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University

THE RESEARCH:CREATIVITY NEXUS: ITS IMPACT ON THE STUDENT EXPERIENCE

This chapter considers -research and creativity in art and design ~~on the student experience in~~ higher education~~, in art and design~~. ~~-~~The focus is specifically upon what we term the research:creativity nexus, ~~which can be seen as the~~where ~~points of contact between~~ enquiry, the search for new knowledge, meets innovation, which is the recognition of new understandings. ~~The origins of the linkage between research and creativity in art and design stems from~~ Close parallels between the roles and functions of research and creativity in creative disciplines are recognised and ~~, the historically recent development of research cultures our field, and where these two areas affect each other and can be found to have an impact~~our thinking began with two explicit assumptions: that creativity is a core concept in art and design; and research is a core practice in universities and art and design schools. We start from a position that considers it essential to clarify the understanding of creativity and research within art and design higher education, in order to articulate the potential impact of this nexus upon future student experience.

Creativity is now perceived as a 'good thing' by government, statutory bodies and industry and, along with research, is recognised as a high priority and a key to the future development and success of post-industrialised economies. It is thus timely to examine some of the assumptions about ~~research and~~ creativity that have emerged through policy papers and other forms of public debate, ~~principally in the form of generic discussion at government and public body level,~~ and as a set of (challengeable) myths, assumptions and values within the sector itself. Our discussions recognise the need to engage with the issue of the currency of creativity, both through our awareness of its sometimes uncritical use within academia, and its increasing adoption as a buzzword across all sectors of the economy. In addition, our understanding within art and design education can benefit from examining emerging models of creativity from a range of other disciplines. While the practices of the art and design disciplines are those generally understood as creative, the study or awareness of what creativity is as a human attribute has not played a significant role in the research agenda within our field. We aim to suggest the veracity of more recent models to support the field's conception of creativity, and speculate that such a re-orientation can re-align disciplinary values with a coherent framing of research within the academic context.

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As art and design has become established in the university research landscape, particularly since the first return from a significant number of departments to the Research Assessment Exercise (RAE) in 1992, there has been considerable development of infrastructure, culture and understanding, which enables us to recognise the 'research engine'. The definition of research provided by RAE provides a baseline for our discussion. Their articulation of research as 'original investigation undertaken in order to gain knowledge and understanding…, which includes the invention and generation of …, artefacts including design.., where these lead to new or substantially improved insights' (RAE 01/2006 (O):80), is becoming more familiar in the art and design field although, as with the term 'creativity', informal or everyday interpretations continue to be operational. The distinction is drawn between professional practice within disciplines and research practice that seeks to advance disciplines. There is a tension between views of the latter as the primary focus within Higher Education, and the historic focus of art and design schools as providing preparation for advanced practice in the former. However we do suggest that this tension is being reconciled and that an emerging positive consensus in relation to research can be identified in the creative disciplines,

It is our contention that the student learning experience can benefit from research into creativity within art and design that will develop our particular knowledge base, as well as from research that is itself informed by creative input. This contribution to the examination of the research:creativity nexus will suggest we can reposition our understanding of creativity and learning, of research in our field, and of the extent to which research in creative disciplines is perceived to have impact beyond the academic field. The research:creativity nexus will be considered ~~from a strategic and an operational~~through examination of the different perspectives and understandings of its constituents parts, before discussing ~~the extent to which current~~how ~~and potential~~ curriculum and learning models engage with the elements. The strategic imperatives and benefits of engaging with the nexus model will then be outlined~~, together or separately~~.

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1 REPOSITIONING UNDERSTANDING

If creativity is a core concept for art and design, then the position from which we understand that concept has to accommodate current thinking from relevant perspectives.

Similarly, if research is a core practice in universities and art and design schools, then the way in which we understand that practice should have general applicability beyond the local context of a particular disciplinary field.

Two key areas of thinking ~~have been identified as~~ offer perspectives on creativity that ~~need to be accommodated within the~~ might usefully be acknowledged by ~~understanding of~~ the art and design field: discussions about ~~the linkages between~~ creativity and economic regeneration, including perspectives on creativity from government and other public agencies; and new models of creativity from the human sciences. Both have useful messages for incorporating into forward visions for the field, and reinforce the model of the research:creativity nexus.

On research, ~~we look back at the emergence of research and~~a brief review of how the field developed highlights some points at which assumptions and misconceptions made the research:creativity nexus problematic. ~~By focusing on~~ The emergence of art and design doctoral and lecturer research activity, first under the Council for National Academic Awards and ~~then within the new wider university sector~~ since 1992, shows how ~~impact of~~ values from creative practice ~~can be seen to lead~~led to ~~the development of~~ particularised conceptions of research. ~~Again the economic impact of research and its funding must be noted, which re-surfaces the issue of definitions and measures.~~

Creativity, education and the economy

~~increasing has also been influential~~

~~A vision for the future role of creativity in education was stressed by~~ Ken Robinson stressed his vision for the future role of creativity in education in 1999 (DfEE, 1999). Many definitions for learning creativity or learning for creativity have been suggested: ~~there are many definitions~~. Taylor (2006) traced some 50 to 60 definitions of creativity itself, while ~~definitions of creativity.~~ Robinson and the National Advisory Committee on Creative and Cultural Education proposed just four characteristics of creative processes, of which the first is that 'they always involve thinking or behaving imaginatively' (DfEE, 1999, p. 29). The definition of creativity from the Qualifications and Curriculum Authority (QCA) is also grounded in the model of associative thinking. They highlight appropriate ways of thinking and practising by suggesting that creativity involves 'questioning and challenging; making connections, seeing relationships; envisaging what might be (visualising); exploring ideas

and keeping options open; reflecting critically on ideas, actions and outcomes.' (QCA, 2001). Art and design also appears to have held on to the models of creativity that gained currency in the immediate pre- and post-Coldstream era, when models of creative synthesis stressed the importance of unconscious strategies, exploiting and guided by backward reasoning and the generation of analogues. Singerman notes the emphasis on strategies for stimulating creativity by letting go of past assumptions, 'creativity without preconception', or 'the removal of method or model' in his discussion of art schools in the American higher education system (Singerman, 1999: 107). Jackson (2006) has concluded that many academics are reluctant to forefront creativity because assessment strategies require specific statements about what students will be expected to have learnt 'with no room for anticipated or student determined outcomes.'

The assumption that creativity might not be teachable is thought to have its origin in the model which understands creativity as arising from unconscious thinking (Weisberg, 2006: 91). However more recent work within the cognitive sciences has established that there are conditions for creativity which could be applied to the educational context. Lubart and Sternberg (1995) established that there are six attributes required to support creative activity: by 1999 they had refined this set of required conditions as knowledge, accompanied by intellectual ability, thinking style, personality, motivation and environment (Sternberg & Lubart, 1999: 11). Weisberg's recent review of studies on creativity and innovation across disciplines (2006) is particularly useful in elucidating the research:creativity nexus: expertise, practice and motivation are clearly implicated in creative performance and the 'tension view', that too much knowledge impedes creativity, is successfully challenged.

The value of the 'creative economy' was recognised through the regeneration of UK cities in the late 1980's (Landry, 1990). The Department of Culture, Media and Sport (DCMS) Creative Industry Mapping Document (DCMS, 1998, 2001) identified creative industry as the fastest growing sector of UK industry and explicitly linked creativity with economic growth. The focus on creativity in relation to local and international economic activity has been sustained by papers, government initiatives and books including, in 2002, Richard Florida's influential, The Rise of the Creative Class. Policy makers have declared that creative industries have an important international impact and have claimed the UK is the 'world's creative hub' (Purnell, 2005). The DCMS creative industries map has been adapted by United Nations Conference on Trade and Development Panel on Creative Industries

Comment [A2]: Hilary asked whether Florida used the term first – I assert not. From my reading of the literature it was Landry who used it first in 1990 – Florida's work in the early 1990's was more focused on Japanese manufacturers who had transplanted to US – more car industry focus.

(UNCTAD, 2004) and in 2005 the International Network for Cultural Diversity (Sagnia, 2005) claimed the creative industries as one of the fastest growing sectors of the global economy.[i] Although the precursors to recognition of the economic importance of creativity may have arisen from harnessing creative and cultural enterprise as a catalyst for regeneration (Landry, 2006), there has also been a focus on creativity in organisations, though the work of thinkers such as Charles Handy and Peter Drucker.

What distinguished the new models of creativity arising by the 1990's was a view that it was a normal attribute of human endeavour, rather than a special gift. This perspective was embedded in the discussion of creative cities, in the literature of psychology, and in neuroscience (Landry, 2006; Csziksentmihalyi, 1996; Wilson 1998). Thinking in the field of psychology has still not resolved if specific thought processes are involved in creative thinking, with some people just being better at using those processes than others, or whether the thought processes involved in creativity are just the same ones involved in ordinary activity (Weisberg, 2006: 118). However, it is appropriate for education in 'creative' subjects such as design and other practical arts, to take note of what might be learnt from this work. Csziksentmihalyi notes that knowledge must be intentionally passed on and learned (1996, p. 37). He also notes that to be creative, one 'must first understand the domain' (1996, p. 340) in order to recognise novelty. This does reflect a commonly held expectation within art and design education that students should become familiar with current work in the field.

In parallel to the conception of creativity as a normal human attribute being shared across the current thinking of several disciplines, the importance of contextual conditions has also been identified in the economic field. Jeffcut and Pratt (2002), in tracing the growth in interest in economic policy for creative and cultural industries, make a number of key assertions. Firstly, that policy assumes downward pressure on costs in growing international markets can not, in the developed world, be met by reduction in labour costs, but that competitiveness will be maintained through cycles of innovation in products and services, innovation that 'relies on creativity' (Jeffcut and Pratt, 2002: 225). Secondly, that from 'a social constructivist point of view' (ibid, 226) organisational form constructs creativity in a particular setting and that creative industries are such a particularity. In other words, the kinds of creativity and the conditions that sustain it are related to the situation of practice. Finally they assert that creativity is 'a process requiring knowledge, networks and technologies' (ibid, 226). This underpins the work of Csziksentmihalyi et al.

but more importantly suggest that efforts to raise the 'creativity quotient' in individuals needs to attend to the conditions and ~~may not yield greater creativity than attention to the~~ context in which it learned and practiced.

