of staff

From the RAE 2001 data it is possible also to estimate the number of academics in Art and Design, since the RAE results indicate the proportion of research active staff in each dept. These are the numbers for the whole sector, indicating that 47% of academics are “research active” in terms of the RAE. However the proportion of academics with the experience to undertake independent research in terms of the AHRC’s remit is probably much lower at around 20%⁴²

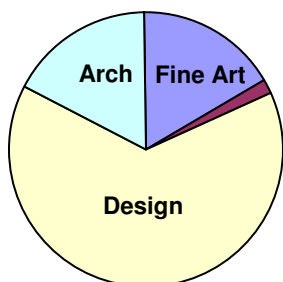
Research Active FTE	Research Active Individuals	All Academics FTE	All Academics Individuals
1669	2526	3563	5394

Fig 3-4. No of Academics in Art and Design in 2001

⁴⁰ Strictly speaking Dundee University should be regarded as a post-1992 University for art and design since it incorporated Duncan of Jordanstone College of Art in 1994.

⁴¹ UWIC and UWC Newport have been included here since they were part of the non-university sector before 1992 and have a great deal of autonomy within University of Wales.

⁴² This is a very sensitive issue. To test it we contacted the heads of research in 5 institutions, in confidence (several others were unwilling to comment), and asked for an estimate of the proportion of their staff who would be able to take responsibility for postdoctoral research in AHRC terms. They agreed that this was a much lower figure than the numbers submitted to the RAE and their average estimate was 20% of staff.



The division of Art and Design academics between disciplines can be estimated from the HESA undergraduate data if we assume that staff student ratios are similar. The number of Architecture academics cannot be calculated from RAE data but the overall academic numbers are available from the RIBA Education Survey 2005.

	Fine Art FTE	Crafts FTE	Design FTE	Architecture FTE
Students ⁴³	13,500	1,205	50,425	(11,285)
Staff	738	67 ⁴⁴	2,758	760

Fig 3-5. Estimate of academic numbers across ADA

Comparison with other disciplines

Fewer Art and Design depts (in AHRC panel 2) have high RAE ratings and they have half the number of professors compared to other AHRC disciplines

AHRC provide some data which compares Panel 2 disciplines (Visual Arts and Media) with the whole of their domain⁴⁵ and gives some indications of a less developed research culture.

62% of Panel 2 academics work in RAE 4/5/5* depts compared to an average of 80%. No Art and Design departments received a 5* rating in RAE 2001. A similar picture is presented by the other main “creative” group in panel 8 (Music & Performing Arts) with 61% in RAE 4/5/5*

There is evidence in the mix of staff too. While panel 2 depts have similar numbers of junior (L) staff to the average they have half the number of Professors (10%) compared to the average (20%)

3.1.2 Isolating Practice-Led Research

As we have indicated in the introduction, there are no clear boundaries to practice-led research and we do not think it would be possible to arrive at an uncontested measure of the amount of practice-led research activity in the different disciplines. However it is important to establish the scale of activity in general terms at least.

The data we have reviewed indicates that practice-led research is a significant part of the research in these disciplines, particularly in Fine Art, where it is the greater part of the activity. As with other questions, data for Architecture is more difficult to isolate.

⁴³ Source: HESA undergraduate enrolment data for 2004-05

⁴⁴ Generally the information about Crafts and Applied arts is confusing and it is difficult to determine whether some activity is concealed within Design or even Fine Art

⁴⁵ AHRC Performance Management Scorecard: 2005/06. (http://www.ahrc.ac.uk/about/delivery_plan.asp)

Presence in RAE

RAE – non-text outputs
68% of Art & Design
3% of Built Environment

To start with the 2001 RAE data, an analysis of types of output indicates that 68% of submitted outputs in Art and Design are in forms that give a strong indication of being practice led (eg exhibition or product). This is a useful indicator of large scale activity but it must be noted that, on the one hand many practice-led design projects result in conventional publications and on the other hand the RAE rules allow a wider range of activity to be included than AHRC would regard as research in its terms. In Built Environment, which includes Architecture, 3% of RAE outputs are in forms that indicate practice-led research but some Architecture outputs were included in Art and Design submissions.

Research funded by AHRC

More detailed information is available from work funded by AHRC/AHRB. We examined records of projects in the period 1998-2006 and identified 666 projects in areas that include the practice of Art, Design or Architecture. The main schemes are Research Grants, Fellowships, Research Leave and Small Grants in the Creative and Visual Arts.

AHRC Awards
105 of 666
indicate “practice-led”

Actual ratio is probably at
least 200 of 666

Some schemes, at some times, have asked applicants to indicate that the work is “Practice-Led” but this data was not collected consistently during the period we examined. Nevertheless 105 successful applicants have indicated that they see their research as practice-led and, given that a large proportion were not asked, and others may have overlooked the question⁴⁶, this indicates that a substantial proportion of this activity, possibly even a majority, is practice-led in some way.

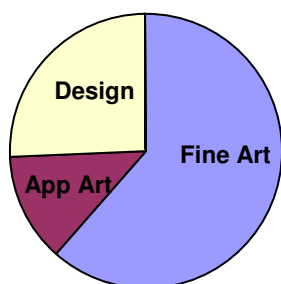
It was not possible to examine the disciplinary split across the full set of data since a great many projects from earlier years are listed under a very broad category of “Visual Arts”. However we have analysed the data for a substantial sub-set where a rough indication of discipline is available, as well as reviewing a smaller set of projects in greater detail, including a qualitative analysis.

**AHRC Award
case examples**
52 of 75
were “practice-led”

To start with the smallest set, where we are completely confident that we are examining practice-led work, a group of 75 successful funding applications were inspected, chosen to provide a spread of subject category and scheme. Of these, 52 (70%) were found to include a significant element of practice in their methods and were analysed in detail as described in 3.2.3.

⁴⁶ Until recently an answer was not required and it is not clear whether a missing answer is a negative or a non-response

The practice disciplines represented in the case examples were:

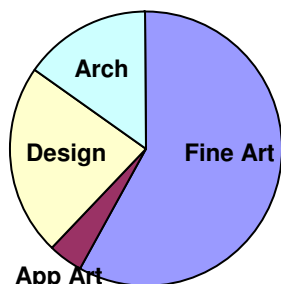


	Projects	Total value £	Average Value £
Fine Art	32	1,875,249	58,602
Applied Arts	7	400,560	57,223
Design	9	790,452	87,828
Architecture ⁴⁷	0		
Others ⁴⁸	4	99,263	24,816
Totals	52	3,165,523	60,875
All ADA Awards	666	28,740,641	43,154
All Awards ⁴⁹	1573	74,962,291	47,656

Fig 3-6. Subject distribution of AHRC award case examples

Our main observation is that Fine Art is heavily represented and the average value of projects is in the same general region for the three main groups. The average value is higher than the average for all awards and this is probably because small grant awards are under-represented in our sample.

Here is the same analysis of all awards where Art, Design and Architecture can be distinguished from the AHRC categories. It shows a generally similar picture:



	Projects	Total value £	Average Value £
Fine Art	100	5,545,836	55,458
Applied Arts	10	394,982	39,498
Design	45	2,186,517	48,589
Architecture	16	1,477,629	92,352
Totals	171	9,604,964	56,169
All ADA Awards	666	28,740,641	43,154
All Awards	1573	74,962,291	47,656

Fig 3-7. Distribution of AHRC awards between ADA subjects

Again Fine Art has a large proportion of the funding, the Applied Arts figure may be lower because this is not a well-defined category - in the 52 case examples we were able to identify applied arts/crafts projects that may not be categorised as such in the data. Architecture is present in this set but the biggest elements in the architecture group are 2 resource

⁴⁷ The sample included Architecture projects but the proportion was small and none were in the practice-led category.

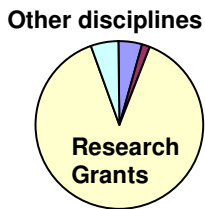
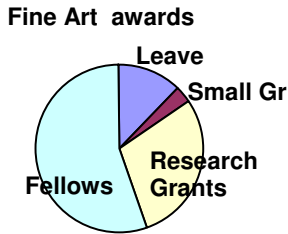
⁴⁸ “Others” were examples of curatorial practice and investigations into technical process relevant to a wide range of creative disciplines. Generally it was not straightforward to isolate the disciplines since the boundaries are blurred and the professional orientation of the researcher may not be straightforward.

⁴⁹ This global figure appears to include a number of duplicate records so the actual total will be lower than this but of the same order.

enhancement projects and 8 research grants, the titles of which indicate that they investigate history (7) or methods (1) and are not practice-led.

Uptake of AHRC schemes

Using the subset of awards where discipline can be identified from the AHRC category, we examined the pattern of awards to see how different disciplines used the main AHRC schemes. The pie charts on the left indicate the big difference between Fine Art and the other ADA disciplines in take-up of the various ARHC schemes, with Fine art having a strong emphasis on Fellowships in the Creative and Performing Arts.



	Research Leave	Small Grants	Research Grants	Fellowships
Fine Art	586,476	156,556	1,342,473	2,596,067
Applied Arts	0	36,493	204,789	0
Design	62,650	10,185	1,258,404	0
Architecture	56,577	5,340	880,293	141,480

Other sources

The literature review, which includes some partial surveys of practice-led research, also indicates that practice-led research is a significant presence, accounting for more than half of activity in some areas, especially in Fine Art⁵⁰.

⁵⁰ For example London Institute (now the University of the Arts, London), the largest provider of Art and Design postgraduate education in the UK, had 135 PhD students in 2003, more than half of whom were engaged in practice-led research. At one of the London Institute Colleges (Chelsea), 19 of 22 PhD projects were practice-led. (Watanabe 2003)

3.2 Consultations with the academic community

3.2.1 *Project Group Workshops*

Workshops were small group events, with invited participants who were experienced academics, including members of the wider project group.

The initial project group workshops did not generate any significant data in themselves but were used to first identify questions and issues to be explored in the consultation and later to identify and clarify the questions to be used in collecting and analysing case examples. That is described and explained in 3.2.2. and 3.2.3. below.

A further workshop was held towards the end of the project, with participants from fine art, to explore issues raised, in all our consultations, by academics who feel that existing paradigms of research are not helpful for their work. Throughout the consultation we were aware of this problem but it was difficult to address in an open arena, such as the online conference, which included a relatively large number of inexperienced researchers.

This workshop produced a large amount of material drawing on the experience of participants and informing our discussion of issues and our recommendations. This is summarised in Appendix B. It also developed a position on the nature of outputs and contributions which we believe to be an important clarification and this is discussed in 4.4. (*The Nature of Contribution*)

3.2.2 *Town Meetings*

Town meetings were large events, held early in the project, open to all interested parties. They were well-attended by a wide range of researchers ranging from Deans and Heads of Research Centres to PhD students. They served two purposes: to allow participants to record and discuss issues and problems and to gather in ideas for the questions that might be applied to examples of practice led research, to inform the mapping work.

These meetings, and the conclusions drawn by the review group in project meetings to analyse the debate, are summarised in Appendix A.

3.2.3 **Case examples**

We sampled three sets of case examples. Project descriptions sent in by contributors, examples of AHRC funded projects and projects funded outside the research environment by NESTA⁵¹

The examples submitted by members of the community were collected via our website. As well as asking for descriptions of the projects under several headings that relate to the AHRC and other frameworks for research, and images that indicate the nature of the work, we asked a series of scalar questions designed to locate the work against ideas about practice-led research developed in our workshops and Town Meetings.