Bringing together thinking on creativity and entrepreneurship, and the conditions for creativity, several key papers have ~~further sharpened these debates~~reinforced the importance of thinking further about creativity in ~~respect of~~ art and design education. ~~Massey, in Developing Creativity for the World of Work (2005) discusses the types of creativity in professional studies for arts and design students.~~ The DCMS task force on Further and Higher Education (DCMS, 2006) claims a direct link between creativity and entrepreneurship in the creative industries. The Cox Review (Cox, 2005) describes how the ~~specific~~ creative skills of design graduates could contribute to improving performance in non design-based commercial enterprises. Models for creativity have been articulated (see Massey, 2006; Felmingham, 2007) but few of the Quality Assurance Agency (QAA) Subject Benchmark Statements for undergraduate programmes include specific references to creativity (Buss, 2007). The Arts Councils paper *The Power of Art* (ACE, 2006) shows how the visual arts contributes to communities beyond education, and recent work undertaken by the Design Council and Creative and Cultural Skills identifies creativity as a major driver of creative industry. NESTA, in a series of recent papers, suggests powerful links between the creative capacity of individual owner-managers of creative enterprises and sustained growth of the creative industries. Finally, *Creating Entrepreneurship* (ADM-HEA, 2007) argues for greater differentiation in developing creative entrepreneurship in arts, design and media education. ~~This aspect of curriculum development will be a particularly important factor for growth in this sector given the significant numbers of graduates working in production areas of creative industry, for example: up to 65% in film and TV (Skillset, 2006) and 41% in design (Design Council, 2005).~~

The combination of these claims for the potential economic contribution of creativity and creative disciplines, together with the revised conceptions of conditions for creativity that could form the focus for education in these fields, provides a persuasive basis for reflection on the extent to which current practice operates.

Research and art and design education

In the other main component of our nexus, research, we considered it relevant to track the key markers in recent developments within UK art and design higher education. From looking at creativity, ~~it appeared that there were~~it was apparent there are gaps between disciplinary perceptions ~~in the academic field~~, assertions or claims by public agencies and others, and emerging theoretical models. In relation to research, it is also important to gain a better understanding of the nexus by reviewing the different strands of thinking that influence the field. ~~This section will~~By looking at the emergence of doctoral activity ~~to introduce ideas about research~~ in art and design, the role of the CNAA, and the impact of the Research Assessment Exercises, ideas about research that have shaped activity to date will be explored.

Comment [A3]: Useful, necessary?

Within the UK, the notion that a research degree might be an opportunity ~~open to~~for the art and design field ~~only~~ became ~~clearly~~ apparent following the inclusion of the subject fields within the academic degree-awarding system of the Council for National Academic Awards (CNAA) in the early 1960s. Prior to 1992, ~~the majority of the~~most research degrees in art and design were awarded by established universities, ~~although there was~~with some pioneering work in the polytechnic sector ~~within~~ under the ~~framework~~ auspices of the CNAA. Fisher & Mottram (2006: 5) report that among the one hundred art and design PhDs awarded between 1976 and 1985, only twenty-three were from the CNAA. Following ~~In~~ 1992, awareness of ~~the opportunity to engage in~~ doctoral study became more widespread in art and design, when the former polytechnics, home to most art and design schools, became part of the new university system and were given the power to award their own research degrees. For most university and polytechnic disciplines, the research degree had already become the generic terminal degree associated with entry into academia. ~~We could speculate on whether or not it was~~It was not necessarily this model that stimulated the emergence of research degree activity in art and design, but the following discussion indicates some factors that may be implicated.

The CNAA Research Committee for Art & Design had supported the emergence of research degree activity before 1992, with a series of conferences reporting on early work in the field and exploring emerging issues of infrastructure and scope. In 1984 the CNAA ~~stated that~~recognised the importance of research ~~was an important part of~~in staff development, noting that involvement in 'research and related activities' enabled lecturers to infuse

teaching with a sense of critical enquiry. ~~They saw~~ The 1984 CNAA paper reproduced in the publication for the 1988 conference (Bourgourd, Evans, and Gronberg, 1989) noted these activities included the following:

> 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

Examination of subsequent statements in the Research Committee report suggests the CNAA intended the statement to be about 'research', and 'related activities', differentiating two sets of activities which infuse teaching. ~~A sensible interpretation might be that~~Those activities to which the authors appended the word research might be understood as that particular sort of academic enquiry (academic, applied, curriculum or pedagogic research), with those not including(Bourgourd, Evans, and Gronberg, 1989) research being understood as 'related activities' (consultancy, professional practice, scholarship, creative work, and applied, interdisciplinary and collaborative activities). Whether there has been inaccurate reporting or obtuse interpretation of activities support subject health is uncertain, but there clearly has been some confusion about the relationship of research and creative practice within the English-speaking world (Fisher & Mottram, 2006: 5).

The 1988 Matrix conference publication included a 1989 paper from the CNAA Research Committee for Art & Design, which clearly stated that they did not accept creative work as scholarly activity, but recognised rapid growth in the reporting of such activity. The Committee reinforced recognition of the breadth of activities needed to support healthy subjects and debated whether alternative awards were needed to recognise advanced creative work. The Committee ~~was clearly making a~~made a clear distinction between that advanced creative work, which has long been held as an important component in the teaching of the creative arts, and the growing interest in research degrees. ~~There was recognition by the~~The CNAA recognised the emergence of some confusion about the relationship of advanced creative practice to research, and the seeds for conflating research with creative practice could be traced back to this point.

~~The conference itself evidences through the published papers some sensitive consideration of how the sector might develop its approach to research. They stressed the need to look at what we could usefully investigate within the discipline, and how this might be achieved.~~

Comment [hr4]: 'Applied' is in both categories here. Can research not be interdisciplinary, applied, collaborative?

Comment [A5]: CNAA used applied in both sets – in the 2nd, I read it that they were talking about applied activities as opposed to applied research

~~arguing that it should not be left to people from other disciplines to tell us what was special and distinctive about our activities.~~

Comment [A6]: Not sure whether the following discussion on the rest of the conference is actually useful, as ref is made to it later

By 1992, the rapid growth of creative activity being reported under the 'research and related activities' performance indicator of the CNAA (but not accepted by them as 'legitimate scholarly activity') was entered into the UK Research Assessment Exercise (RAE). The definition for research for the Higher Education Funding Council for England (HEFCE) assessment exercise took on the CNAA 'subject health' performance indicator and repackaged it as the definition for outputs that would be reviewed under the RAE. Art and design, as the 'new kids on the research-block' (Brown, Gough and Roddis, 2004), were the saviours of the new universities. The volume of activity submitted by art and design rather skewed the projections made by HEFCE about how far the research money would go, but did create a climate in which the activities and outcomes the art and design departments submitted as research generated significant income streams for several universities. Brown et al. note that much of the activity reported at that 1992 RAE was applied work undertaken within professional or industrial contexts, and that it was the sort of activity described mostly as 'professional practice'. Thus it was probably the sort of activity the by-now-disbanded CNAA would have described as 'related activities' and possibly not what they might have termed as legitimate scholarly activity.

The proposition of equivalence was thus tentatively established through the impact of income streams derived from RAE 1992, and this model has since influenced perceptions of the sort of activities that might be appropriate for the field. What had not happened at this point, and might still be required, is the identification of the areas of activity that might usefully be investigated from within the field, as called for by the 1988 Matrix conference.

Ways of explaining the equivalence model have been developed. In 1993, Christopher Frayling, then Rector of the Royal College of Art, first applied Herbert Read's model of teaching for, through and into a discipline to research (Frayling, 1993). He noted that research could be **for** practice, as in Picasso gathering source material for the making of a painting such as 'Les desmoiselles d'Avignon'. He saw research **through** practice as being exemplified by the interactive process of making a working prototype, testing and amending that model, and research **into** practice as including observations of practicing artists at work. The particularly tricky point of this triad is the emphasis placed within

undergraduate programmes upon research for practice. There is a search which forms an integral part of many creative processes, but the extent to which this becomes more than the compilation of material intended to stimulate studio work may be questionable. Is it the same sort of intentional data gathering or data generation undertaken in order to address a research question? The collection of 'stuff' indicates very little about the capacity of the collector to organise, evaluate or interpret, although the counter-argument would be that it is the resulting art object that articulates this evaluation and interpretation. Frayling saw the goal of this collection of stuff as art, and 'as much about autobiography and personal development as communicable knowledge' ~~than about understanding and communicable knowledge~~(Frayling, 1993: 5).

The emphasis and value placed on the end product of the familiar process of making is enshrined in the professional and educational frameworks in art and design. The 'final show' has been a key~~'show and tell' as~~ ~~-~~evaluation point~~main means~~ ~~of exchange~~ within the educational ~~professional~~ context, and exhibitions the key dissemination of artefacts for stakeholder evaluation. These are the roots of a propositional problem, where we have outcomes of creative practice being presented in a manner which ~~makes~~ claims ~~for~~ embodied evidence or argumentation. As Frayling said: 'no scientist would ever say that contents of a test-tube changing colour speaks for itself' (Frayling, Painter & Woodham, 1998: 10). The colour of a creative outcome may speak for itself in its own context, but it is the general applicability for the operation of that colour beyond that context which would make the case for ~~the~~ research impact ~~of research in the creative sphere upon economic realities~~. This differential, which links the creative innovation to knowledge acquisition or to research intentions, is seen to be at the heart of the opportunity to generate a more credible framework for the research:creativity nexus.

Snagging the Nexus

~~Although there have been considerable efforts to~~The articulation of~~e~~ the value of links between research and creativity has been ~~, the discussion is~~ hampered by a number of key factors. Despite considerable investment on the assumption that research ~~in higher education (in particular, collaborative research)~~ will yield economic benefits ~~in commercial sectors~~, there are gaps in the evidence to support this. The contribution of research in the creative disciplines to the economy was asserted by JM Consulting's examination of the research infrastructure for Arts and Humanities (HEFCE, 2002). They noted arts and

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humanities research had a 'vital role' underpinning 'the UK's leading position in the creative, cultural, and heritage industries', which were among 'the fastest-growing and most important export earners for the UK' (HEFCE, 2002:35). However, the extent of links between HEIs and those industries is uncertain. The first finding reports by the Department of Trade and Industry (DTI, 2005) suggest that only 30% of 'innovation active' businesses have formal collaborations with Higher Education Institutions (HEIs) and of them only 2% claim that their innovation is dependent on these collaborations. These innovation-active businesses are predominantly in the science and technology-driven sectors and the contribution made by creative disciplines in the HEIs is not clear. ~~There does appear to be an opportunity to develop the extent to which creative disciplines research can be seen to contribute to economic benefit.~~

While there is considerable and growing work on the research-teaching nexus (see Hattie and Marsh, 1996; Jenkins et al. 2007) clear evidence has yet to ~~emerge showing~~demonstrate benefits to students' learning experience. Where research is conceived as high-level 'discovery' research (Boyer, 1990), abstracted from any concern for student learning, it has been shown to negatively impact on staffs' concerns for teaching and can result in a structural separation of course design and delivery from staff research (Hattie and Marsh, 1996). Anecdotal evidence suggests that research rating tables ~~do have an~~ impact on potential students' choice of university ~~but also~~and that students often feel their teachers are distracted from ~~the business of~~ teaching by ~~their focus and~~ the emphasis of the institution on research.

The ~~has been a clear~~ growth in activity reported as research within art and design was noted by CNAA in the late 1980's and by Brown et al (2006) with reference to the 1992 RAE. There has ~~sector. Not only are the~~ also been a ~~RAE returns the second highest of all subjects (see Brown et al.) but also the~~ sharp growth in the number of doctoral completions in comparison with other disciplines ~~across all subjects includes proportionally greater growth in art and design subjects~~. While the number of first degree graduations across all disciplines has grown from 211,841 in 1995 to 278,385 in 2006, and the number of doctoral completions has grown by a factor of nine (from 1,385 to 12,950), the rise in creative arts and design PhDs has increased by a factor of nineteen, from seventeen completions in 1995, to 320 in 2006 (HESA, 2007). However the extent to which this engagement in advanced study has had an impact upon the candidates or their subsequent social or economic contribution has not yet been recorded ~~in any detail~~.

Comment [hr8]: If universities have only been articulating in a major way the impact and activity of research in A&D since the RAEs of 1992 and 1996, then to have 30% of innovation active businesses working in collaboration with HEIs by 2005 is pretty good going. 'in collaboration' suggests active, ongoing, working relationships. Many others may be affected by the university experiences of their staff. How might this figure compare with other types of businesses?

Comment [a9]: I think this answers Hilary's comment

Comment [A10]: Here are the numbers

~~3892~~

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There appears to be some uncertainly about the extent to which university research in art and design has economic impact, and about the impact of research upon the student learning experience, but the creative sectors are clearly important to the UK. Before looking at the strategic arguments for strengthening the research: creativity nexus, the following two sections discuss some current perspectives on how research and creativity relate to the current student learning experience in art and design.

2 RESEARCH, THE CURRICULUM AND LEARNING ~~THE STUDENT LEARNING EXPERIENCE~~

~~The extent to which research is currently visibile and explicit in the curriculum is seen to enable identification of the tools and methods of research within a creative practice orientated curriculum. This section concludes by suggesting that existing interests and expertise recognise the inherent value of this disciplinary field.~~

If we surmise that practice-based research is undertaken by most members of art and design teaching staff, and if that research is directed toward a transforming practice ~~that is transforming~~ (e.g., of the art and design world debates, etc.), we should expect research to increasingly underpin delivery and content of undergraduate and postgraduate degrees. ~~The extent of underpinning will depend on the extent to which transformational practice is a constituent of the academic programmes.~~ Despite the possible mismatch of graduate numbers with market needs, it is generally assumed and made manifest in the Art & Design Benchmark Statement (QAA, 2007), that for undergraduate courses, ~~and postgraduate students are being developed as practitioners and that practice underpins practice based research.~~ 'primacy is given to the preparation of students for professional, creative practice'. If~~We could then say that, insofar as their teachers~~teaching staff frame course content and delivery ~~as building towards~~in relation to their own practice-based research, then students will be engaged with research from the outset (Drew, 2007). However, this position ~~does contain~~carries three assumptions ~~which it may be useful to highlight~~: first is the level of engagement in practice-based research. We have ~~already~~ noted ~~the~~ problems ~~inherent in~~with the equivalence model, and suggest the need for clarity in distinguishing ~~between activities that are~~ research focused activities and those that are practice-based 'research' in name only. The second assumption is to assume engagement in research, creative or

scholarly practice; and the third is that research in this field necessarily involves the researcher in practice. Instead of focusing on the distinctions between research and practice-based research, it is useful to look at how the sector iscurricula may need to articulateing the distinctions between practice, practice-based research and research-based practice.

The principal distinction between practice-based research and practice is that in the former there is more public engagement of the practitioner with the theories and ideas underpinning creative work. This public engagement is manifested in the art and design world debates, which encompass both linguistic and visual modes of exchange, and generally take place within a market context. In the progression from Bachelors to Masters through to PhD, we should expect students to be engaged in this way at increasing depth, rigour and intellectual sophistication, and to increasing productive consequence. As such, this engagement can be seen as replicating, reflecting and even contributing to the exchange, or discourse, largely taking place within the wider academic and non-academic art and design worlds. This then could beis the equivalence with knowledge of the field that was identified in the discussion of models of creativity from other fields, and, in a reflexive mode, scholarly enquiry into this knowledge of the field can provide a basis also for research-based practice. The extent to which any of these approaches to research and creative practice are made explicit or evidenced in curriculum design or content rests upon the intentionality with which they are employed.

~~However the benefits to students learning through research and enquiry have never been in question. The central message for course teams is to 'focus on the student experience of appreciating, using and doing research' (Jenkins et al, 2003).~~

~~Csikszentmihalyi (1997) argues that the main value of teaching for both the teacher and the student is lost if there is a lack of satisfaction in teaching. For a university teacher, intrinsic motivation and a scholarly approach impacts upon the student experience, and that 'Teachers who do not find their subject matter worthwhile in and of itself but teach it only for extrinsic reasons – pay or prestige – waste their own time and convey the message to students that learning lacks intrinsic value and is only a means to other ends.' (p. 82).~~

There is emerging evidence that proto-research, or research-like learning, is beginning to be employed intentionally within the field. This includes exploring topics and approaches

new for students although not new knowledge in the field. Examples documenting such approaches include projects at the University of Sydney (USYD project), Oxford University (Oxford Learning Institute) and Project Link (Oxford Brookes University). Examples of such strategies used or considered within art and design includes the conference and review model of a multimedia course at Southampton ~~The curriculum mirrors research processes and activities, with students engageing in research skills development programmes which include collaborative team working, presentations, posters, papers, and exhibitions. The assessment process mirrors research practices of peer review, revision on the basis of feedback and representing of revised artefact. Another example of this approach is a Multimedia course (Southampton University) organised to mirror the process of conference paper/poster submission, research, writing and peer review, and then presentation at a One Day Conference to which outsiders, including potential employers, are invited to take part.~~ and r~~R~~ecent work where~~on teaching design at undergraduate level~~ ~~also links~~ research and enquiry based approaches – 'like the ones used in research' – have been linked to high level learning outcomes in design courses (Shreeve, Bailey & Drew, 2004).

Comment [A11]: Are these projects art & design focused? If not, the relevance will have to be re-framed

~~The embedding of research in art and design within the curriculum does require introducing the domain and its knowledge base through an introduction to research cultures and backgrounds. It is suggested that to support research the learning environment must include channels for continual exchange between a department or school and the wider academic and professional community. At one level this is the preserve of the well found laboratory and library, but when facing the market the following primary mechanisms are also necessary: internet presence, accessible and well documented events, publications, exhibitions, and collaborative networks with research and professional peers.~~

These models are ~~In considering the student learning experience, there is scope for further development of the understanding of research processes and enquiry based learning within the art and design field. As with recent understanding of creativity from outwith the field, other fields have also advanced thinking that can be drawn to bear upon the particularities of art and design. E~~enquiry-based approaches ~~have become more popular in university settings~~which are understood to ~~as a way of e~~encourage ~~both~~ learner autonomy and higher level learning outcomes (Brew 2003). In enquiry-based learning (EBL) ~~describes an~~ environments. ~~where~~ learning is driven by a process of enquiry owned by the student. The identification of issues and questions and the examination of the resources to conduct the investigation incorporate the requisite knowledge acquisition ~~of the requisite knowledge~~.

Knowledge is ~~more readily~~ retained because it is acquired by experience, in relation to a real problem. ~~Many researchers see the benefits of enquiry-based learning.~~The approach has been described as 'a good way of thinking' by Knight & Yorke (2004), that leads to subject knowledge acquisition and fluency with the skills and practices which engender employability and ~~. This signals another justification for the greater integration of research activity into taught curriculum and student learning. Students can be~~ induction into the culture and community of researchers ~~at all levels through enquiry-based approaches, developing knowledge of what it is to engage in the subject in a research-based way, understanding key issues and debates in the subject area, and knowing what researchers in the subject do.~~ In other words, engagement in activities which mirror the research process.

~~Learning how to incorporate intentional use of research strategies within a context that is primarily focused on creative practice production needs to encompass a range of methodological approaches. Whilst the~~ Postgraduate curricula have developed ~~over the past ten years~~since the mid-1990s to include introductions to research methods, but the emphasis at undergraduate level is more upon ~~students undertaking~~ 'research' that is ~~more akin to~~fundamentally searching for material to support their practice. This research for practice provides the stimulus for creative ~~actions~~responses, and the theoretical context for describing the outcomes of that practice. ~~Despite the relative low levels of dialogue between the schools sector and higher education at present, the 'A' level curriculum in art and design does include a strong emphasis on critical appreciation and evaluation that could usefully feed into undergraduate learning. However, the prevalence of an interim 'foundation' experience in art and design that focuses heavily on portfolio production might impact on the extent to which the emphasis on evaluation can be carried over.~~

The embedding of research in art and design within the curriculum does require introducing the domain and its knowledge base through an introduction to research cultures and backgrounds. To support this, the learning environment must include channels for continual exchange between a department or school and the wider academic and professional community. At one level this is the preserve of the well-found laboratory and library, but when facing the market the following primary mechanisms are also necessary: internet presence, accessible and well documented events, publications, exhibitions, and collaborative networks with research and professional peers.