Cases from the community

The topics for these 38 examples were diverse, including textile design, software development, CAD and physical modelling methods, innovation culture, children's obesity, musical instruments, polymer technology, pornography, communication disabilities, telematic art, historic glass techniques, relationship between graphics and creative writing in book production and relationship between school architecture and pedagogy,

The full account of each case can be found in Appendix F. Apart from two examples where it was not clear what role practice took in the inquiry, the case examples all appeared to be valid as practice-led research.

The outcomes and methods were also diverse. *Wolfgang Jonas* provided two examples of developing operational models for small companies where the professional practice involved was itself a good example of research-led designing. Jonas is one of the few international examples and a distinguished figure whose references range from his background as a craft-led designer in former East Germany to work in contemporary industrial settings.

Daria Loi, an Italian designer who studied for a PhD in Australia and has gone on to work in the USA for Intel, has developed research that explores the needs of collaborative practices, embodying the research in a famously "designed" thesis in which a diverse collection of materials, developing the concept of cultural probes, are packed into a suitcase intended to provide an engaging means to explore the theories and practices she has developed.

As a complete contrast to these "industrial" examples, *Jill Gibbon* employs drawing as a method of reportage, operating as a participant observer in political action as a peace campaigner. Her research includes an examination of the reception of this work, in both mainstream and

⁵¹ National Endowment for Science, Technology and the Arts

“alternative” media, in relation to discourses of contemporary and historical war reportage. She also analyses her own experience as the “reporter” in the light of a critical reading of the notion of “witness” in war art and reportage and is seeking to contribute to both art theory and the practice of visual reportage. The drawings produced during the research have been shortlisted for a Jerwood prize indicating a high level contribution to practice and gainsaying the fears of those individuals who imagine that engaging in academic inquiry might undermine their ability to function as artists.

The architect, *Victoria Watson*, has undertaken research that aims to “examine and evaluate (Henri) Lefebvre's accusation that (Mies van der Rohe's) architecture was the manifestation of ‘the worldwide, homogenous and monotonous architecture of the state’.” Her research proceeded through making a lattice structure of cotton thread that reproduced only the grid of Miesian architecture and revealed complex spatial effects leading to a new large scale proposal, the ‘Cotton Caves’ designed for Stevenage Town centre with “vibrant optical properties” that bring warmth to the “cold body of the town. The work contributes to the debate about Modern Architecture and Mies van der Rohe but it also creates new spatial phenomena that go beyond the original intention of the work.

Paul Reader, of University of New England in Australia, has provided a description of the project “It was like a movie” in which he explores effects of juxtaposing video images following reflections on how the writer Gary Krug formed a particular observation (on 9/11). Reader's account is a highly personal one which avoids making a direct response to the questions asked in the case study template. In this he is consistent with his contributions to the online debate where his position was to challenge the preconceptions bound up in the conventional models of inquiry. He asserts very strongly “that a practice based research act can precede formulation of a research question. It also begs the question as to what constitutes a methodology?” His position is self-consciously and assertively outside the mainstream but it prefigures the issues debated below in 4.4

Kristina Niedderer, a German metalworker who undertook a PhD in the UK, has explored the concept of “performative objects” that stimulate particular behaviours and “mindfulness” in their users. The research, “A Study in Designing Mindful Interaction Through Artefacts,” set out to analyse and define the concept of the performative object through conceptualisation, making and comparative evaluation of objects intended to have performative properties. She describes her research as a “naming and classification” study but it has the unusual aspect that, while it is

possible to identify performative objects that exist already, she has set out to create the matter that she is classifying.

Lionel Dean's Doctoral project "Future Factories" develops the notion of 'mass individualisation' (more usually called mass customisation) in which modern techniques allow the production of one-off industrial products. This notion has a number of problems, not least the difficulty of producing satisfying unique designs economically, whether produced by an individual or a professional. Dean's proposition is to develop a "generative" design that uses evolutionary algorithms to introduce a random element which might nevertheless remain true to the designer's intent. The value of the work is indicated by the acquisition of one of Dean's pieces by the New York Museum of Modern Art (MoMA) as well as a series of refereed publications.

Finally John Lindsay's project "Green and Smart" indicates that there is interesting work that has yet to connect fully with the academic arena. Lindsay and others have conducted a long-term examination of urban mapping and notations that could engender a shift in behaviour in favour of "greener" travel. This work has been exhibited and demonstrated to a wide variety of audiences but it has yet to have impact in either the professional or academic arenas. It examines the relationship between information design and the institutions of engineering, planning, politics and arguably it fits well with the current interest in interdisciplinary research and practice. While Lindsay's propositions may be difficult to "sell" in the short-term environment of professional practice they could find more fertile soil in an academic setting as long as the protagonists are able to frame their work in terms that will be recognised by the wider community of academics. While we might sympathise with Paul Reader's rejection of conventional structures it is arguable that practice-led research needs to map itself against those structures if it is to have a full role in the academy.

Significance of Doctoral Projects

A high proportion (50%) of the 38 projects are from PhD projects. From our observation of debates and our consultations we can speculate that this may have several causes:

Firstly we have observed directly and through the responses of the questionnaire surveys, that those who have completed or are well advanced in PhD studies are among the most confident and articulate members of the ADA research community, with a clear understanding of the need to disseminate your work in an academic setting, compared to "undoctored" mid-career academics and those approaching doctoral study.

It is reasonable to assume that they will be more ready to take any opportunity to demonstrate their work.

Similarly we may speculate that this group are the beneficiaries of the growth of understanding of practice-led research, referred to by Owain Pedgley below where he explains how the lack of confidence felt by him and his supervisors in a very early practice-led project has been dissipated by the more recent growth of exemplars and shared practices, promoted, for example, by the inter-university research training schemes funded by AHRC.

Finally, we can also speculate that the large number of “research active” academics entered in the 2001 RAE includes many whose work might be presented as directed inquiry but whose ability to conduct independent inquiry and expose it with confidence to their peers might be in question. This was supported by our follow-up to the institutional survey (Footnote 42 above) which indicated that less than half of “research-active” staff were able to work independently within formal research frameworks such as peer-reviewed funding.

International Implications

The case examples are predominately (82%) from the UK. However the audience from which they were requested is the same international audience that engaged with questionnaires, online workshop and the project mail list where the ratio of UK participation was around half (eg 56% of survey responses). While we cannot put too much significance on this absence of non-UK evidence, and the project was of more relevance to UK people, nevertheless it does indicate that the UK has a large share of the visible activity in this field and the large number of “observers” from other countries indicates interest in what we are doing. The examples also appeared to include 5 PhD projects by international students in the UK, the same number as contributions from other countries.

In the absence of international case examples it is difficult to be certain about the spread of activity. However our impression through the various aspects of this work, supported by anecdotes encountered in past debates, indicates that the main focus of practice-led research is to be found in Northern Europe (particularly the UK and Scandinavia) and Australia.

One factor noted in expert papers concerned with doctoral education in design is the effect of different validation regimes. At the La Clusaz Doctoral Education in Design Conference, contrasting papers from the UK and USA pointed to the rigidity of the US regional system of validating

PhD Programs which inhibited innovation⁵² and the more fluid UK system of institution-wide validation which allowed new developments in both research focus and research methods⁵³. A further example from University of Barcelona⁵⁴ indicates a system which favours predetermined departmental programmes of research.

Birth pains of practice-led research

Dr Owain Pedgley provided a significant example. He undertook doctoral research at Loughborough University in the mid 1990's, the first practice-led design research project undertaken at Loughborough, supervised by engineering academics who had to develop their approach from scratch. From earlier published work⁵⁵ it appears that the project group were led into an over-convoluted approach. This was prompted by a methodological prescription published by theorists who may not themselves have engaged in practice led research, or who were imagining a quite different scenario to the one emerging at Loughborough. The project was making a straightforward contribution to knowledge of aspects of technology and musical instrument design supported by thoughtful qualitative methods but the PhD was framed as a piece of reflective practice that played down the true contribution. Pedgley comments:

With the benefit of hindsight, and the research discussions that have been held in the period since submitting the PhD, I would now be confident to supervise practice-led design research directed solely at product innovation (e.g. pushing technology for non-wood musical instruments forward). In 1995, neither I nor my supervisory team were brave enough, informed enough or armed with sufficient examples to take that route. Things have moved on very positively since then

Perceptions and focus of projects

Looking beyond our own qualitative observations on the examples, the analysis of the scalar questions revealed some issues:

Project is an investigation of the discipline....

....an investigation of something outside the discipline

A majority of projects was described as investigations of the researcher's own discipline but 5 were clearly investigations of something outside the discipline, with 3 positioned at the point of balance between the two propositions.

Project arises in a professional/creative context....

....arises in an academic context

Examples from fine art were described as arising in a professional/creative context whereas those from design and architecture were positioned at the point of balance, except one example (Pedgley) which was located in the academic half

⁵² Kroelinger and Giard, 2000

⁵³ Scrivener 2000

⁵⁴ Rust 2003

⁵⁵ Norman, Heath & Pedgley (2000)

<i>Practice is central to the research....</i> <i>....practice supports the research</i>	The majority of projects described practice as being central to the research activity. 7 design projects described practice as playing a supporting role in the research
<i>Practice is a site for reflection....</i> <i>....practice is a means of production</i>	Projects are fairly evenly spread between reflection and production, but with a cluster balanced in the middle, reflection was mainly Fine Art, Production was mainly Design.
<i>The investigation is secure....</i> <i>....investigation is risky</i>	3 distinct clusters: two at the extremes of risky or secure with a third group in the middle. Design projects were found in all three areas. No fine art investigation was described as being predominantly risky. The “risky” examples were all investigations of the discipline.
<i>The investigation is generative....</i> <i>....investigation is analytical</i>	Only 3 investigations are described as being predominantly analytical. 8 are clustered in the centre suggesting both generative and analytical elements. The remainder are clustered towards the generative end of the spectrum. No differences between disciplines
<i>uses a single set of theory/ methods....</i> <i>.... uses a wide range of theory/ methods</i>	Most projects used a wide range of theory/methods, 3 were at the point of balance and one used a single set of methods
<i>. Responds to questions</i> <i>.. Identifies questions</i>	Projects are evenly spread but there are no projects situated at either extreme. 5 are located at the centre. Fine art tended to be more focussed on identifying questions rather than responding.
<i>Product of the research is artefact....</i> <i>.... Product is understanding of process</i>	A cluster of 8 projects is located at the balance point. The remaining are divided between artefact and process. 3 are described as being entirely artefact, no projects are located at the opposite extreme indicating a reluctance to claiming a purely process output even though some of the examples seemed to be claiming that in their descriptions
<i>Outcomes are explicit....</i> <i>.... Outcomes open to interpretation</i>	Design outcomes mainly in the explicit end and Fine art mainly open to interpretation Most contributors were able to be explicit about the contribution of their research but one example summed up the problem of contribution in art research. The section on contribution to knowledge / understanding / practice started with the word “hopefully” and went on to discuss the possible impact of the work. The research was purposeful and methodical but so far it has stopped short of knowing its contribution. Some other examples had similar problems and dealt with it by describing the audience for the artwork. Elsewhere we have discussed this problem as a potential research question. (4.4)

AHRC Cases

Statistical data from the AHRC cases, on disciplines represented, amounts of funding etc, can be found in earlier sections of this data

chapter. We also examined the AHRC Cases against the same criteria as the invited examples above, the main difference being that we could apply the questions consistently rather than depending on how individual contributors interpreted them. The weakness is that the analysis relied on the descriptions supplied in the research proposal:

- In a large majority of examples (71%) the creative or professional practice was the central or only instrument of the research. In the remainder it formed part of a mix of activities. This agrees closely with the submitted examples. This observation is consistent over all disciplines.
- There was an even balance between investigations of the discipline (eg Alison Clarke's investigation of the nature of video portraits in relation to historic portrait techniques) and investigations of something outside the discipline, (eg Snol Snelvelt's work on how neuroscientists might provide better representations of their knowledge).
- The majority of inquiries (59%) appeared to arise in a professional/creative context. 27% came from an academic context and the remaining 14% were balanced between the two.
- We looked at whether the research was advancing an existing paradigm or challenging orthodoxy. It was not surprising that the great majority (70%) appeared to working with an existing paradigm in terms of the contribution to knowledge and a very small number (4 examples) appeared to be challenging orthodoxy (eg work by Mohini Chandra that explores alternative ways to tell histories of colonialism and Graham Whiteley's investigation of entirely new concepts for the construction of artificial limbs). The remainder (23%) were in the middle of the range, indicating some challenge to existing thinking.