~~**The explicitness of research in the curriculum**~~

~~Brew and Boud have noted that 'Teaching and research are correlated when they are co-related…' and they suggest we should '…exploit further the link between teaching and research in the design of courses' (Brew & Boud, 1995). The visibility of faculty members' engagement in research related to the disciplines they teach can make an important contribution to breaking down any perception of a division between practice and research. Institutional strategies which recognise the importance of good practice in course design have also rewarded that activity (e.g. HEFCE Teaching Quality Enhancement Funds, Centres for Excellence in Teaching and Learning). This has increased the motivation to reward good practice in teaching and learning, including that which is research-led. Examples of~~

Comment [A12]: Not sure much value in this apart from introduding next sentence, which could be used elsewhere

~~activities which have been seen to impact on course design include pedagogic research projects, teaching fellowship activities and learning and teaching secondments.~~

Comment [A13]: Not sure how particularly important this is to the argument

~~**The explicitness of research in the curriculum**~~

It is apparent that research-aligned teaching requires the learning experience to be organised around the research strengths and interests of the staff (including pedagogical research) and the curriculum to be aligned with those research strengths. The more research is embedded in the institution the more pervasive is the influence of these research areas on the curriculum. Explicit links from research to learning have to be made – as strategic choices for research affect the subjects that are taught. Healey has noted that 'In constructing links between research and teaching the discipline is an important mediator' (2005, p.67), and this privileging of disciplinary knowledge is an important reminder to academic professionals to value the inherent currency of the field within the knowledge economy, rather than privileging the value of the discipline within its cultural marketplace. The responsibilities are different, and if we are to argue that research is a core practice in our disciplines, we need to locate our discussion appropriately. While it is clear that a high level and quality of communication about research and its implications for subject development and educational process is key to a culture of scholarship within the art and design subject field, this does need the support of a recognised evidence base and a shared terminology.

~~5012~~

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4 CREATIVITY AND~~,~~ THE CURRICULUM ~~AND THE STUDENT LEARNING EXPERIENCE~~

The following discussion of the current and potential role of creativity in the research:creativity nexus is necessarily focused on where this topic has emerged within the higher education context in art and design. As noted above, recognition of the desirability

of incorporating creativity within the general education curriculum first surfaced in the 1960s, and has resurfaced again strongly since the 1990s. The early work drew heavily upon the post-Freudian models of unconscious strategies that still appear to inform much thinking about creativity in the art and design sector. The period since 1995 has seen a growing recognition from government, policy-makers and commentators that creativity is an extremely important aim for education, given the economic imperative to foster it in and for business. It is notable that the majority of the work on creativity in education has focused upon primary and secondary education, and has not necessarily been focused on creativity within the disciplines of 'creative' practices. This section will discuss current modeling of creativity within the art and design field, noting the distinctions made between 'normal' and 'high' levels of creativity. Particular issues relating to the assessment of creativity are noted, and the fit between traditional heuristics of art and design education and emerging models of the conditions for creativity are described.

The explicitness of creativity in the curriculum

To discuss creativity in the curriculum for degree and postgraduate courses in art and design, we need first to establish the relationship of creativity to practice in the subject disciplines. We tend to work on a day-to-day basis with the understanding that the art and design disciplines are, de facto, inherently creative. This may not be a particularly helpful starting position for a number of reasons. We have already noted the emergence of models of creativity as a normal attribute of ordinary human brain activity, which effectively disengages the idea of giftedness or talent from artistic expression. Advanced practice in any field is now seen as more closely connected to investment models of creativity through deliberate practice and familiarity with past achievement rather than to divine inspiration. Social constructivist models of innovation and achievement are identifying connections and networks as key determinants for the positive recognition of new contributions to the field, theorising the models of reputation development that have motivated the social networking of artists and clients throughout history. However, what can be claimed is that the art and design field is one where creative activity can generate contributions to that field that are recognised and valued because they are seen to be different from previous contributions. Novelty becomes a key feature, but one where the connections to context, previous work in the field, and intentionality, is essential.

While the definition for concepts of creativity has proved elusive, most of the dominant writers acknowledge a broad spectrum of activity (Spiel & von Korff, 1998). One clear and major distinction made by some analysts is that between 'high' creativity and 'ordinary' or everyday creativity. High creativity is identified as the sort of publicly acclaimed creativity which changes our understanding or perspective on the world, such as 'the achievement of something remarkable and new, something which transforms and changes a field of endeavor in a significant way ... the kinds of things that people do that change the world' (Feldman, Cziksentmihalyi & Gardner, 1994: 1). Again we see congruence across disciplinary boundaries, with researchers in cognitive and computing science such as Margaret Boden (1990) suggesting a model similar to that proposed by Vernon (1984) and the above authors. Boden saw little difference in type, merely scale, between this 'high' creativity and the ordinary or 'democratic' creativity that is essentially the innate human capacity for solving everyday dilemmas as well as more complex problems. Her position gets over the difficulty of the focus on extraordinary or high creativity in its propensity to be applied only to extremely talented people, which may be of little or no relevance when used in the context of a comprehensive and general education environment. The phrase 'democratic' creativity was coined in All our Futures (DfEE, 1999) to mean the creativity of the ordinary person, and in the same year the National Curriculum Handbook included creativity within the section on thinking skills. They defined these skills as the attributes which 'enable pupils to generate and extend ideas, to suggest hypotheses, to apply imagination, and to look for alternative innovative outcomes' (National Curriculum Handbook for Primary and Secondary Teachers, 1999).

It is also important to develop a clear position on whether we are considering creativity within a domain specific context, or whether we are referring to creativity as a generic attribute. The influence of models of creativity as a normal human attribute sit more comfortably with this chapters' assertion of the generality of research practices, but does not deny the position of creativity as a core concept within the practices of art and design.

When it comes to reviewing the extent to which creativity is explicit in the curriculum for art and design, there is little evidence of the field intentionally addressing it as a curricular topic. It is perhaps of note that the field itself does not see fit to address one of its distinguishing characteristics as a part of its domain knowledge, but perhaps some contemporary ambivalence to notions of domain knowledge itself might have a bearing on

this.

Assessment and creativity in art and design

While many instruments have been created to assess various aspects of creativity – Isaksen (1993) identified more than 200 tests, inventories, rating scales, and checklists – there is little evidence of any interest in such instruments within art and design. There is a tendency to argue it is difficult to assess creativity, based on claims that the complex and multidimensional nature of creativity cannot be captured effectively and comprehensively by any single instrument or analytical procedure. Creativity assessment might be regarded as an attempt to recognise or identify creative characteristics or abilities among people, or to understand their creative strengths and potentials. Tests, inventories, or rating scales do not engage with the outputs of creative practice within the terms of operation of the art and design field. Jackson's 1997 summary of art and design lecturer views on whether creativity can be assessed suggests there are four main perspectives: that students' creativity is evaluated through explicit assessment criteria; secondly, that insufficient attention is given to recognising students' creativity and that at best the evaluation and recognition is implicit; third that is not possible and/or desirable to assess creativity; and finally, there are those who value creativity but do not know how to assess it. Jackson comments that 'Looking at this optimistically I interpret this to mean that, most teachers with appropriate support, guidance and cultural encouragement could and would assess creativity in students' higher education learning'.

The key stumbling block that might be implicated as a reason why the field has not explicitly drawn creativity into its conception of relevant domain knowledge is a modified version of what Weisberg terms the 'tension view'. Weisberg uses this term to describe the assumption that there is 'a tension between past experience and creativity' (2006: 203). He recounts the model inherent in the work of many researchers on creativity that too much knowledge or too much expertise is believed to inhibit creative action. Such action is believed to come about only by 'breaking away from expertise'. However, his own case studies have determined that this model is flawed and that close scrutiny of creative achievements demonstrates that innovation does build upon previously acquired knowledge and expertise. It is suggested by the authors here that in art and design, we have become

increasingly reluctant to assess or measure creativity because of the similar beliefs that Weisberg attributes to 'confluence' models of creativity which encompass the tension view: the key factor for them is that creativity is causally linked to personality type. If we attempt to assess creativity, are we presuming to assess personality type rather than creative outputs? This model would not actually fit the more open view of creativity as a core human attribute, but instead has more congruence with outmoded notions of creativity as a special 'gift'.

What is apparent is the conditions that can be established within the educational context to help students use their creative abilities to better effect. Instead of viewing the assessment of creativity as a contested issue, we suggest that by increasing familiarity with more workable models of creativity as an innate attribute, we might be more confident in applying criteria derived from our study of our field. If we come back to think about the idea of 'research-like' activity within the curriculum, the notion of assessing the outcomes of such practice by adopting proto-professional models of peer and stakeholder review in the field seems to re-surface.

If we decide to focus on the creative outcome, rather than upon personality, Besemer and O'Quin's framework for assessing creative products in higher education does appear to provide a feasible model for evaluating creative products (1987). They proposed working within the three domains of 'novelty, resolution and elaboration/synthesis'. The originality, 'germinality' and 'transformationality' of the output were seen as the characteristics of novelty. Resolution was characterised by levels of adequacy, appropriateness, usefulness, value and logic, all attributes clearly possible to relate to the already known. Elaboration and synthesis were seen to relate to well-craftedness, attractiveness, expressiveness, complexity, elegance and unity. What is clear is that there is some room for interpretation of the extent to which any of these characteristics might be recognised and valued. However, what such a model does provide is a framework that maps reasonably well onto the types of criteria that are used within the professional context, with social constructivist models of innovation recognition, and with historic accounts of the attributes of recognised exemplar works.

In summary, we accept Craft's analysis that there is minimal literature on the recording and assessing of creativity (2001), but suggest that it is important to move beyond discussion of reasons to not tackle the task. Even the simpler model provided by Torrance's

description of the four components by which individual creativity (or creative outputs) could be assessed (Torrance, 1974) has a remarkable resonance with the in-built values of post-Coldstream (NACAE, 1962), but pre-Post-Modern, art and design education. This simple model suggested the following criteria would enable the assessment of creativity: the fluency of idea production, the ability to generate various and flexible ideas, to elaborate or develop ideas, and to generate ideas that are original.

Creativity and the heuristics of art and design learning

If the model of creativity as a normal human trait is acceptable, together with its associated conditions to support creative action - motivation, deliberate practice and expert knowledge – it is possible to review the historic methods of art and design education in a new light. Mottram notes that emerging explanations for creativity, as well as those for vision and other human functions, are reflecting 'behaviours that were once commonly known and understood as central to training artisans' (Mottram, 2007). Deliberate and intentional practice is based on the repetition of tasks and in many fields this is still understood to be an important foundation for expert achievement. Within the visuals arts, drawing from observation, copying and transcribing, or more mundane tasks such as grinding pigments, were all cornerstones of artistic training from the Renaissance until the latter part of the twentieth century. The past emphasis on task repetition in the training of artists and designers has declined over the past few decades, as new technological tools present alternative means to achieve the coherent representations previously achieved as a result of fluency developed through practice.