In contrast, the majority of people who submitted case examples to us asserted that they were challenging orthodoxy, possibly an indication of how artists and designers perceive themselves and their creative practice rather than a true reflection of their research aim.

- We also asked whether the research was responding to questions or identifying them, since it has been claimed that art practice is better at doing the latter. Approximately half of the projects were firmly in the mode of responding to specific questions but nearly as many had at least some evidence of raising questions as well as answering them. (eg projects that develop novel techniques for creative practice or forms of communication that question perceptions in other disciplines)
- In half of all cases the main practical outcome of projects was an artefact. A smaller number (31%) resulted in understanding of process with 17% balanced in between. While there is no fundamental reason

why an artefact should not embody a contribution to knowledge if properly contextualised by a supporting text this is a contentious area. In 4.4. we have suggested that positioning the exhibition or other practice output at the end of the project can be problematic for both methods and dissemination.

In looking at the examples from different research funding schemes, while the AHRC files do not tell the whole story, it appears that the main research grant scheme has engendered an increasingly high quality of proposal, with some weaknesses in the very early years disappearing over time. The Research Leave, Small Grants and Fellowship presented a less confident picture and we note that AHRC has made some a number of changes to these schemes.

NESTA Cases

We reviewed 30 projects funded by NESTA (National Endowment for Science Technology and the Arts) to see how projects by professional practitioners, selected by NESTA for their innovative quality, compared with the academic examples.

The projects ranged in length from 9 months to 5 years, the average award was £77,550 (ranging from £3,000 to £225,000) and the award holders included artists, designers and architects.

The projects were all valid examples of innovation and all could have been carried out within an academic research setting. The main differences observed were that the work was not set in any explicit theoretical or critical framework, or wider context of innovation or knowledge development and the descriptions of projects provided by NESTA followed the practice (found widely in art and design practice) of extravagant claims for the achievements of practitioners. The material provided by NESTA was written *about* the practitioner rather than by them so it was impossible to tell how far the award holders owned the ambitious narrative provided to describe their work.

However all those criticisms could be made of the position of some ADA academics, evidenced for example in criticisms of some RAE submissions⁵⁶ and all the NESTA projects had potential to contribute to knowledge, for example Giles Revell's use of photography to reveal the structure of insects in a project funded by the NESTA Art/Science scheme⁵⁷. Several projects made claims to have influenced the thinking of scientists as well as producing new creative works.

⁵⁶ Brown, Gough & Roddis (2003) have discussed the problem of straightforward practice proposed as research in RAE submissions.

⁵⁷ <http://www.nesta.org.uk/ourawardees/profiles/1414/index.html>

There is a difference between NESTA and AHRC-funded work which can be seen in the scholarly disciplines enforced by research degree frameworks and the peer review system, and the research culture developing in some ADA departments. Without those there would be little difference to observe between the work carried out under the NESTA umbrella and work by ADA academics and it is important for academics to recognise this.

3.2.4 **Online Workshop**

Three weeks of moderated e-mailings have cultivated a set of voices as familiar as presenters on Talk Radio. I tuned in whenever I could and when I could not keep up with the daily instalments I printed out chunks of correspondence to read at leisure. Thank goodness for the JISC archive of these exchanges.

Althea Greenan

The online workshop took place in June 2006 and was intended to explore specific questions that had emerged in the earlier consultation. Fuller details of this event can be found in Appendix B. 59 people from 12 countries took an active part in the debate including 38 from the UK. A further 200 people joined the online audience for the event.

The workshop had three one week sessions each with a discussion topic:

1. Relevance to Professions and Society.
2. Development and Impact of the PhD
3. Themes and Characteristics of Practice-Led Research

There was also a continuing theme throughout the workshop:

Being an Academic

Each weekly session was launched by invited “speakers” who provided a short position paper to stimulate discussion and raise questions. The discussion was moderated to ensure that contributions from participants were of manageable length and kept on topic.

While the debate was very lively and covered a wide range of issues, it was more useful in airing issues than resolving them. However the event concluded with a request to participants to submit summaries of the issues that interested them and this resulted in contributions from 23 people who took a more measured and constructive position on the discussion. Some significant points that arose were:

Necessity of engaging with practice outside the academy

Johannes Birringer⁵⁸ argued that the academy does not generally provide the environment or stimulus for advanced creative work.

I have not always found such sustainable and exciting/challenging research conditions in the academic universe (challenging in the sense in which artistic experimentation and innovation necessarily involve and require a heavy-duty peer to peer context of artists exchanging knowledge and ideas and impelling each other to do new and better work, rehearse with each other, test each other's assumption and subject them to critique and then to the critical eyes of the public. audiences, markets), and thus I often prefer to create them outside

Phillip Hughes commented in a similar vein that star practitioners in architecture were pre-eminent role models because they had the resources to conduct live projects with very tangible, visible results. Academics did not have the same opportunities to demonstrate their thinking.

“Posttheorisation”

Birringer's use of this term was challenging but a useful reminder that it may be necessary for the creative disciplines to assert the need for an open-ended, uncertain process when developing new work. Katy Macleod⁵⁹ made a similar point

The logic comes after the event. After the rendezvous, as Duchamp would have it, the co-efficient of the gesture (object?) and its interpretation

In the Fine Art workshop, taking up this point, we considered the problem that an exhibition was often regarded as the appropriate end point for research and agreed that an approach that allowed for reflection and other directed forms of evaluation to follow on from the creative work, rather than relying principally on reflection in action, might help to unlock the problem of contribution (4.4. *The Nature of Contribution*)

Journeyman & the Craft Guild Model

Ken Friedman⁶⁰ raised the issue of the journeyman nature of the PhD which was taken up by a number of contributors who emphasised the need for a supportive community, perhaps reflecting the newness of doctoral training in many ADA institutions. (Respondents to the Research Experience Questionnaire indicated that that less than half of those who held a doctorate had been part of a supportive group of peers during their doctoral research). Friedman also pursued a similar “craft” theme elsewhere in the workshop, in using the metaphor of the closed Craft Guild to contrast with the commitment to shared development of

⁵⁸ Chair in Drama & Performance Technologies, Brunel Univ, UK

⁵⁹ Exeter School of Arts and Design, UK

⁶⁰ Norwegian School of Management and Denmark's Design School

knowledge expected of the academic community. This was a valuable tool for identifying when practice was not contributing to research.

Basic Requirements for research

Friedman also asserted the importance of a common set of requirements for the conduct of research that go beyond any one discipline (as represented by the AHRC definition of research):

Practice-led research must necessarily meet the conditions for any form of research.

However as described above, this position was challenged by Katy Macleod who questioned assumptions about contributions (4.4.). Arguably the classic descriptions of research still hold true but some of the assumptions which are used to interpret them may not be helpful to some researchers in ADA.

Professional Doctorates and Practice-led PhDs

Ranulph Glanville⁶¹ described the Architecture PhD by invitation programme at RMIT University - a practice-led programme in which practicing architects engage with questions of practice. This programme is widely admired for its rigour but it also questions the concept of contribution since the focus of the research is directed towards the work of the participants, despite the focus on putting the research in its wider context. It may be that this programme fulfils the requirements of a professional doctorate in the UK sense of “research in the service of practice”. However the debate about this issue is confused by assumptions in many countries that professional doctorates are, or should be, awarded for advanced practice.

Motivation for practice-led research

Althea Greenan⁶², who is an artist and archivist (of an art collection), stated that she would not have undertaken doctoral research without the opportunity to conduct practice-led research. On the one hand she had no interest in undertaking scholarly research within the tradition of her work as an archivist and on the other hand, as an artist, she realised that:

...if I do not engage with practice-led research I will no longer have a practice, just a job.

Zoe Sadokierski⁶³ made a similar point.

An interest in contributing to a growing field of knowledge and a belief that reflective practice allows me to develop as a design professional, were enough

⁶¹ RMIT University, Melbourne, Australia

⁶² Goldsmiths, University of London, UK

⁶³ University of Technology, Sydney, Australia

incentive for me to begin...the potential to enter academic life full time interests me, but I would never give up practice entirely to do so.

As did Owain Pedgley⁶⁴ who gained one of the first practice-led design PhD's in the UK and has made a substantial and highly respected contribution to the debate

You don't need to design in order to deliver high-quality research, for example, into other people's designing, into the efficacy and desirability of products, or into the effectiveness of newly devised design guidelines. But where's the continuity, sense, satisfaction, or empowerment in that for a design graduate?

This theme was also reflected by a contributor from outside the ADA disciplines

As someone who has always had trouble fitting into the strongly theoretical environment of English studies, I applaud a focus on practical project-based work (Sue Thomas⁶⁵).

These individuals seem to speaking for a great many ADA academics who define themselves through their membership of a creative community and their wish to sustain their creative role. As academics they will not abandon that membership and arguably their work in the academy would lose its point if they did.

Barriers (of language?) between academics and practitioners

Several contributors from design spoke regretfully of the difficulty of communication between academics and practitioners, illustrating, and perhaps explained by, the lack of engagement between the two.

many practitioners' voices remain unheard as they become increasingly intimidated (or irritated) by the 'lingo' (Martin Salisbury⁶⁶)

Each time I participate in debates on practice-led research and related themes, I notice an inexorably present language-divide between practitioners and academics. (Daria Lo⁶⁷)

research becomes a discourse hermetically closed to the ones who speak/understand that "language game". We need to "jump" across other "language games" in order to articulate our discourse to other groups, namely the professionals (Luis Inacio⁶⁸)

Sadly this concern has a mirror image in the feelings of more experienced researchers towards practitioner colleagues, who are perceived as lacking a critical position, and we have heard personal accounts of this difficulty, from designers who have achieved a doctorate and are working in practice.

⁶⁴ Loughborough University, UK

⁶⁵ Professor of New Media, De Montfort University, UK

⁶⁶ Anglia Ruskin University, UK

⁶⁷ RMIT University, Melbourne, Australia

⁶⁸ Universidade de Coimbra, Portugal)

Conclusions

The workshop has given us a taste of the international academic community engaged with practice led research in ADA and beyond. There has been a tendency to focus on doctoral research, probably realistic given the newness of the field and relative novelty of the PhD in ADA.

The debate was more mature than that observed in 2000 when there was an upsurge of interest in practice-led research at the time of the La Clusaz Doctoral Education in Design Conference. While there is still a high proportion of inexperienced participants and some naïve thinking⁶⁹ the arguments were better rehearsed and participants much more willing and able to reflect on the debate. There was also evidence of a growing number of people with recent doctorates who had strong relevant insights and readiness to lead the debate. They demonstrate that there is a growing supply of role models for the novices.

Johannes Birringer's concept of "posttheorisation" did not make any waves in the debate at the time but it turned out to have much more relevance as the review progressed, chiming with the thinking developed in the fine art workshop in September. The workshop also pointed to the gap between professionals and academics also mentioned in various other contexts.

The clearest insight from the workshop came from the reasons given for taking up practice-led research. The argument that professionals and teachers in ADA need an approach to research that does not undermine their identity as creative practitioners is hard to refute.

3.2.5 **Questionnaire Surveys**

We conducted two questionnaire surveys. The first, aimed at all researchers, explored their experiences as individuals (*Research Experience Survey - Appendix C*). The second, for research leaders, investigated institutional issues and patterns of activity and experience (*Institutional Research Survey - Appendix D*).

Individual Responses
UK 141
Non-UK 107

The Research Experience Survey received 248 responses from researchers around the world including 141 in the UK. An analysis of respondents will be found in Appendix C

Institutional Responses
Fine Art 9
Design & Applied Arts 6
Architecture 4

The Institutional Research Survey received 19 responses from Heads of Dept or Heads of Research and we believe that it provides useful guidance to broad patterns but is not a reliable source of statistics⁷⁰.

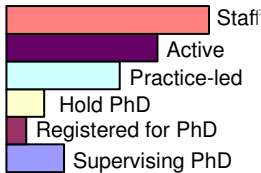
⁶⁹ Artists and Designers are not naturally deferential so the idea that experienced heads may know something important about all this can be hard to accept

⁷⁰ This was a relatively small number of respondents. The survey, which drew on the earlier consultation work, was conducted during the summer period and there was little

Where we have indicated numbers or percentages these can only be taken as very broad indications. Respondents were asked to complete the questionnaire for one disciplinary group only.

Academic Activity and Experience

All Academics in Sample



The institutional responses provide a picture of staff activity and experience. The average number of academic staff in a department was 32 of whom 24 were described as research active (we took this to be in RAE terms). 18 were engaged in practice-led research, 6 had a PhD, 3 were working towards a PhD and 9 were supervising PhD's

These figures indicate a much higher proportion of research-active staff than the RAE data so the institutions responding may represent the more research-focused end of the spectrum with higher rates of participation. The individual researchers' survey, with a larger sample of institutions, indicates that 57% of academics are research-active which is more consistent with the RAE2001 data.

This pattern was generally consistent across all three of the groups although Design/Applied Arts depts had larger overall numbers (42) than Architecture (28) or Fine Art (29), which matches our national picture of student and staff numbers and appears to be consistent with the larger number of subjects within Design.

Academics with PhDs 25% of research-active UK ADA academics hold PhD degrees?

This survey indicated that 25% of research-active staff (19% of all academics) had PhDs. Given the mismatch with the RAE data we suspect this may exaggerate the number of doctorates. Respondents to our individual researchers' survey indicated that 40% of 82 research active UK academics had PhDs but these were self selected for a strong interest in the development of research. Numbers of PhDs held by academics have risen. The institutional survey indicated that they have risen by a third from 5 years ago (from 4 to 6 per department on average).

The responses from individual researchers also indicated that the international ratio was different. 52% of 61 non-UK academics responding held a PhD. Again these were self-selected for interest in the development of research.

General nature of research projects and funding

Funding sources for research

Looking at the volume of work, rather than the numbers of people involved, institutions estimated that half of their research was practice-led although

time remaining to encourage further respondents. However the responses were consistent on a number of important points and included some very clear observations on important issues. Given the expertise and experience of the respondents we felt that it was a useful sample to identify issues if not statistically reliable.



Funding sources for individual research UK



Funding for group research UK



Aims of practice-led research

the proportion varied greatly between them. There was a strong bias towards individual inquiry (80%) rather than team projects and a spread of funding sources between external sources (35%), institutional funding (40%) and research not funded directly as such (24%).

The large proportion of work with no explicit funding source may reflect the way that some practitioner/academics are able to exploit professional work funded by other means for their research, there is also a possible imbalance between Pre-1992 and Post-1992 institutions as the latter have fewer research-active staff and may be applying QR money more directly to individuals and projects. 7/15 indicated this was the case while none of the 4 pre1992 institutions who responded had direct control over QR income but may have teaching workloads more geared to research.

The individual researchers' survey gives a more detailed picture of funding sources. It describes numbers of projects rather than amount of money so we have not given detailed figures. Not surprisingly research councils and other research funding sources figure more strongly in support for group research and they probably fund more of the large-scale projects so this data is likely to underplay their contribution. However it gives a sense of the funding opportunities available.

The responses from non-UK researchers indicate that they depend more on research funding organisations and businesses and less on institutions or charities.

Most departments who had received QR funding have applied it to support for individual staff projects as well as a smaller amount allocated to resources that support research. These institutions have also applied SRIF funds in ADA and the majority have invested the money in equipment while a small number have also spent it on new or refurbished buildings.

We asked institutions a number of questions about whether Full Economic Costing had improved the support for practice-led research. It is our impression that FEC is helpful to practice-led research since it allows grants to be used to pay for the investigator's time, an essential step when the investigator wishes to employ their own creative practice rather than working by proxy through a researcher. However the responses we received were generally very negative with most people indicating dissatisfaction with FEC and not believing that it was particularly relevant to practice-led research. As FEC is very new the position may change if institutions start to see benefits of the system in action.

Motivation

Respondents to the individual researchers' survey were asked for their main aim in undertaking practice-led research. The two main responses, in



similar numbers were “to add to our understanding of practice” (37%) and “to add to our understanding of questions arising outside the immediate concerns of practice (34%). These both seem valid and mature answers and indicate an appropriate balance of interest. Another group (18%) selected “to support my creative practice” and this seems to indicate a minority of this group who may not have understood the principle of a general contribution to knowledge. A final group selected “none of the above” but from their descriptions, either they preferred to assert a mix of the reasons given, eg:

to support my creative practice AND to add to our understanding of practice AND to effectively teach architecture in a meaningful manner.

or they gave reasons which were mostly easy to translate into one or other of the three choices. eg:

To understand a subject outside art by using the practice as the mode of inquiry

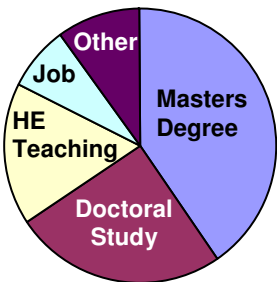
One or two gave rather generalised responses which concealed more than they revealed:

to access knowledge which emerges through engagement with artistic practice when this is undertaken within a critical/academic framework

Other questions asked about researcher’s personal aspirations. 60% preferred to remain in academic work (41% strongly) but 30% were interested in moving to professional practice, 12% strongly.

Routes into research careers

Introduction to academic research

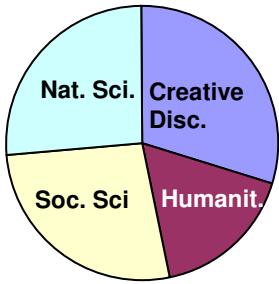


The greatest number of researchers (41%) first became involved in academic research through Master’s degree studies. 25% were introduced by Doctoral studies, 17% entered through being employed as teaching in Higher Education and 8% through being employed as a researcher. The “other” category mostly mapped on to the above groups or gave enigmatic explanations.

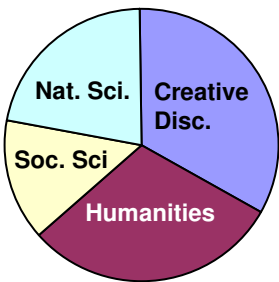
Interdisciplinary research

Interdisciplinary collaborations
Institutional response
(by volume of work)

The surveys both indicated a strong strand of interdisciplinary research which appears to be a very positive feature of practice-led research in ADA. There was evidence of collaborations within the creative disciplines but also beyond in all areas of research. 8/19 institutional respondents said their practice based research tended to be interdisciplinary and 12/19 stated that they were explicitly organised to support interdisciplinary



Interdisciplinary collaborations
Individual researchers' response (by numbers of collaborations)



research.

A majority (12/19) agreed, 6 of them strongly, that practice-led research is highly valued by collaborators and half agreed that it was easier to get funding for interdisciplinary research than discipline-specific work.

The survey of individual researchers also indicated a strong involvement in interdisciplinary research with 78% indicating that the different disciplines working together had developed a shared approach to their research. This reflects the agreement by 13/19 institutional respondents that collaborators from other disciplines influence their practice-led research methods.

90 respondents provided a list of disciplines with which they had collaborated and a very wide spectrum of academia was represented, Most people listed at least three disciplines and many gave a much longer list.

Here is a small sample:

Medical Physics History Gerontology Computer Science Engineering linguistics, semiology, ecology, human history Design Engineering Civil Engineering Manufacturing Engineering Psychology Sociology Management Furniture Design Interior Design Mechanical, electrical, computer engineering, Dye & Colour Chemistry Physics Polymer technology Laser Engineering Garment design Industrial Design Interaction Design Informatik Geologie Usability Oekonomie Marketing Soziokulturelle Animation Prävention Soziologie Interkulturelle Kommunikation Archaeology Sociology Anthropology Tourism and Management glass and stone finishing Literature, religion, art history, Planning Landscape architecture Ethnography Architecture Design Studies Participatory and User-Centred Design; Social Science; Education; HCI; Art; Industrial & Communication Design; Management; History. applied linguistics, applied psychology.

Impact of research on ADA institutions

There was a very strong agreement from institutions with the statement that research-active academics make a distinctive contribution to curriculum and teaching. Comments included:

The output of undergraduate and Masters-level work has now found bigger platforms because of staff practice-led research. The closer understanding of research mechanisms and discipline infrastructures helps to open up possibilities. (Design/Applied Arts)

Our practice-led research active members of staff use their research to give lectures, workshops and seminars and our galleries are also highly active with an innovative programme of contemporary art work generated by staff through their research. There are many more examples which touch upon the various aspects of subject development such as international links, teaching materials and case studies, but overall research tends to breed confidence and credibility

within the subject through staff, which is clearly much more difficult to measure. (Design/Applied Arts)

It has allowed new forms of practice and new methods of design to be taken seriously (Architecture)

The output of undergraduate and Masters-level work has now found bigger platforms because of staff practice-led research.(Architecture)

Highest impact has been on curriculum design and delivery, including increased access to new technologies (Fine Art)

Individual researchers also indicated that their research was having an effect on teaching. 80% asserted this although only 53% were confident that they could provide evidence.

There was also agreement, although less strongly stated, that academics today have a clearer understanding of research than 5 years ago. In general our impression from various sources of data has been that the period since 2001 has seen a good deal of consolidation and growth of confidence about practice-led research. Most respondents agreed, although not emphatically, that newer academics were more focused on research, the exceptions were departments in pre-1992 universities.

The individual researchers' survey indicated a general satisfaction with the effect that research was having on individual careers in HE.

Respondents agreed strongly that their research had made them part of a wider academic community beyond their institution and also that it had helped them to develop connections with practitioners and businesses or other organisations beyond Higher Education.

Impact of research beyond the institution

We asked individual researchers a number of questions about impact and asked them to say whether they had evidence to support their assertions. The main results were:

	Yes I have evidence of this	I believe that it has but I have no evidence
influenced other researchers beyond my institution	50%	26%
influenced practitioners	35%	29%
influenced the lives of people outside my academic or professional community	32%	26%
contributed to research methods in my field	31%	37%

The categories of evidence indicated were:

Form of evidence	% of respondents claiming this evidence
Requests to speak about your research	85



Some of the “other” forms of evidence were evidence of peer review of the research rather than impact.

Doctoral Training

We asked a number of questions about PhD provision and the experience of those who hold PhDs.