The investment in time, practicing how to manipulate materials, to enable processing from natural form through to another state, becomes less relevant as production becomes more about specification and outsourcing fabrication rather than expertise with materials. Within the fine arts particularly, disciplinary expertise has been subsumed by a professionalising that severs tactile engagement with the materials of the disciplines and give a greater emphasis to strategic knowledge. There is still an embedded recognition of the importance of tacit knowledge, that understanding of how it feels to wield the chisel, drape the fabric, or draw the connection. Within art and design, this tacit knowledge is what is distinctive and does form the key rationale for continuing focus on learning through doing.

While tacit knowledge cannot be acquired through engagement with the literature of the field, it is still important to recall the emphasis on domain knowledge in models of creativity. While it appears fashionable to reject the body of domain knowledge, sometimes called the canon or our 'cultural inheritance' (Jones 1999, pp. 162), this is the basis of the understanding of what has been done before that is essential for the evaluation of innovation. Familiarity with the field, or curiosity about what colleagues are making, seems almost a fundamental attribute of artists and designers and creativity models would appear to reinforce its importance. The rejection of the tension view: that too much knowledge inhibits creativity, is a reminder that knowledge of the achievements of the past continues to be important to support innovation in the future.

The recognition of the importance of intuition for designers by Durling (1999) can be accommodated by the framework of tacit, strategic and domain knowledge. Although the intuitive approach has been linked to the personality characteristics of artists and designers, we could speculate that what has been identified as intuition could actually be more closely related to the combined operation of tacit and domain knowledge. While it has been suggested that the designer's particular brand of originality seems more connected with divergent thinking (coupled as it is with ideation and unusual associations) than it does with convergent thinking, counter arguments based on Weisberg's case studies (2006) stress that the great creative achievements of the past have actually been linked to accumulated wisdom and the accretion of influences from a wide range of sources. However we describe the ability to be flexible in thinking or open to experience or ideas, the need to embed the tools for creative thinking and action is clearly a key aspect of the learning experience in art and design. We need to understand how to provide the appropriate context where students can develop their distinct set of transferable and subject specific skills and the knowledge base from which to leverage their creativity.

Research, creativity and economic policy

Comment [A15]: Perhaps this should be the start of the strategy section?

A consideration of research and creativity in relation to national policy can usefully be viewed in relation to studies that articulate how they inform economic and education policies, and reports on the knowledge economy and creative curriculum.

~~There has been an articulation of models for creativity (see Massey, 2006; Felmingham, 2007) but few of the Quality Assurance Agency (QAA) Subject Benchmark Statements for undergraduate programmes include specific references to creativity (Buss, 2007).~~

As already noted above, familiarity with new models of creativity is low, and conceptions of research are still confused. In terms of research, articulation of the knowledge economy suggests that all research has the potential for being exploited and it is this view that lies at the heart of the research funding mechanism for UK universities.

Government departments have not drawn an explicit relationship between creativity and research, but successive government reports have claimed relationships between research carried out in universities, the capacity of graduates to be creative and enhancements to the UK economy, and benefits to wider communities, including social enterprise, regeneration and public subsidy enterprise. In 2003 the Lambert Review urged Universities to enhance the intensity of their collaboration with industry (DTI, 2003) and more recently Cox (2005) claimed that UK businesses will benefit from harnessing the creativity capacity of design graduates. Attention by all UK governments towards these issues is articulated in the policy strategies of those agencies shaping higher education. The QAA makes specific reference to the value of creativity as an outcome of graduate programmes (Buss, 2007), and the Higher Education Funding Councils of England, Wales and Scotland have initiatives linked to research and to creativity. The QAA in Scotland has made the link between research and learning one of their 5 enhancement themes and the Higher Education Academy has undertaken work on research-teaching nexus. The Arts and Humanities Research Council has, in its new strategy (AHRC, 2006) made links between funded research undertaken in universities and benefits to creative industries.

~~is a lack of "innovation active" recorded by HESA~~

Expertise and extensive domain knowledge are the necessary basis for reflecting critically, and the creativity of outputs could be viewed as the evidence of learning within the field. By stressing the conditions for creativity rather than the recognition of creative outcomes, a more useable model for developing a pedagogical framework for creativity might be conceived. Such a framework would also be able to accommodate a notion of research that could successfully incorporate knowledge acquisition and expert practice.

Comment [A16]: Here the issue is that its not with Art & Design that these companies have been collaborating – do we need to make that more explicit?

~~2~~4 STRATEGIC CONSIDERATIONS IN THE RELATIONSHIP BETWEEN RESEARCH AND CREATIVITY

This section considers the strategic development of research and research cultures in the creative disciplines in higher education in the UK. This includes issues of environment and planning, infrastructure and academic replenishment, subject development, the role of research related organisations and, finally, links between research and teaching.

Comment [A17]: May chop

Environment

~~While t~~The importance of research for knowledge generation, ~~and~~ the development of academic disciplines~~, as well as~~and for the well-being of the economy has never been in doubt. However the strategic implications of engagement in research, and ~~, with art and design a relatively recent entrant (historically speaking) into the research landscape,~~of the relationship between research, ~~and~~ creativity, the creative disciplines and the experience of art and design students remains under-explored. ~~At a time when r~~Research is recognised as a foundation of innovation in society, ~~"~~'which is central to improved growth, productivity and quality of life~~"~~' (DfES, 2003:23), and there is growing recognition from policy-makers, ~~as well as~~ funders and wider constituencies that this applies ~~"~~'not only to scientific and technical knowledge~~"~~' (DfES, 2003:23). ~~, and that r~~Research in the arts and humanities is seen as able to ~~can~~ benefit the economy in addition to enriching ~~the~~ culture ~~more widely~~. This reinforces ~~earlier arguments~~the assertion that ~~the "relationship between the arts and humanities and the sciences [read 'research'] is at the very heart of future economic growth" (Potter, 2001, in Council for Science and Technology, 2001:12), and that~~ ~~"~~'research in the arts and humanities underpins the UK's leading position in the creative, cultural and heritage industries~~"~~' (HEFCE, 2002/35:3), although the evidence base is still being developed. Given this recognition of the importance of creative disciplines research, HEIs are faced with major challenges and responsibilities, as well as opportunities in strategically developing the relationships between research and creativity.

Research in the creative disciplines, as a fundamental function of an HEI, continues to undergo ~~significant and radical~~ change. Recent decades have seen the basic functions of creative education ~~expand to transformed, to~~ encompass ~~research as a core practice in~~

~~universities, related in no small part to institutions'~~the ability~~ies~~ to award research ~~(as well as taught)~~ degrees in creative subjects. The award of university title has also been given to HEIs dedicated to the provision of creative education, recognising the~~: something made possible by the presence of an~~ active research culture and doctoral level study in our subjects (see QAA(a)).

The environment has shifted in terms of the accessibility of creativity. Sir George Cox calls for creativity to be integrated into higher education in the sciences, arts and business programmes, to overcome the perception of creativity as the province of the few. "'Creativity needs to pervade the whole of an organisation and, for this reason, the nature and value of creativity needs to be an integral part of all learning"' (Cox, 2005). For him the requirement is simple, education should be about developing a new understanding of the role of creativity: "'We need business people who understand creativity, who know when and how to use the specialist, and who can manage innovation; creative specialists who understand the environment in which their talents will be used and who can talk the same language as their clients and business colleagues; and engineers and technologists who understand the design process and can talk the language of business."'

Planning

Access to research funding is a factor in the growth of research capacity and volume of activity, but the strategic development of creative disciplines research also needs institutional commitment to, and organisation of, the development of a sustainable research base, leadership, environment, and disciplinary knowledge. These principles were enunciated over a decade ago in the Report of the National Committee of Inquiry into Higher Education, chaired by Sir Ron Dearing (the "'Dearing Report"'), which recognised higher education as embracing teaching, learning, scholarship and research, with the latter's key role being to provide "'the long-term foundations for innovation….central to improved growth, productivity and quality of life"' (Dearing, 1997). Again we have recognition ~~Importantly, the Committee acknowledged~~ that this research role included not only science and technology but also the arts: "'Research in the social sciences, and in the arts and humanities can also benefit the economy…not to speak of enriching our culture more widely"' (Dearing, 1997).

Infrastructure

The development of the infrastructure to support increasing research activity in the creative disciplines has been uneven. ~~, however, has been uneven resulting in s~~Specific discipline strengths are emerging in some centres, with ~~, and growing student~~research projects, publications and doctoral student activity ~~numbers, with significant gaps particularly in relation to~~ low levels of external funding, underdeveloped departmental and management infrastructures, and less developed research ethos and expertise. This has been compounded by lack of critical mass, researchers working in isolation, and a large number of short-term contracts (SHEFC, 2004:81). If the relationship between research and creativity is to prosper, the sustainability of the research infrastructure remains key: JM Consulting noted the "'extent of remedial investment required"' and set out the "'conditions needed to manage this infrastructure on a sustainable basis"' (HEFCE 2002/35:§2.18). Significant obstacles highlighted included lack of research space, research squeezed to the margins by teaching, and poor facilities leading to researchers conducting their research outside the institution. The inevitable conclusion is that substantial investment is required to remedy the low expectations of staff and the "'culture of 'excellence in poverty'… (which) leads to sub-optimal performance, and lowered expectations and ambitions for the future."'

Academic Replenishment

The infrastructure also includes the supply of ~~Academic replenishment is about the adequate supply of~~ suitably qualified art and design practitioners who are able to meet the existing and future needs of the cultural industries and the academic profession, and their replenishment. While ~~In the UK~~ the main findings of a 2001 British Academy review of graduate studies ~~makes it clear~~suggested that there will be a significant gap between demand and supply ~~that~~ in the creative and performing arts because of ~~there will be~~ the projected~~a~~ ~~marked~~ increase in the number of professionals reaching retirement age, their focus was on PhD student numbers. ~~and~~ . In three target years in 1994/5, 1996/7, and 1998/9 it was shown that in HEIs, the number of academic staff leaving exceeded the number of awarded doctorates (Britac, 2001:27). This report notes that the shortfall in the supply of suitably qualified researchers is so marked in most of the creative and performing arts that the ratio is likely to fall well below the threshold determined by HEFCE.

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The 1996 Review of Postgraduate Education conducted by Sir Martin Harris had found that in the sixteen years between 1979 and 1994-5, postgraduate students as a proportion of overall student numbers rose sharply from 13% to 21%. Amongst postgraduate students, 82% were on taught programmes (PGT), with 18% being postgraduate research students (PGR). (Harris, 1996). If we look at the numbers of graduating students in 2006, the shape of activity in the Creative Arts and Design subject areas becomes more apparent. Although Creative Arts and Design students account for 9.9% of all those gaining an undergraduate award in 2006, only 5% of postgraduate awards were in this subject field, and 1.9% of the doctorates (HESA, 2007). The take up of postgraduate and doctoral study in the creative arts and design subjects is lower than across other disciplines.

It is important to recall that there are also low numbers of academics with a doctoral qualification in art and design departments, which means that role models for further study are few. The Art & Design Index to Theses (ADIT) includes fewer than 1000 records of PhDs completed since 1957, with an average of fifty completions each year having been reached by 2000 (Fisher & Mottram, 2006). If the concerns outlined in the British Academy review of graduate studies are to be addressed, there is a clear strategic imperative to consider the extent to which doctoral study is seen as a prerequisite for entry into the academic profession.

Research Teaching Linkages

The need to make explicit links between the development of curricula and academic programmes with the new knowledge produced by research has been recognised. In particular, there are benefits to be drawn from the developing research cultures and expertise, and the related and significant investment in infrastructure and environment, which can ~~), with the aim of~~ significantly enhance the student experience. Efforts have been focused increasingly on ensuring that new subject knowledge impacts directly on what students learn and, perhaps more importantly, to encourage 'research-like learning' amongst students, even at undergraduate level. ~~The need for such efforts has been clear for some time.~~ The Roberts Report ~~(published in April 2002),~~ highlighted inadequate training of postgraduates in higher education institutions, which was confirmed in consultation responses: "'The amount of training – particularly in transferable skills –

available to postgraduates was criticised as inadequate, contributing to many employers not valuing a postgraduate student significantly more than a first degree graduate~~"~~' (Roberts, 2002)

In seeking ways to address this situation, Roberts~~' report~~ drew attention to the recent development of Master of Research (MRes) programmes as a step in the right direction, stating their purpose as ~~"~~'...to offer high quality postgraduate training in the methods and practice of research and in relevant transferable skills...~~"~~' (Roberts, 2002:113), and recommended that the Research Councils had a critical role to play in supporting postgraduate training, with evidence existing to suggest that a postgraduate qualification can boost career and earning prospects. In 2001 ~~T~~the UK Council for Graduate Education (UKCGE) published~~, in 2001~~ a report on the first five years of the MRes degree, which recommended the full integration of MRes programmes within HEIs' portfolios of postgraduate programmes, particularly given the positive experience of the MRes in raising the profile of transferable skills to the top of the postgraduate training agenda.

Following the Roberts Review, the ~~and other reviews of research, in 2003 the~~ four UK higher education funding councils, concerned about the development of research and other skills, issued a formal consultation in 2003 on proposals for minimum threshold standards for postgraduate research degree programmes. T~~, t~~he results of ~~which~~ the consultation ~~were to~~ contributed to the development of the revised QAA Code of Practice on postgraduate research programmes~~., itself one of a suite of interrelated documents forming an overall Code prepared by the QAA in response to the reports of the National Committee of Inquiry into Higher Education and its Scottish Committee (the Dearing and Garrick Reports).~~

~~Recently, there has been considerable i~~Interest in exploring the links between research and teaching has continued. In Scotland it forms part of the Enhancement Themes initiative, which identifies and explores areas for development in order to improve the student learning experience in higher education. The significance of this theme led the Scottish Higher Education Enhancement Committee (SHEEC), in March 2006, to bring it forward in the original schedule. In order to provide additional focus it will concentrate on the learning experiences of students on taught programmes and in particular, how ~~"~~'research-teaching linkages~~"~~' enhance graduate attributes.

Comment [IS18]: We are checking this reference

Comment [A19]: Cannot see point of full mention of code

~~In order to explore the theme, a~~A subject-based approach has been adopted to explore the theme, ~~in which the~~with the research practices of particular disciplines being ~~are~~ examined for their influence on the learning environment of their students. The interpretation of research is broad and the initial ~~list~~ definitions includes ~~"~~'practice/consultancy led research; research of local economic significance; contributions to the work of associated research institutes or other universities and various types of practice-based and applied research including performances; creative works; and industrial or professional secondments~~"~~' (Enhancement Themes, 2007). Reflecting interest in the potential impact on student experience in this area, t~~T~~he Higher Education Academy Subject Centres in Art, Design Media (ADM-HEA) and, Dance, Drama and Music (PALATINE) are also due to report on research-teaching linkages in Creative and Cultural Practices in 2008.

~~3 RESEARCH, THE CURRICULUM AND THE STUDENT LEARNING EXPERIENCE~~

~~The premise for this chapter was the need to explore assumptions about the research:creativity nexus and how it impacts upon the learning environment and student experience. A particular question for the authors of this study was to consider how research impacts upon the student learning experience, and how we might model the appropriate conditions for future practice. The extent to which research is currently visibile and explicit in the curriculum is seen to enable identification of the tools and methods of research within a creative practice-orientated curriculum. This section concludes by suggesting that existing interests and expertise recognise theits inherent value as a of this disciplinary field.~~

~~If practice-based research is undertaken by most members of art and design teaching staff, and if that research is directed toward a practice that is transforming (e.g., of the art and design world debates, etc.), we should expect the research to increasingly underpin delivery and content of undergraduate and postgraduate degrees. The extent of underpinning will depend on the extent to which transformational practice is a constituent of the academic programmes. Despite the possible mismatch of graduate numbers with market needs, it is generally assumedThe general assumption and made manifest in the Art & Design Benchmark Statement (QAA, 2007), within the field is that undergraduate and postgraduate students are being developed as practitioners and that practice underpins practice-based research. We could then say that, insofar as their teachers frame their~~

courses in content and delivery as building towards practice-based research, then the students will be engaged with research from the outset (Drew, 2007). However, this position does contain three assumptions which it may be useful to highlight: first is that most of our staff are engagedthe level of engagement in practice-based research. We have already noted the problems inherent in the equivalence model, and suggest the need for clarity in distinguishing between activities that are research focused or areand those that are practice-based 'research' in name only. The second assumption is to assume engagement in research, creative or scholarly practice, and the third is that research in this field necessarily involves the researcher in practice. Instead of focusing on the distinctions between research and practice-based research, it is useful to look at how the sector is articulating the distinctions between practice, practice-based research and practiceresearch-based researchpractice.

The principal distinction between practice-based research and practice is a more public engagement of the practitioner with the theories and ideas underpinning creative work. This public engagement is manifested in the art and design world debates, which encompass both linguistic and visual modes of exchange, and generally take place within a market context. In the progression from Bachelors to Masters through to PhD, we should expect students to be engaged in this way at increasing depth, rigour and intellectual sophistication, and to increasing productive consequence. As such, this engagement can be seen as replicating, reflecting and even contributing to the exchange, or discourse, largely taking place within the wider academic and non-academic art and design worlds. This then is could be the equivalence with knowledge of the field that was identified in the discussion of models of creativity from other fields, and, in a reflexive mode, scholarly enquiry into this knowledge of the field can provide a basis also for research-based practice. The extent to which any of these approaches to research and creative practice are made explicit or evidenced in curriculum design or content rests upon the intentionality with which they are employed.

Whilst this model of increasing engagement in the field has a reasonable fit with well-established heuristics within the art and design field, there is evidence from beyond the field that narrow views of research might not benefit students. Where research is conceived as high-level 'discovery"' research (Boyer, 1990), abstracted from any concern for student learning, it has been shown to negatively impact on staffs' concerns for teaching and can result in a structural separation of course design and delivery from staff research (Hattie

and Marsh, 1996). However the benefits to students learning through research and enquiry have never been in question. The central message for course teams is to "'focus on the student experience of appreciating, using and doing research"' (Jenkins et al, 2003).

Csikszentmihalyi (1997) argues that the main value of teaching for both the teacher and the student is lost if there is a lack of satisfaction in teaching. For a university teacher, intrinsic motivation and a scholarly approach impacts upon the student experience, and that 'Teachers who do not find their subject matter worthwhile in and of itself but teach it only for extrinsic reasons – pay or prestige – waste their own time and convey the message to students that learning lacks intrinsic value and is only a means to other ends.' (p. 82).

There is emerging evidence that Pproto-research, or research-like learning, is beginning to be employed intentionally within the field. This includes exploring topics and approaches new for students although not new knowledge in the field. Examples documenting such approaches include projects at the University of Sydney (USYD project), Oxford University (Oxford Learning Institute) and Project Link (Oxford Brookes University). The curriculum mirrors research processes and activities, with students engageing in research skills development programmes which include collaborative team working, presentations, posters, papers, and exhibitions. The assessment process mirrors research practices of peer review, revision on the basis of feedback and representing of revised artefact. Another example of this approach is a Multimedia course (Southampton University) organised to mirror the process of conference paper/poster submission, research, writing and peer review, and then presentation at a One Day Conference to which outsiders, including potential employers, are invited to take part. Recent work on teaching design at undergraduate level also suggest that teachers at undergraduate level in design need to uslinkse research and enquiry based approaches – "'like the ones used in research"' – to enable high level learning outcomes (Shreeve, Bailey & Drew, 2004).

Comment [A20]: Are these projects art & design focused? If not, the relevance will have to be re-framed

The embedding of research with in art and designcreative disciplines within the curriculum does require framing introducing the domain and its knowledge base through an introduction to research cultures and backgrounds. It is suggested that Tto support research the learning environment must support the needinclude channels for for continual exchange between a department or school and the wider academic and professional community. At one level this is the preserve of the well found laboratory and library, but

when facing the market the following primary mechanisms are also necessary: internet presence, accessible and well documented events, publications, exhibitions, and collaborative networks with research and professional peers.

In considering the student learning experience, there is scope for further development of the understanding of research processes and enquiry based learning within the art and design field. As with recent understanding of creativity from outwith the field, other fields have also advanced thinking that can be drawn to bear upon the particularities of art and design. Enquiry based approaches have become more popular in university settings as a way of encouraging both learner autonomy and higher level learning outcomes (Brew 2003). Enquiry based learning (EBL) describes an environment where learning is driven by a process of enquiry owned by the student. The identification of issues and questions and the examination of the resources conduct the investigation incorporates the acquisition of the requisite knowledge. This knowledge is more readily retained because it was acquired by experience, in relation to a real problem. Many researchers see the benefits of enquiry-based learning, described as "'a good way of thinking"' by Knight & Yorke (2004), as leading to subject knowledge acquisition and fluency with the skills and practices which engender employability. This signals another justification for the greater integration of research activity into taught curriculum and student learning. Students can be inducted into the culture and community of researchers at all levels through enquiry based approaches, developing knowledge of what it is to engage in the subject in a research based way, understanding key issues and debates in the subject area, and knowing what researchers in the subject do. In other words, they can engage in activities which mirror the research process.