Respondents to the institutional survey indicate that:

- More departments have a large group of doctoral students than 5 years ago. The average for these institutions is 17 students (8 in 2001) of which 9 are undertaking practice-led research (2 in 2001)
- Most departments (16/19) provide formal research training designed specifically for their subject (9 in 2001), nearly all of these (15) now include training in methods for practice-led research (only 2 in 2001).
- Training programmes provided by subject areas outside ADA have not increased (6/19 departments) but there has been a big increase in institution-wide research training (15/19 depts now, only 3 in 2001)
- Forms of thesis include equal numbers of conventional theses (43%) and theses supported by exhibitions (43%) with a smaller number (14%) in which the exhibition or other practice output is regarded as the main output, supported by other documentation.
- Not all students are interested in an academic career particularly in Fine Art, where more than half have other reasons for undertaking a PhD including improving their practice.
- A majority (12/19) of respondents say that their department has limited capacity to supervise PhD students in ADA. This was marked in Fine Art where 8/9 respondents said this.
- A large majority (15/19) agreed that good graduates in their subject tend to focus on opportunities in professional practice rather than research. A small majority (11/19) agreed that graduates in their

subject are not aware of the opportunities in academic research. This was particularly marked in design (5/6 respondents)

- Only a small majority (11/19) believed that Doctoral students are the main source of academics in future and a similar number (10/19) believed that PhD studies are having a beneficial effect on professional practice. However respondents had a more positive view of the long term - a larger majority (14/19) believed that the PhD will have a beneficial effect on professional practice in future and nearly all (17/19) believed that the growth of doctoral studies have changed the academic culture in a positive way. Comments included:

Doctoral students in the department change the centre of gravity and focus attention on higher level issues

Professionals in a variety of design jobs normally do not hold a doctoral qualification. When they do they appear to be in significant and influential positions with knowledge at the forefront of their work

Architecture (which for too long has relied on the myth of genius) needs to establish its knowledge base and to communicate its ability to creatively/rigorously synthesise information through the act of design. The PhD and other practice-led research is a method of doing this

Responses from individual researchers indicate:

- There was a high degree of satisfaction (among an admittedly self-selected sample) that PhD studies had led to benefits in their subsequent careers, including new work opportunities, and benefits to their work as both practitioners and teachers. This group also rejected the suggestion that their research degree had made them less effective as creative practitioners, although there was a minority of 18% who agreed with that statement.
- Two thirds had gone on to postdoctoral research on the same topic as their PhD, or one that is closely related.
- Only 50% of those holding PhDs said that they were completely happy with their supervision. While several respondents pointed out that it would be utopian to expect complete satisfaction, and there was a normal number of the generic problems one would find in any discipline, there are some issues specific to ADA and practice-led research. This example encapsulates many of the issues:

...there was not sufficient support for the practice-led element (which is understandable, as my project was only the second practice-led phd in XXXX in the UK) also, my second supervisor was an anthropologist and was not prepared to accept that there was a valid point in researching XXXX as art form, rather than as a social phenomenon. The second supervisor was not interested in my research but accepted to be part of the supervisory team in order to get experience in doctoral supervision.

Problems include supervisors who did not understand or have relevant experience of practice-led research and supervisors imported from

other disciplines to beef up an inexperienced team (50% of students had supervisors from other disciplines – some to support interdisciplinary projects but many to provide supervision experience). The recent efforts of AHRC and QAA have transformed the support for Doctoral students and there is a greater understanding of practice-led research than could be found even 5 years ago but we have not seen similar systematic attention to the development and training needs of PhD supervisors in ADA.

- Responses also indicate that only 41% of the sample had been part of a supportive group of postgraduate students during their doctorate. One commented that their peer group had been mainly in two institutions in a different city. This can be seen in the institutional survey data above which indicates that 5 years ago institutions typically had 2 students with practice-led projects in a cohort of 8 (today there are 9 in a cohort of 17). The online conference demonstrated, in the discussion about journeymanhood, people's need for a supportive community. From this and other contributions and comments we feel that most students today are likely to have a peer group in their own department but we may not yet have achieved the "critical mass" needed to ensure that all PhD students have that necessary element of peer support.

Conclusions

From the questionnaire surveys we gain a picture of a field in which there is a good deal of activity and energy but the infrastructure is very stretched. The proportion of experienced, confident academics is relatively small, putting a burden on those able to supervise PhDs and mentor their less experienced colleagues. There has been a growth of PhD studies but the new generation of postdocs have yet to have an impact on the profile of the academic community, despite their eagerness to do so.

There has been some rapid change in the past 5 years and this and other sources indicate that practice led research has gone from being a tentative development to a well-established part of many departments' portfolio of research. There is a strong indication that practice-led research stimulates interdisciplinarity and has a part to play in many disciplines, reflecting the diverse contexts that artists and designers connect with.

4. Issues

4.1 Why?

Practice-led research has been a vexatious issue for ADA and other academic communities since the changes of 1992. Our review has exposed some of the reasons for this and some reasons why the journey has been worthwhile.

If mainstream ADA academics are to control their own destiny they need an approach to the creation of knowledge that is relevant to them. We have seen many arguments, by experienced and clear-minded people as well as less experienced colleagues, that practice-led research provides a necessary balance between maintaining a strong hold on the core strengths of these creative disciplines and developing a community of inquiry. Some exceptional and pioneering individuals may have made that journey by engagement with the research traditions of other disciplines but that does not justify expecting every academic artist, designer or architect to become also a historian, social scientist or technologist even though we should learn from all those fields and others.

Many of the examples of research we have seen are genuinely novel, not just in the originality of their contribution but in its nature. Work by Sarah Wigglesworth on the relationship between buildings and pedagogy, or Owain Pedgley on the qualities of musical instruments, takes an approach that is only accessible to those who can shape artefacts that expose novel possibilities. That is not all they must do for the research to be valid but it is a defining characteristic of practice-led research – that creative practice can disrupt the status quo and allow us to explore new scenarios as well as the ones that exist.

We have found strong evidence of interdisciplinarity and that seems to be a consequence, in part at least, of this disruptive quality. Our disciplines are able to provide a new dimension to interdisciplinary research, for example technologists may speculate that new materials may be useful for musical instruments but they need the designer to explore how that possibility will work in practice before they can begin to understand it.

More importantly they may not be able to visualise the potential in their work without the novel questions that can be provided by the creative disciplines.

Institutions and teachers have told us that practice-led research is stimulating to their work. Not only does it change the curriculum and materials available but they report that it changes the thinking and level of ambition in their courses.

The price of this innovation has been a slow struggle. The 1990's was a time of individual pioneers, small numbers of isolated PhD students and confused debate. The current decade has seen a greater confidence, more shared experience, larger cohorts of PhD students (arguably we have not yet achieved critical mass) and a growing body of exemplars. AHRB/AHRC has been a dynamic force in this and it is hard to remember that it did not exist only a few years ago.

The history of another field is instructive. Medical research in the modern era began with the study of pathology in the 19th century⁷¹. However that effort offered few if any "cures"⁷² and it was only in the 1940's that a century of scientific effort began to be translated into practical progress for doctoring. At that point a new discipline of clinical research arose to provide the tools for innovation in medicine but it was a severe challenge to the medical schools of the day and posed new ethical and intellectual questions that took decades to answer. We are so used to today's culture of clinical research that it is hard to remember that, in the lifetime of some of us, that tradition was tentative and not understood by the great majority of doctors or their teachers.

In that light any difficulties of the past 14 years might be seen as reasonable growing pains for a new community. Of course we should not stretch the patience of our colleagues in the more confident disciplines but we should recognise also that a research culture cannot mature overnight and new methods cannot be expected work reliably without a period of experiment and reflection.

⁷¹ Unless one wishes to extend the modern period back to the renaissance anatomists

⁷² Luckily the surgeons, mere craftsmen, were on hand to sustain the tempo of innovative treatment while their more scientifically-minded colleagues laboured in the diagnosis mines.

4.2 **Infrastructure**

4.2.1 ***The effect of AHRC Funding Schemes***

Through our review of AHRC awards in ADA and the detailed examination of 52 funded projects we have observed some interesting features of the funding landscape.

As noted in 3.1.2 Fine Art has received a large share of the funding awarded to practice-led research in ADA. In great part this reflects the energetic uptake of research opportunities by artists, also demonstrated in RAE2001. However another factor is the existence of special funding schemes (Fellowships, small grants and research leave) that support practice-led research and make up the bulk of the Fine Art awards.

As we have noted before, the ADA academic community, while energetic and committed to developing its research, is generally less experienced in research thinking than is normal across the university sector and the small grant and research leave schemes offer a good way to develop the experience of academics in service. The nature of these schemes, providing funding for academics' time in the period before Full Economic Costing, rather than only for research assistants, has been very appropriate for researchers who wish to employ their own abilities as experienced creative practitioners within a project.

4.2.2 ***Doctoral Research***

The current low ratio of doctoral students to academics in ADA, and the small number of academics with doctorates, indicates that we should consider ways to increase the "production rate" of UK PhDs in ADA.

While the problem of providing a relevant doctoral training has been addressed with a good measure of success, the issue of supervision expertise is more pressing today as indicated in both of the questionnaire surveys. In the longer term the new generation of postdocs should be well equipped to supervise their successors but there is a gap that must be bridged and our evidence indicates that it cannot be done completely by the small number of experienced supervisors within the disciplines or supervisors from outside ADA.

4.2.3 ***Full Economic Costing and practice-led research***

We were disappointed that research leaders when questioned had not generally noticed the significance of FEC for practice-led research. Now that FEC is in place it is much more straightforward to use the mainstream research grants scheme for projects that make a heavy call on academics'

own time and we feel that this opportunity may need to be clarified. Arguably this is a problem for academics rather than the funding councils.

The effects of FEC have yet to be seen working out in practice. Ironically it may turn out that FEC, with its current regime of paying 80% of costs, undermines the small grant scheme for practice-led research in situations where a high proportion of technical costs are incurred with a relatively modest amount of academic staff time paid for. Again this may be a question for academics and institutions to understand and think through.

4.2.4 ***Outcomes - Language and Meaning***

In discussing research outcomes with the Fine Art workshop group it was suggested that the language of bidding and reporting documents may undermine the process of planning dissemination of practice-led research.

In most academic research the role of publications in disseminating knowledge is central, well understood and includes an automatic check on quality by peer reviewers. In ADA practice-led research the forms of dissemination are very diverse, and that is acknowledged by AHRC in providing a checklist of forms of output.

We are concerned that researchers should not assume that the production of one of these forms of output is the principal aim. In fact most of the output options do not guarantee that the audience or gate keeping will be relevant and researchers must take responsibility for explaining how knowledge from the research will be transmitted and why the methods and audiences chosen are appropriate.

4.3 **Developing and Training Researchers**

As indicated in 3.2.5. the efforts made by AHRC and others to improve doctoral training have had good effect and we feel confident that ADA doctoral students generally receive good training and support, including support for practice-led methods. As indicated above we believe that increasing the "production" of PhDs would be very beneficial and the improvements in doctoral training make that a practical proposition.

4.3.1 ***Developing Academics***

In contrast we feel that the majority of academics are still in need of help to develop their understanding of research and ability to operate independently as researchers. The proportion of inexperienced researchers seen in our consultations is high, often half or more of the people in a discussion.

On the positive side there is a great deal of energy and interest available to be exploited and many academics, as indicated in our online workshop report and the comments of Owain Pedgley above, see practice-led research as the only way they can reconcile their dual identity as an artist/designer/architect on the one hand, and an academic on the other. The workshop also gave some evidence that individuals who may be inexperienced and naive are, nevertheless, able to progress quickly in their thinking when exposed to critical debate and examples of good practice that reconcile some of their difficulties. The key issue for making progress is structure - the moderated workshop appears to have achieved a degree of agreement, or at least shared recognition or understanding of issues, that is not evident in some longer-running but unstructured debates in this arena.