Learning how to incorporate intentional use of research strategies within a context that is primarily focused on creative practice production needs to encompass a range of methodological approaches. Whilst the postgraduate curriculum has developed over the past ten years to include some introductions to research methods, the emphasis at undergraduate level is more upon students undertaking 'research' that is more akin to searching for material to support their practice. This research for practice provides the stimulus for creative actions, and the theoretical context for describing the outcomes of that practice. Despite the relative low levels of dialogue between the schools sector and higher education at present, the 'A' level curriculum in art and design does include a strong emphasis on critical appreciation and evaluation that could usefully feed into undergraduate

learning. However, the prevalence of an interim 'foundation' experience in art and design that focuses heavily on portfolio production might impact on the extent to which the emphasis on evaluation can be carried over.

The explicitness of research in the curriculum

Brew and Boud have noted that "'Teaching and research are correlated when they are co-related…"' and they suggest we should "'…exploit further the link between teaching and research in the design of courses"' (Brew & Boud, 1995). The visibility of faculty members' engagement in research related to the disciplines they teach can make an important contribution to breaking down any perception of a division between practice and research. Institutional strategies which recognise the importance of good practice in course design have also rewarded that activity (e.g. HEFCE Teaching Quality Enhancement Funds, Centres for Excellence in Teaching and Learning). This has increased the motivation to reward good practice in practice based teaching and learning, including that which is research led. Examples of activities which have been seen to impact on course design include pedagogic research projects, teaching fellowship activities and learning and teaching secondments.

Comment [A21]: Not sure much value in this apart from introduding next sentence, which could be used elsewhere

Comment [A22]: Not sure how particularly important this is to the argument

Research processes and methods

The explicitness of research in the curriculum

It is apparent that research aligned teaching requires the learning experience to be organised around the research strengths and interests of the staff (including pedagogical research) and the curriculum to be aligned with those research strengths. The more research is embedded in the institution the more pervasive is the influence of these research areas on the curriculum. Explicit links from research to learning have to be made – as strategic choices for research affect the subjects that are taught. Healey has noted that "'In constructing links between research and teaching the discipline is an important mediator"' (2005, p.67), and this privileging of disciplinary knowledge is an important reminder to academic professionals to value the inherent currency of the field within the knowledge economy, rather than privileging the value of the discipline within its cultural

marketplace. The responsibilities are different, and if we are to argue that research is a core practice in our disciplines, we need to locate our discussion appropriately. While it is clear that a high level and quality of communication about research and its implications for subject development and educational process is key to a culture of scholarship within the art and design subject field, this does need the support of a recognised evidence base and a shared terminology.

Comment [A23]: Insert a summation of section 3?

4 CREATIVITY, THE CURRICULUM AND THE STUDENT LEARNING EXPERIENCE

The following discussion of the current and potential role of creativity in the research:creativity nexus is necessarily focused on where this topic has emerged within the higher education context in art and design. As noted above, recognition of the desirability of incorporating creativity within the general education curriculum first surfaced in the 1960s, and has resurfaced again strongly since the 1990s. The early work drew heavily upon the post-Freudian models of unconscious strategies that still appear to inform much thinking about creativity in the art and design sector. The period since 1995 has seen a growing recognition from government, policy-makers and commentators that creativity is an extremely important aim for education, given the economic imperative to foster it in and for business. It is notable that the majority of the work on creativity in education has focused upon primary and secondary education, and has not necessarily been focused on creativity within the disciplines of 'creative' practices. This section will discuss current modeling of creativity within the art and design field, noting the distinctions made between 'normal' and 'high' levels of creativity. Particular issues relating to the assessment of creativity are noted, and the fit between traditional heuristics of art and design education and emerging models of the conditions for creativity are described.

The explicitness of creativity in the curriculum

To discuss creativity in the curriculum for degree and postgraduate courses in art and design, we need first to establish the relationship of creativity to practice in the subject disciplines. We tend to work on a day-to-day basis with the understanding that the art and design disciplines are, de facto, inherently creative. This may not be a particularly helpful

starting position for a number of reasons. We have already noted the emergence of models of creativity as a normal attribute of ordinary human brain activity, which effectively disengages the idea of giftedness or talent from artistic expression. Advanced practice in any field is now seen as more closely connected to investment models of creativity through deliberate practice and familiarity with past achievement rather than to divine inspiration. Social constructivist models of innovation and achievement are identifying connections and networks as key determinants for the positive recognition of new contributions to the field, theorising the models of reputation development that have motivated the social networking of artists and clients throughout history. However, what can be claimed is that the art and design field is one where creative activity can generate contributions to that field that are recognised and valued because they are seen to be different from previous contributions. Novelty becomes a key feature, but one where the connections to context, previous work in the field, and intentionality, is essential.

While the definition for concepts of creativity has proved elusive, most of the dominant writers acknowledge a broad spectrum of activity (Spiel & von Korff, 1998). One clear and major distinction made by some analysts is that between 'high' creativity and 'ordinary' or everyday creativity. High creativity is identified as the sort of publicly acclaimed creativity which changes our understanding or perspective on the world, such as "'the achievement of something remarkable and new, something which transforms and changes a field of endeavor in a significant way ... the kinds of things that people do that change the world"' (Feldman, Czikszentmihalyi & Gardner, 1994: 1). Again we see congruence across disciplinary boundaries, with researchers in cognitive and computing science such as Margaret Boden (1990) suggesting a model similar to that proposed by Vernon (1984) and the above authors. Boden saw little difference in type, merely scale, between this 'high' creativity and the ordinary or 'democratic' creativity that is essentially the innate human capacity for solving everyday dilemmas as well as more complex problems. Her position gets over the difficulty of the focus on extraordinary or high creativity in its propensity to be applied only to extremely talented people, which may be of little or no relevance when used in the context of a comprehensive and general education environment. The phrase 'democratic' creativity was coined in All our Futures (DfEE, 1999) to mean the creativity of the ordinary person, and in the same year the National Curriculum Handbook included creativity within the section on thinking skills. They defined these skills as the attributes which "'enable pupils to generate and extend ideas, to suggest hypotheses, to apply imagination, and to look for alternative innovative outcomes"' (National Curriculum

Handbook for Primary and Secondary Teachers, 1999).

It is also important to develop a clear position on whether we are considering creativity within a domain specific context, or whether we are referring to creativity as a generic attribute. The influence of models of creativity as a normal human attribute sit more comfortably with this chapters' assertion of the generality of research practices, but does not deny the position of creativity as a core concept within the practices of art and design.

When it comes to reviewing the extent to which creativity is explicit in the curriculum for art and design, there is little evidence of the field intentionally addressing it as a curricular topic. It is perhaps of note that the field itself does not see fit to address one of its distinguishing characteristics as a part of its domain knowledge, but perhaps some contemporary ambivalence to notions of domain knowledge itself might have a bearing on this.

Assessment and creativity in art and design

While many instruments have been created to assess various aspects of creativity – Isaksen (1993) identified more than 200 tests, inventories, rating scales, and checklists – there is little evidence of any interest in such instruments within art and design. There is a tendency to argue it is difficult to assess creativity, based on claims that the complex and multidimensional nature of creativity cannot be captured effectively and comprehensively by any single instrument or analytical procedure. Creativity assessment might be regarded as an attempt to recognise or identify creative characteristics or abilities among people, or to understand their creative strengths and potentials. Tests, inventories, or rating scales do not engage with the outputs of creative practice within the terms of operation of the art and design field. Jackson's 1997 summary of art and design lecturer views on whether creativity can be assessed suggests there are four main perspectives: that students' creativity is evaluated through explicit assessment criteria; secondly, that insufficient attention is given to recognising students' creativity and that at best the evaluation and recognition is implicit; third that is not possible and/or desirable to assess creativity; and finally, there are those who value creativity but do not know how to assess it. Jackson comments that "'Looking at this optimistically I interpret this to mean that, most teachers with appropriate

support, guidance and cultural encouragement could and would assess creativity in students' higher education learning"'.

The key stumbling block that might be implicated as a reason why the field has not explicitly drawn creativity into its conception of relevant domain knowledge is a modified version of what Weisberg terms the "'tension view"'. Weisberg uses this term to describe the assumption that there is "'a tension between past experience and creativity"' (2006: 203). He recounts the model inherent in the work of many researchers on creativity that too much knowledge or too much expertise is believed to inhibit creative action. Such action is believed to come about only by "'breaking away from expertise"'. However, his own case studies have determined that this model is flawed and that close scrutiny of creative achievements demonstrates that innovation does build upon previously acquired knowledge and expertise. It is suggested by the authors here that in art and design, we have become increasingly reluctant to assess or measure creativity because of the similar beliefs that Weisberg attributes to "'confluence"' models of creativity which encompass the tension view: the key factor for them is that creativity is causally linked to personality type. If we attempt to assess creativity, are we presuming to assess personality type rather than creative outputs? This model would not actually fit the more open view of creativity as a core human attribute, but instead has more congruence with outmoded notions of creativity as a special 'gift'.

What is apparent is the conditions that can be established within the educational context to help students use their creative abilities to better effect. Instead of viewing the assessment of creativity as a contested issue, we suggest that by increasing familiarity with more workable models of creativity as an innate attribute, we might be more confident in applying criteria derived from our study of our field. If we come back to think about the idea of 'research like' activity within the curriculum, the notion of assessing the outcomes of such practice by adopting proto-professional models of peer and stakeholder review in the field seems to re-surface.

If we decide to focus on the creative outcome, rather than upon personality, Besemer and O'Quin's framework for assessing creative products in higher education does appear to provide a feasible model for evaluating creative products (1987). They proposed working within the three domains of "'novelty, resolution and elaboration/synthesis"'. The

originality, "'germinality"' and "'transformationality"' of the output were seen as the characteristics of novelty. Resolution was characterised by levels of adequacy, appropriateness, usefulness, value and logic, all attributes clearly possible to relate to the already known. Elaboration and synthesis were seen to relate to well-craftedness, attractiveness, expressiveness, complexity, elegance and unity. What is clear is that there is some room for interpretation of the extent to which any of these characteristics might be recognised and valued. However, what such a model does provide is a framework that maps reasonably well onto the types of criteria that are used within the professional context, with social constructivist models of innovation recognition, and with historic accounts of the attributes of recognised exemplar works.