4.3.2 ***Progression for Postdocs***

While there is good support for the training of PhD students in ADA we are less confident that sufficient opportunities exist for them to move into the academic mainstream. During the review we heard some anecdotal reports to the effect that post-doctoral applicants in art and design tend to have difficulty in finding lecturer posts when in competition with practitioners.

It is very hard to verify such claims since the proceedings of selection panels are confidential but they are believable given that relatively few members of a department are engaged with doctoral or postdoctoral research (although many may be successful in RAE terms).

We would therefore welcome any initiative that gave institutions or departments an incentive to provide opportunities for postdocs to become part of the permanent academic community.

4.3.3 **Summary**

To conclude, there has been gratifying progress in the levels of competence in ADA research and clarity about the nature of practice-led research, especially at doctoral level. This bodes well for the future. However that surge of new competence is now working through the system as new researchers' progress and we anticipate that new strains will emerge.

4.4 The Nature of Contribution

Through the consultation process and literature review we encountered a persistent concern, expressed strongly in Fine Art but reflected across ADA, that some practice-led inquiry resists the established descriptions of research, exemplified by the AHRC's definition. This became one of the central topics for the focus group held with experienced Fine Art academics towards the end of the project and we were able to identify a significant issue, the nature of outcome or contribution, which might be addressed by some strategic research. (A fuller description of this workshop can be found in Appendix E

In discussing established frameworks for research there was general agreement that most experienced researchers would be able and willing to position their work in terms of questions or problems, context, and methods/methodology. **However it was agreed that the idea of outcome or contribution to knowledge/understanding was more difficult to resolve and may require fresh thinking and this was a challenge to the AHRC definition of research, or at least the way that definition is generally interpreted.**

At the core of this was the awkward problem that seeking to identify explicit outcomes, in the way that other disciplines may take for granted, can undermine the tacit process of engendering insight in the audience⁷³. We acknowledged that it was not acceptable merely to assert that new knowledge or insights have arisen "somewhere" as a result of the work but it was clear that a delicate balance must be struck between the explicit and tacit aspects of the research.

There appear to be two components to this. Firstly we must resolve the philosophical problem of what kinds of contribution we expect from those who undertake creative practice as the central vehicle for research (rather than as an element of their methods). Secondly we must develop the practical methods that can be used to give the ADA practitioner/researcher proper ownership of the process. Workshop participants believed that these questions had not been identified in this way before, partly because debate has tended to include questions of method and purpose which may be interesting and problematic but do not challenge our established descriptions of research.

⁷³ During the online workshop debate described in 0, Katie MacLeod noted that "what has fascinated philosophers about the Arts, is the development of their capacity to employ the imagination to perceive things differently".....She argued that a creative arts academic can bring us to a closer understanding of complex propositions through the imaginative possibilities opened up by material realisations.

In the first arena, the nature of the contribution, it is arguable that all knowledge is tacit in the sense that it exists in the understanding of individuals rather than the documents or other media used to record it. Most outcomes of advanced research require an effort by a reader to internalise them and different readers may understand different things from the record. This constructivist viewpoint offers a link between the classical model of research contribution and one that emphasises tacit insights in the audience rather than explicit assertions by the researcher.

It was agreed in the discussion that the creative arts are often better at proposing questions than answering them and it has been argued by one of the authors that the role of creative practitioners in a multi-disciplinary setting is to frame the environment in which other specialists may recognise propositions or opportunities to be developed in their research⁷⁴. We suggest that this is a fertile area for inquiry and, while there will be no ready or single way to resolve it, some directed debate and research on this particular issue would help the creative disciplines move forward.

The second aspect, that of methods, might also respond to some directed inquiry. For example we discussed the degree to which artists might take on some social science thinking, or some other methods, to allow them to record or register some measures of influence on audience, whether that involves the artist directly or might be achieved through appropriate collaboration. This is not straightforward since we would not be seeking to register transmission of specified knowledge but rather the effects on attitudes, ideas or actions resulting from the artwork. It also raises the perennial difficulty of maintaining a separation between the role of the artist and the role of the observer.

The focus group discussion also drew attention to a widespread expectation that an artwork will be the finishing point of a project and it could be instructive to examine the idea of research that starts with creative practice, not least because that breaks out of the classical rational concept of preparation preceding action⁷⁵.

Finally, although this issue has been discussed in terms of Fine Art, we are confident that the questions it raises are of interest to all ADA disciplines⁷⁶.

⁷⁴ Rust 2004

⁷⁵ Gedenryd (1998) demonstrates how designers frequently confound the expectation of most cognitive theory by choosing to immerse themselves immediately in visualisations of the imagined future rather than undertaking analysis and planning before action. The Design Methods movement in the 1960s attempted to develop a more scientific approach to designing based on complex planning but most of the leading proponents rejected such theories within a remarkably short time.

⁷⁶ For example research by Dunne and Raby adopts the principle of “critical design” to deploy stimulating artefacts that influence audiences. This kind of work may be

4.5 Quality

We have not set out to "measure" the quality of the research that we have examined but we have been able to note areas where research is generally successful in matching AHRC's aspirations for quality and where it falls short.

Quality in the wider field of research is difficult to assess since the outputs and gatekeepers are eclectic and there are many variations in practice and purpose between the different areas of ADA. However our assessment is that there are some sound research practices being used in professional practice in design and architecture and these would benefit from a better dialogue between academics and professionals. The RAE has obscured the picture of research quality from an advanced research perspective but anecdotal evidence from senior researchers in ADA indicates that the pressures of the current round of the RAE may be bringing a greater convergence of thinking on quality.

Interdisciplinarity beyond the creative disciplines has a positive effect on quality and we have seen evidence in examples of research and our questionnaire surveys that researchers engaged in interdisciplinary work have fewer problems in meeting quality expectations.

In looking at the AHRC funding schemes, it seems evident from both proposals and some of the outcomes evident in project files that the **research grants scheme** has been successful in attracting an increasingly confident and rigorous approach to research in ADA, including practice-led research. The different disciplines have very different approaches but we saw, in the examples examined, good use of the AHRC/AHRB application framework to propose coherent valid projects. Some examples of funded projects from the very early years of AHRB had weaknesses that would not pass through the peer review gate today, and that seemed to be welcome evidence of progress in researchers' understanding as well as greater competition and strengthening of the review process.

Other schemes have had more mixed results and we note that AHRC has recently introduced changes which have strengthened their aims and criteria.

undertaken for social reasons, to understand or influence attitudes and perceptions, or it may be instrumentally aimed at identifying directions for future products through observation of the effect of critical "prototypes"

5. Conclusions

These conclusions draw mainly on the issues identified in the preceding chapter. We have not set out detailed arguments here since those will be found above.

5.1 **Scope and Quality of Practice-Led Research**

We feel that, had such a review been conducted 5 years ago, the picture would have been far less clear and confident. In the case examples illustrated in 2.2 above we have found both a great breadth of work but also clarity. While some of the academics concerned are still lacking confidence in telling their story and setting it into the academic framework the work itself is methodical, inquiring and making diverse contributions to knowledge and understanding. In particular doctoral research is demonstrating a great deal of new confidence.

AHRC has had an impact on this as shown by the developing quality of work funded by the research grants scheme and the uptake of specialist schemes for practice-led research as well as the effects of Doctoral funding and research training schemes.

There seems to be a good deal of scope for practice led research to extend its reach. The NESTA case examples show that there is a relationship between the innovative work funded in the professional sector and academic practice-led research and we see no reason why that should not become more of a continuum. Some of the case examples also illustrate the role of practice-led research in influencing domains beyond our immediate disciplines, Jill Gibbon's engagement with political activism, Sarah Wigglesworth's influence on educational policy and John Lindsay's work on the relation between information design and sustainable cities all demonstrate the potential for the creative disciplines to exert influence through practice-led inquiry.

5.2 **Capacity**

There are some capacity problems. The doctoral “production” rate is slower than in most disciplines and is building on a very low base. This is not helped by the limited number of experienced PhD supervisors, especially as practise-led research requires a good deal of flexibility from a supervisor if they are to navigate a sound route in the very complex territory indicated by the case examples. There are no easy formulae.

The new postdocs represent a growing resource for advanced research, teaching and critical practice but it cannot be taken for granted that they will fit automatically into an academic environment that has not had to accommodate them in the past. They may also present a difficult challenge to those existing academics, often well-established and productive people, who have not yet engaged with the research agenda.

5.3 **Funding Schemes**

We have noted some opportunities to improve the detail of AHRC processes in ways that would encourage practice-led research and ensure parity of treatment:

Some questions asked in application and monitoring forms, particularly about outputs and dissemination, might be refocused to concentrate on purpose rather than form.

It was also observed that the quality of practice, best understood through direct inspection, is important in so far as it affected the quality of research and referees and applicants may be helped by a more open approach to the inclusion of visual material in applications.

5.4 **Definitions of Research**

While the AHRC definition of research was considered generally appropriate we feel that there is a good case for investigating how our understanding of output/contribution and the related dissemination infrastructure might be developed in the light of the tensions between explicit and tacit outputs described above (4.4). This is mainly a question for academics in the disciplines but there may be value in seeking to fund some research or events that develop and demonstrate approaches to these issues.

Alongside this is a broader question, particularly for Fine Artists, of how to balance the professional and academic worlds and how to be more

explicit about purposes and methods without undermining the tacit qualities of their practices and contributions.

5.5 **Infrastructure**

There is no easily described infrastructure for supporting research in ADA, especially when it comes to publishing. The situation is improving over time but there is scope for specific initiatives to support the development of the scholarly infrastructure. However the diversity and eclecticism of the dissemination that does take place is also an indication of the richness and interdisciplinarity of the field and should not be seen as a problem in itself.

5.6 **RAE 2008**

The timing of this review was problematic in that material from RAE 2001 is largely out of date. The RAE 2008 panel for Art and Design have indicated that they expect institutions to evidence that allows the nature and contribution of practice-led research to be inspected and we anticipate that this will lead to a good deal of new material coming onto the public domain, directly or indirectly from the RAE. While we have been able to establish a base of examples the next year should see many more case examples becoming available, together with more up to date statistics.

5.7 **Other Observations**

To summarise what we have learned from this review:

Practice-led research in ADA is a significant activity which is growing in both doctoral and staff research. It has a positive effect on the culture of academic departments and practitioner academics (arguably the great majority of staff in ADA) often see it as the only way they are likely to engage in research. As a result we view it as an important means of stimulating the development of ADA as academic disciplines.

The ADA disciplines are relatively underdeveloped in comparison with most research disciplines, with a high proportion of staff who lack experience of research. Nevertheless there is a good deal of enthusiasm and energy among the “RAE-active” staff which can be exploited.

Practice-led research is frequently interdisciplinary and this has been a great strength, especially as it contributes a new dimension to the disciplines that get involved. Interdisciplinary is also a problem in terms of

the conventional view of an academic field with a well-established dissemination infrastructure. The diverse profile of ADA dissemination defies metrics but is an indicator of the wide relevance of ADA research.