In summary, we accept Craft's analysis that there is minimal literature on the recording and assessing of creativity (2001), but suggest that it is important to move beyond discussion of reasons to not tackle the task. Even the simpler model provided by Torrance's description of the four components by which individual creativity (or creative outputs) could be assessed (Torrance, 1974) has a remarkable resonance with the in-built values of post-Coldstream (NACAE, 1962), but pre-Post-Modern, art and design education. This simple model suggested the following criteria would enable the assessment of creativity: the fluency of idea production, the ability to generate various and flexible ideas, to elaborate or develop ideas, and to generate ideas that are original.

Creativity and the heuristics of art and design learning

If the model of creativity as a normal human trait is acceptable, together with its associated conditions to support creative action – motivation, deliberate practice and expert knowledge – it is possible to review the historic methods of art and design education in a new light. Mottram notes that emerging explanations for creativity, as well as those for vision and other human functions, are reflecting 'behaviours that were once commonly known and understood as central to training artisans' (Mottram, 2007). Deliberate and intentional practice is based on the repetition of tasks and in many fields this is still understood to be an important foundation for expert achievement. Within the visuals arts, drawing from observation, copying and transcribing, or more mundane tasks such as grinding pigments, were all cornerstones of artistic training from the Renaissance until the latter part of the twentieth century. The past emphasis on task repetition in the training of artists and

designers has declined over the past few decades, as new technological tools present alternative means to achieve the coherent representations previously achieved as a result of fluency developed through practice.

The investment in time, practicing how to manipulate materials, to enable processing from natural form through to another state, becomes less relevant as production becomes more about specification and outsourcing fabrication rather than expertise with materials. Within the fine arts particularly, disciplinary expertise has been subsumed by a professionalising that severs tactile engagement with the materials of the disciplines and give a greater emphasis to strategic knowledge. There is still an embedded recognition of the importance of tacit knowledge, that understanding of how it feels to wield the chisel, drape the fabric, or draw the connection. Within art and design, this tacit knowledge is what is distinctive and does form the key rationale for continuing focus on learning through doing.

While tacit knowledge cannot be acquired through engagement with the literature of the field, it is still important to recall the emphasis on domain knowledge in models of creativity. While it appears fashionable to reject the body of domain knowledge, sometimes called the canon or our "'cultural inheritance"' (Jones 1999, pp. 162), this is the basis of the understanding of what has been done before that is essential for the evaluation of innovation. Familiarity with the field, or curiosity about what colleagues are making, seems almost a fundamental attribute of artists and designers and creativity models would appear to reinforce its importance. The rejection of the tension view: that too much knowledge inhibits creativity, is a reminder that knowledge of the achievements of the past continues to be important to support innovation in the future.

The recognition of the importance of intuition for designers by Durling (1999) can be accommodated by the framework of tacit, strategic and domain knowledge. Although the intuitive approach has been linked to the personality characteristics of artists and designers, we could speculate that what has been identified as intuition could actually be more closely related to the combined operation of tacit and domain knowledge. While it has been suggested that the designer's particular brand of originality seems more connected with divergent thinking (coupled as it is with ideation and unusual associations) than it does with convergent thinking, counter arguments based on Weisberg's case studies (2006) stress that the great creative achievements of the past have actually been linked to accumulated wisdom and the accretion of influences from a wide range of sources. However

~~we describe the ability to be flexible in thinking or open to experience or ideas, the need to embed the tools for creative thinking and action is clearly a key aspect of the learning experience in art and design. We need to understand how to provide the appropriate context where students can develop their distinct set of transferable and subject specific skills and the knowledge base from which to leverage their creativity.~~

It is becoming clear that despite the emergence of creativity as a recognised factor in research and learning, which is valued in practice beyond education, in both commercial and social enterprise, it is uncertain whether this has yet been successfully articulated in the curriculum. In addition, the extent to which we can predict or measure the effects of greater creative capacity in graduates is also as yet unclear. Creativity does remain as a core concept, but thinking within the field appears to be either confused or generalised. While research practice is growing, there are still areas where we are not in control of our own definitions and have not established consensus on the important questions for the field. The role of research as a core practice in universities is embedded, but there is still some pressure to argue for special circumstances or practices. These gaps suggest that a review of how we engage with the research:creativity nexus would be a useful contribution to make to the field.

5 SUMMARY

Through exploring the research:creativity nexus in art and design, we suggest that there are clear drivers to reposition our understanding of those two separate elements, and how they might impact upon student experience. We see that their nexus could then provide clear goals for a future vision for art and design within the context of UK higher education.

We noted that the linkages between creativity and economic regeneration are now being substantiated, although there continues to be some dispute on exact definition and professional boundaries. The problem of definitions was also seen in relation to creativity. New models of setting the conditions for creativity were seen to provide more useable frameworks where creativity was seen as a normal human attribute rather than as a special gift for a privileged few. The notion of conditions for creativity applies to the economic as well as educational context, suggesting that reflection on current practice is timely.

The short history of the research degree in art and design was used to model how conceptions of research activity within art and design higher education have developed. The frameworks provided by the CNAA were influential in stimulating early doctoral work and instigating the process of reporting on engagement by lecturing staff in professional creative practice beyond the university or art and design school. The RAE in 1992 was a pivotal moment in attributing a value to the professional creative practice reported by the field. However it is suggested that this point, when equivalence became a dominant model, was when art and design lost clear sight of the applicability of research beyond the local context. The 1990's saw some attempts to frame alternatives to equivalence which had more general applicability, but the propositional notion of embodied evidence continues to be problematic.

To a certain extent this mirrors the claims for linkages between creative graduates and the economy, or between university research and economic development. The base problem was identified as a lack of evidence: of innovative businesses linking with universities; of research ratings impacting on student experiences; on reasons for increasing numbers of doctoral students. The lack of evidence and continuing fluidity of definitions are seen as two key reasons to look more closely at repositioning our understanding of the research:creativity nexus.

In strategic terms, it is clearly important to understand how research in art and design is benefiting the economy, and how engagement in creative practice can influence the integration of creativity more generally within higher education across all disciplines. This needs long term planning, to build the capacity to engage with outstanding questions of definition and evidence, as well as to identify issues of strategic important for future enquiry. The need to determine a coherent approach to academic replenishment has been identified as a key challenge. Despite the growth in postgraduate doctoral numbers in recent years, there is still a very low proportion of staff holding PhDs across the art and design sector. The involvement in creative practice that CNAA recognised as one of the several attributes that contributed to the quality of the student experience has remained the dominant model in art and design so far, in contrast to other disciplines within the higher education sector. The increasing emphasis on research and the establishment of the AHRC has had a dramatic impact on the way research, scholarly activity and creative professional practice have been integrated into the life of art and design academics, but the linkages which then impact upon the student experience are still developing pace. In

respect of doctoral level students, the revised QAA Code of Practice on postgraduate research programmes has drawn together earlier work on the student experience at that level, to provide a robust framework for future activity. The next challenge is to reflect further on what could be achieved at Masters' and undergraduate levels.

The focus on valuing engagement in practice has led to a view that all research in art and design is necessarily practice-based. This is not considered to present the full picture, although it does provide one model for comprehension of a logical relationship between staff engagement in research and the student replication of that. The distinguishing feature of research orientated practice is seen to be the level of public engagement in art and design world debates, and the productive consequences of that. This model of research replicates the general understanding of contributing to a field, but does require the development of abilities to discern supportable claims, to recognise innovation and to engage in enquiry-based learning.

We suggest that a research culture needs to be appropriately supportive of teachers in order for professional learning to continue to occur in a reflective environment, where analysis and evaluation can become embedded as tools to support enquiry. This again picks up the strategic need to consider academic replenishment. Methods that can operate to establish such a context can include staff research plans, informal research mentoring, and review of research in appraisal. The expectation is that these initiatives will extend to most staff. Support for PhD registration, sabbatical leave, research project management and training can all be designed with a view to raising the quantity of teachers actively engaged in research and the quality of their engagement.

The learning environment of a research-orientated curriculum needs to be organised such that there are foci of enquiry, reflecting the idea that we need to look longer terms at the development of the research agenda. Emerging foci at institutional level can be built from existing or new interests, and enable the culture to become developmental and transformational. PhD students are seen as central to this but it is vital to enhance the links between research and undergraduate and postgraduate students, to inspire the next generations to aspire to progress to Ph.D.

A creative approach to conceiving the educational offer as well as understanding how creativity works is seen as a central plank for developing future provision. By reviewing

thinking about creative practice and the conditions for that practice, we are confident that art and design disciplines can deliver the graduates who will penetrate all disciplinary fields within our economy. The perceived limitations of assessing creativity are seen to be ably challenged by the adoption of proto-professional models of peer and stakeholder review. The focus on causal links between student personality type and creative achievement suggests that attempts to impact on the student experience might be limited in success. Instead, the focus on setting the conditions for creativity appears as a more optimistic context that can be modelled from within the field. What becomes clear when looking at recent studies on creativity is that there are remarkable coincidences between the historic methods of the atelier and the suggestions of the right conditions to support creativity. The emphasis on knowledge of the field, on deliberate practice, and on being in the right supportive context, seems to mirror closely the characteristics of earlier models of art and design training. We suggest that it is vitally important to be cognisant of the full range of knowledge required for creative expertise. It is not just the tacit knowledge or skills of how to wield the tools of the field. In addition, the domain knowledge to recognise innovation and the strategic knowledge of how the field operates, are required to complement the ability to generate inventive contributions to objects, knowledge and understanding of art and design.

~~(FROM OPENING SECTION> POSSIBLY USE HERE? It is intended that the chapter will provide valuable insights into delivering the vision for an art and design higher education that meets both our aspirations and strategic needs, based on the collective responsibility we share for owning our understanding of creativity and creative research, within the creative disciplines. We would wish for any such suggestions to be both reasonable and deliverable, with respect to the differential capacities of institutions, research cultures and individuals to realise the vision.~~

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[i] It is important to acknowledge that the DCMS definition for the creative industries is problematic, and research papers are articulating some of the difficulties with this definition. This falls outside our discussion for further reading on this see Dunlop and Galloway's critique of definitions paper (2007) and NESTA's Creating Growth report (2006).