6. Bibliography

Includes both sources cited in the report and background material consulted during the review

- Archer, B. (1995) *The Nature of Research Co-Design* Jan 95 6-13
- Bangma, A. (2004) *Observations and considerations*. Lier en Boog, 18, pp. 126-134.
- Bayazit, N. (2004) *Investigating design: A review of forty years of design research*. Design issues, 20(1), pp. 16-29.
- Biggs, M. (2000) *The Foundations of Practice-Based Research: Introduction*. Working Papers in Art and Design. Vol 1. pub University of Hertfordshire (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/vol1intro.html>)
- Biggs, M. (2004) *Introduction: the role of the artefact in art and design research*. Working Papers in Art and Design. Vol 3. pub University of Hertfordshire (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol3/mbintro.html>)
- Boyer, E.L. (1990) *Scholarship Reconsidered: Priorities of the Professoriate*. Princeton University Press: New Jersey.
- Bourgourd, Jeni, Evans, Stuart and Gronberg, Tag (Eds.) (1989), *The Matrix of Research in Art & Design Education*. Documentation from the conference on research in art and design organised by the London Institute and the Council for National Academic Awards 1988. (London: London Institute, 1989)
- Brown, B., Gough, P. and Roddis, J. (2004) *Types of Research in the Creative Arts and Design*. University of Brighton (http://www.brighton.ac.uk/art/research/5_0_scholarly_infrastructure/5_6_0_epapers/4_research.pdf)
- Brown, N. (2000) *The Representation of Practice*. Working Papers in Art and Design, Vol. 1, pub University of Hertfordshire (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/brown2full.html>)
- Buchanan, R. (1992) *Wicked Problems in Design Thinking*, Design Issues 8,2 Spring 1992 5-21
- Caban, G. (1999) *The implications of the 'new scholarship' for practice-based research in design*. Third European Academy of Design Conference, Sheffield, pp. 136-149.
- Cabrera, A, Kommonen, K-H, Oilinki, I., and Koskijoki, M. (2003) *Co-Designing Visions, Uses, and Applications*. 5th European Academy of Design Conference, Barcelona.
- Calouste Gulbenkian Foundation (2002) *Annual Report 2002: Grant Summary* (<http://www.gulbenkian.org/english/main.asp>)
- Calouste Gulbenkian Foundation (2003) *Annual Report 2003: Grant Summary* (<http://www.gulbenkian.org/english/main.asp>)
- Calouste Gulbenkian Foundation (2004) *Annual Report 2004: Grant Summary* (<http://www.gulbenkian.org/english/main.asp>)

- Candlin, F. (2000a) *A Proper Anxiety*. Invited Working Paper in Art and Design. Vol 1, (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/candlin1.html>)
- Candlin, F. (2000b) *Practice-based doctorates and questions of academic legitimacy*. JADE, 19(1), pp. 96-101.
- Centre for Fine Print Research (2005) Bristol School of Art, Media and Design, University of the West of England (<http://amd.uwe.ac.uk/index.asp?pageid=712>)
- Chamberlain, P., Roddis, J. and Press, M. (1999) *Good vibrations: A case study of design-led collaborative new product development in the field vibro sound therapy*. the Third European Academy of Design Conference, pp. 18-39.
- Choueiri, S. (2003) *Diagrams of the design process*. 5th European Academy of Design Conference, Barcelona.
- Cocoran, K. (2005) *Re:cerca, Re:search, Re:searche, Ri:cerca, Re:cherchieren, Re:search in and through the art*. in Readings for a symposium on research in and through art and design practice, 4-6, National College of Art and Design, Dublin, 22 April 2005 (http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf)
- Colford, A. (2005) *National Profile Commissioned by ELIA (Summary)* in Research Questions: Readings for a symposium on research in and through art and design practice, 7-9, National College of Art and Design, Dublin, 22 April 2005 (http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf)
- Connolly, M. (2005) *Art practice, peer-review and the audience for academic research*. in Research Questions: Readings for a symposium on research in and through art and design practice, 10-14, National College of Art and Design, Dublin, 22 April 2005 (http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf).
- Cooper, R., Hands, D., Wotton, A. (2003) *Machiavelli and Innovation: The Politics of Design?* 5th European Academy of Design Conference, Barcelona.
- Conklin, J. (2005) *Wicked Problems and Social Complexity* in Conklin, J. *Dialogue Mapping: Building Shared Understanding for Wicked Problems*, pub Wiley
- Cross, N. (1982) *Designerly ways of knowing*. Design Studies, 3(4), 221-227.
- Cross, N. (2000) *Design as discipline*. Proceedings of the 2nd Conference on Doctoral Education in Design: Foundations of the Future, La Clusaz, France July 2000, Staffordshire University Press.
- Cross, N. (2001) *Design research: A disciplined conversation*. Design issues, 17(3), pp. 49-55.
- Cull, K. and Malins, J. (2003) *Designing a sustainable future: a new approach to influence design practice*. 5th European Academy of Design Conference, University of Barcelona (www.ub.es/5ead/PDF/5%20CullMalins.pdf)
- Dally, K., Holbrook, A., Bourke, S., Graham, A. and Lawry, M. (2003) *Higher degree examination in fine art*. The Association for Active Researchers Newcastle Mini-Conference (www.aare.edu.au/conf03nc/abs03z.htm)
- de Gusmão Pereira, G. (2003) *Playful-Symbolic Aspects of Urban Material Culture* 5th European Academy of Design Conference, University of Barcelona (www.ub.es/5ead/PDF/3/Pereira.pdf)
- Dilnot, C. (1998) *The Science of Uncertainty: The Potential Contribution of Design to Knowledge*, Doctoral Education in Design Conference, Ohio 1998
- Douglas, A. (2000) *Research Through Practice*. Invited Working Paper in Art and Design. Vol 1, University of Hertfordshire (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/douglas2.html>)
- Duffy, C. and Kemp, S. (2003) *What are the ICT needs of practice-based researchers in the visual and performing arts?* AHRC Expert Seminars (http://www.ahrcict.rdg.ac.uk/activities/expert_seminars/creative_and_performing_arts.pdf)

- Durling, D. (2000) *Reliable Knowledge in Design*. Invited Working Paper in Art and Design. Vol 1. University of Hertfordshire
(<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/durling2.html>)
- Durling, D. (2002) *Discourse on research and the PhD in design*. *Quality Assurance in Education*, 10(2), pp. 79-85.
- Eddinson, E. and Dickinson, M. (2003) *Design Research and the five-legged dog*. The Association for Active Researchers Newcastle Mini-Conference URL: www.aare.edu.au/conf03nc/abs03z.htm (accessed 9 Oct 06)
- Eskola, T. (1997) *Water lilies and wings of steel: Interpreting change in the photographic imaging of Aulanko park*. PhD Thesis, University of Art and Design, Helsinki UIAH, Finland.
- Evans, S. and Le Grice, M. (2001) *The state of art: Research in the practical art doctorates - Autonomous methodologies*. *Criticism, Legitimacy and Transgressions: European Journal of Art Education*, 3(2-3).
- Fisher, T. and Gibbon, J. (1999) *The politics of craft*. Third European Academy of Design Conference, Sheffield, pp. 284-293.
- Frayling, C. (1993) *Research in art and design*. Royal College of Art: Research Paper
- Friedman, K. (2002) *Theory construction in design research: Criteria, approaches, and methods*. *Common Ground: Proceedings of the Design Research Society International Conference at Brunel University, 5-7 September*, Durling, D. and Shackleton, J. (Eds), Stoke on Trent, UK, Staffordshire University Press.
- Friedman, K. (2005) *Building theory. What, how and why*. Third International Conference on Design Research, Rio de Janeiro, Brazil.
- Friedman, K. (2006) Contribution to AHRC Review Workshop on Practice-led Research in Art, Design and Architecture.
- Furlong, J. and Oancea, A. (2005) *Assessing Quality in Applied and Practice-based Educational Research, A Framework for Discussion*. Oxford University Department of Educational Studies.
(<http://www.bera.ac.uk/pdfs/Qualitycriteria.pdf>)
- Gedenryd, H. (1998) *How Designers Work – making sense of authentic cognitive activities* PhD thesis, Lund University, Sweden
(<http://www.lu.se/People/Henrik.Gedenryd/HowDesignersWork/index.html>)
- Ginouliac, M., Branco, R. and Branco, V. (2003) *Person-centered design: A communicational meta-model for the evaluation of digital interactive artifacts*. 5th European Academy of Design Conference, University of Barcelona
(<http://www.ub.es/5ead/PDF/4/BrancoSGino.pdf>)
- Gowans, G., Campbell, J., Astell, A. Ellis, M., Alm, N., Dye, R. (2003) *Designing CIRCA (Computer Interactive Reminiscence and Conversation Aid). A Multimedia Conversation Aid for Reminiscence Intervention in Dementia Care Environments*. 5th European Academy of Design Conference, University of Barcelona.
(<http://www.ub.es/5ead/PDF/2/Gowans5.pdf>)
- Gray, C. and Pirie, I. (1995) *Artistic research procedure: Research at the edge of chaos?* Proceedings of the European Academy of Design 'Design Interface' Conference Vol. 3, University of Salford.
- Gregory, N. (2005) *A practical tool to assist with higher degree research in fine arts*. ELIA European League of Institutes of the Arts Teachers' Academy, Rotterdam 13-16 April 2005 (http://www.research.elia-artschools.org/TA_Gregory.PDF)
- Grillner, K. and Ståhl, L-H (2003) *Developing practice-based research in architecture and design*. *Nordisk Arkitekturforskning (Nordic Journal of Architectural Design)* No. 1.
- Haptec (2005) *The Haptec Research Project*. The London Institute, Camberwell College of Arts (<http://www.arts.ac.uk/research/conres/haptec/index.html>)

- HEFEC (2005) Examples of projects funded under SRIF2 (2004-05 to 2005-06) (http://www.hefcw.ac.uk/Research/round_two.htm)
- HESA (2005) HESA On-line Information Service, (<http://www.hesa.co.uk/holisdocs/home.htm>)
- HEFEC (1998) *Research Assessment Exercise 2001: Assessment Panels' Criteria and Working Methods*, Higher Education Funding Council for England
- Hockey, J. and Allen-Collison, J. (2000) *The supervision of practice-based research degrees in art and design*. Journal of Art and Design Education Volume 19 Issue 3, pp. 345- 355.
- Hockey, J. (2003a) *Art and design practice-based research degree supervision. Art and humanities in higher education*, Volume 2 Issue 2, pp. 173-185.
- Hockey, J. (2003b) *Practice-based research degrees students in art and design: Identity and Adaption*. Journal of Art and Design Education Volume 22 Issue 1, pp. 82-91.
- Hockey, J. and Allen-Collison, J. (2005) *Identity Change: Doctorial students in art and Design*. Arts and Humanities in Higher Education, 4(1), 77-93.
- Horne, G. and Ferguson, I. (2003) *Making sense: The value of making as a research methodology with reference to the development of solid state diffusion bonded Damascus steel*. 5th European Academy of Design Conference, University of Barcelona (<http://www.ub.es/5ead/PDF/7/HorneFer.pdf>)
- Huddersfield University (2004) *Annual Research Report 2003-2004*. (<http://www.hud.ac.uk/registry/research/docs/researchreport2003-4.pdf>)
- James, D. (2005) *A working model for postgraduate practice based research across a creative arts*. Design Research Society 3rd Doctoral Education in Design Symposium, Tsukuba, Japan
- Jenkins, P., Forsyth, L. and Smith, H. (2005a) *Balancing three dimensions in architectural research: Depth, breadth and Length. An Institutional Analysis of Research in Architecture in the UK Higher Education Sector*. Royal Institute of British Architects/Edinburgh College of Art (http://www.eca.ac.uk/pdf/institutional_analysis/report.pdf)
- Jenkins, P., Smith, H. and Garcia-Ferrari, S. (2005b) *Architecture research and the profession in Scotland*. pub ScotMARK.
- Jordan, P. (2004) *Research developments in practice-based/led research in art and design*. All Ireland Society for Higher Education Inaugural Conference 2004, Trinity College Dublin 2-3 September 2004.
- Kaila, J. (2004) *What is the point of research and doctoral studies in art?* Lier en Boog, Artistic Research, Volume 18, pp. 63-68.
- Kroelinger, M. Giard, J. (2000) *Initiating an interdisciplinary doctoral program: Perspectives from a new program*, Doctoral Education in Design: Foundations for the Future, proceedings of the 2nd DED conference, La Clusaz, France July 2000. Staffordshire University Press.
- La Garce, M. (1999) *Lighting design interventions affecting the disruptive behaviours of Alzheimer's Disease patients*. Proceedings of the 3rd European Academy of Design Conference, Sheffield Hallam University, pp. 40-50.
- Lawrence, G.M. (2003) *Hospital beds by design : a socio-historical account of the King's Fund Bed : 1960-1975* Thesis submitted for PhD at the University of London 2003.
- Lindekens, J., Heylighen, A. and Neuckermans, H. (2003) *Re-designerly ways of knowing: Towards a deeper understanding of redesign*. 5th European Academy of Design Conference, University of Barcelona. (<http://www.ub.es/5ead/PDF/15/LINDEKkens.pdf>)
- Lotz, K. (2005) *Architectural projects and research - specificity and meta-reflection*. Nordic Design Research Conference, Copenhagen, Denmark. (<http://www.tii.se/reform/inthemaking/files/p109.pdf>)

- Love, T. (2003) *Implications for design-focused professional doctorates of Australian research into professional doctorates*. Design Research Society 3rd Doctoral Education in Design Symposium, Tsukuba, Japan.
- Lyons, L. (2006) *Walls are not my friends* Proceedings of Research into Practice Conference, University of Hertfordshire, UK, July 2006 (in press)
- MacLeod, D. (2003) *Universities share £1bn science bounty*. The Guardian Newspaper, February 12, 2003.
(<http://education.guardian.co.uk/higher/research/story/0,,894064,00.html>)
- Mäkelä, M. (2005) *Knowledge through making: The role of the artefact in practice-based research*. Nordic Design Research Conference, Copenhagen, Denmark.
- Malins, J. (1999) *The gap: Addressing practice-based research training requirements for designers*. Proceedings of the 3rd European Academy of Design Conference, Sheffield Hallam University.
- Marshall, T. and Newton, S. (2000) *Scholarly Design as a Paradigm for Practice-Based Research*. Invited Working Paper in Art and Design. Vol 1, University of Hertfordshire
(<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/marshall2.html>)
- Maude-Roxby, A. (2003) *The Delicate Art of Documenting Performance*, in "Art, Lies and Videotape: Exposing Performance", Exhibition catalogue, pub Tate Liverpool.
- Maxwell, T. (2003) *Defining the (research) professional doctorate: Can the notion of the creative arts portfolio contribute?* The Association for Active Researchers Newcastle Mini-Conference (www.aare.edu.au/conf03nc/abs03z.htm)
- McCleod, K. and Holdridge, L. (2002) *Practice-based research: A new culture for doctoral fine art practice*. Symposium on 'Monstrous Thinking: On practice-based research' 7th Biennial conference of the European League of Institutes of the Art, Dublin (<http://www.bologna.elia-artschools.org/otm/downloads/otm1/practice-based.pdf>)
- McCleod, K. (2000) *The Function of Written Text in Practice-Based PhD Submissions*. Invited Working Paper in Art and Design. Vol 1, University of Hertfordshire
(<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/macleod2.html>)
- Millar, L. (2003) *Culture and Creativity: Education and Training in the Arts*. Seminar, The Diawa Anglo-Japanese Foundation, Japan House, London
(http://www.dajf.org.uk/_pdf/sem68.pdf)
- Mottram, J. and Fisher, T. (2005) *Art & Design Index to Theses (ADIT) project* Sheffield Hallam University (<http://www.shu.ac.uk/research/c3ri/adit/>)
- Murray, G. (2005) *ScotMARK Architectural Research and Knowledge: A Scottish Dimension*. Published by ScotMARK
- NCAD (2005) *The Frascati manual: Definition of research*. Position Papers on Practice-Based Research: Research questions, National College of Art and Design, Dublin. pp. 34-35.
(http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf)
- Niedderer, K. (2003) *The performative object: Enacting the humane dimension within design*. 5th European Academy of Design Conference, University of Barcelona. (<http://www.ub.es/5ead/PDF/6/Niedderer.pdf>)
- Nevanlinna, T. (2005) *Is artistic research a meaningful concept?* Lier en Boog, Artistic Research, Volume 18, pp. 80-83.
- Newbury, D. (1996) *Research Perspectives in Art and Design: A Research Guide*. The Research Training Initiative, University of Central England, Birmingham
- Newbury, D. (2000) *The development of research education and training in art and design: a personal view*. in Durling D and Friedman k (eds.) *Doctoral Education in Design: Foundations for the Future* Stoke-on-Trent: Staffordshire University Press, pp. 283-290.

- Newbury, D. (2002) *Doctoral education in design, the process of research degree study, and the 'trained researcher'*, Art, Design and Communication in Higher Education, Volume 1 Issue 3, pp. 149-159.
- Nippert-Eng, C. (2005) *A view from the outside: Challenges of the design PhD*. workshop on doctoral supervision, Cumulus International Association of Universities and Colleges of Art, Design and Media conference, Lisbon, Portugal.
- Norman, E., Heath, J. Pedgley, O. (2000) *The framing of a practice-based Ph.D, in design*. Core77 research web pages (<http://www.core77.com/research/thesisresearch.html> accessed May 2004)
- Nottingham University (2005) *School of the Built Environment* (<http://www.nottingham.ac.uk/prospectuses/undergrad/school.php?code=000233>)
- O Briain, C. (2005) *Forward to the Position papers on practice-based research: Research Questions*. National College of Art and Design, Dublin http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf
- O Conchubhair, G. (2005) *The practice-based PhD in industrial design*. Position Papers on Practice-Based Research: Research Questions, National College of Art and Design, Dublin pp. 20-24.
- Phelan, P. (1993) *Unmarked: The Politics of Performance*. Published by Routledge, London and New York:
- Press, M, Cusworth A, (1998) *New Lives in the Making, The Value of Crafts Education in the Information Age*, Sheffield Hallam University/Crafts Council, 1998
- RAE (2005) *RAE2008 Research Assessment Exercise: Guideline for Submission*. Ref 03/2005 (<http://www.rae.ac.uk/pubs/2005/03/rae0305.pdf>)
- RAE (2005b) *RAE 2008 Consultation on assessment panels' draft criteria and working methods*. (<http://www.rae.ac.uk/pubs/2005/04/>)
- Raein, M. (2005) *From practice to reflection and on to reflexivity*. Nordic Design Research Conference, Copenhagen, Denmark. (<http://www.tii.se/reform/inthemaking/files/p68.pdf>)
- Refsum, G. (2003) *Historical studies in practice based art and design research* in Tostrup, E. and Hermansen, C. (Eds) (*Theorising History of Architecture*, Oslo School of Architecture, pp. 229-238. (<http://www.aho.no/Forskerutdanning/Konferanse/Papers/Refsum.pdf>)
- Rittel, H. Webber, M. (1973) *Dilemmas in a General Theory of Planning*, Policy Sciences 4, Elsevier Scientific Publishing, Amsterdam, pp. 155-159.
- Royal College of Art (2006) *Current Research Activity*. Royal College of Art, London (http://www.rca.ac.uk/pages/research/current_research_activity_571.html)
- Royal Institute for British Architects (2005) *RIBA President's Awards for Research*. (http://www.riba.org/go/RIBA/News/Press_5055.html)
- Rust, C, (2007) *Unstated Contributions – How artistic inquiry can inform interdisciplinary research* International Journal of Design 1, 3 (<http://www.ijdesign.org>)
- Rust, C. (2004) *Design Enquiry: Tacit knowledge and invention in science* Design Issues 20, Nov 2004
- Rust, C. (2003) *Many Flowers, Small Leaps Forward: debating doctoral education in design* Art Design and Communication in Higher Education. Vol 1 No 3 (Invited paper)
- Schön, D. (1983) *The Reflective Practitioner*. New York, Basic Books.
- Scrivener, S. (2002) *The art object does not embody a form of knowledge*. Working Paper in Art and Design, Vol. 2, (<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol2/scrivener.html>)
- Scrivener S (2000a) *Reflection in and on Action and Practice in Creative-Production Doctorial Projects in Art and Design The Foundation of Practice-Based Research: Introduction*. Working Papers in Art and Design, Vol. 1,

University of Hertfordshire

(<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol1/scrivener2.html>)

Scrivener, S. (2000b) *Towards the operationalisation of design research, a reflection on action and practice*. Doctoral Education in Design: Foundations for the Future, proceedings of the 2nd DED conference, La Clusaz, France July 2000. Staffordshire University Press.

Scrivener, S. and Chapman, P. (2004) *The practical implications of applying a theory of practice based research: a case study*. Working Papers in Art and Design, Vol. 3, University of Hertfordshire

<http://www.herts.ac.uk/artdes1/research/papers/wpades/vol3/ssabs.html>.

Searle, J. (1995) *The Construction of Social Reality*, Published by Penguin, London.

Shillito, A., Scali, S and Wright, M. (2003) *Haptics: for a more experiential quality in a computer interface*. 5th European Academy of Design Conference, University of Barcelona (<http://www.ub.es/5ead/PDF/9/ShillitoSW.pdf>)

Shipton, J. (2003) *The spontaneous re-use of packaging: Designing for creative consumption and dispossession*. 5th European Academy of Design Conference, Barcelona. (<http://www.ub.es/5ead/PDF/4/Shipton.pdf>)

Silva, J. (2000) *The research process as 'theore-in-practice'*. Exchange Online Journal. http://www.media.uwe.ac.uk/exchange_online1/exch1_article2.php3

Smith, L. (2006) *Exchanging Knowledge*. Podium issue 4, pp. 6-7.

Smith, L. (2002) *A tutorial on Principal Components Analysis*. University of Otago (http://csnet.otago.ac.nz/cosc453/student_tutorials/principal_components.pdf)

Stellingwerff, M. (2003) *Developing design discourse in a contextual virtual environment*. 5th European Academy of Design Conference, University of Barcelona. <http://www.ub.es/5ead/PDF/15/Stellingwerff.pdf>

Tebby, S. (1994) *The relationship between practice and research* RADicle conference, Gray's Centre for Research in Art & Design, Aberdeen (keynote paper)

Turpeinen, O. (2005) *Researching the visual qualities of exhibition design through experimental and cross disciplinary methods*. Nordic Design Research Conference, Copenhagen, Denmark. <http://www.tii.se/reform/inthemaking/files/p39.pdf>

Bristol School of Art, Media and Design (2006) *Enamel, Textile and Ceramic applied arts group* University of the West of England (<http://amd.uwe.ac.uk/index.asp?pageid=726>)

van der Lem (2001) *The development of the PhD for the visual arts*. Exchange Online Journal issue 2. (http://www.media.uwe.ac.uk/exchange_online/exch2_article2.php3)

Watanabe, T. (2003) *Practice-Based PhD in Art and Design: Britain and Japan*. Seminar in Cultural and Creativity: Education and Training in the Art.

Weick, K. (1989) *Theory construction as disciplined imagination*. Academy of Management Review, Volume 14 Number 4 pp. 516-531.

Whetten, D. (1989) *What constitutes a theoretical contribution*. Academy of Management Review, Volume 14 Number 4 pp. 490-495.

Wilson, M. (2005) *Introduction to the Position papers on practice-based research: Research Questions*. National College of Art and Design, Dublin http://www.ncad.ie/research/downloads/position_papers_on_practice.pdf

Woodfield, R. (2004) *The UK fine art PhD and research in art and design*. Lier en Boog, Artistic Research, Volume 18 Number 1, pp.103-108.