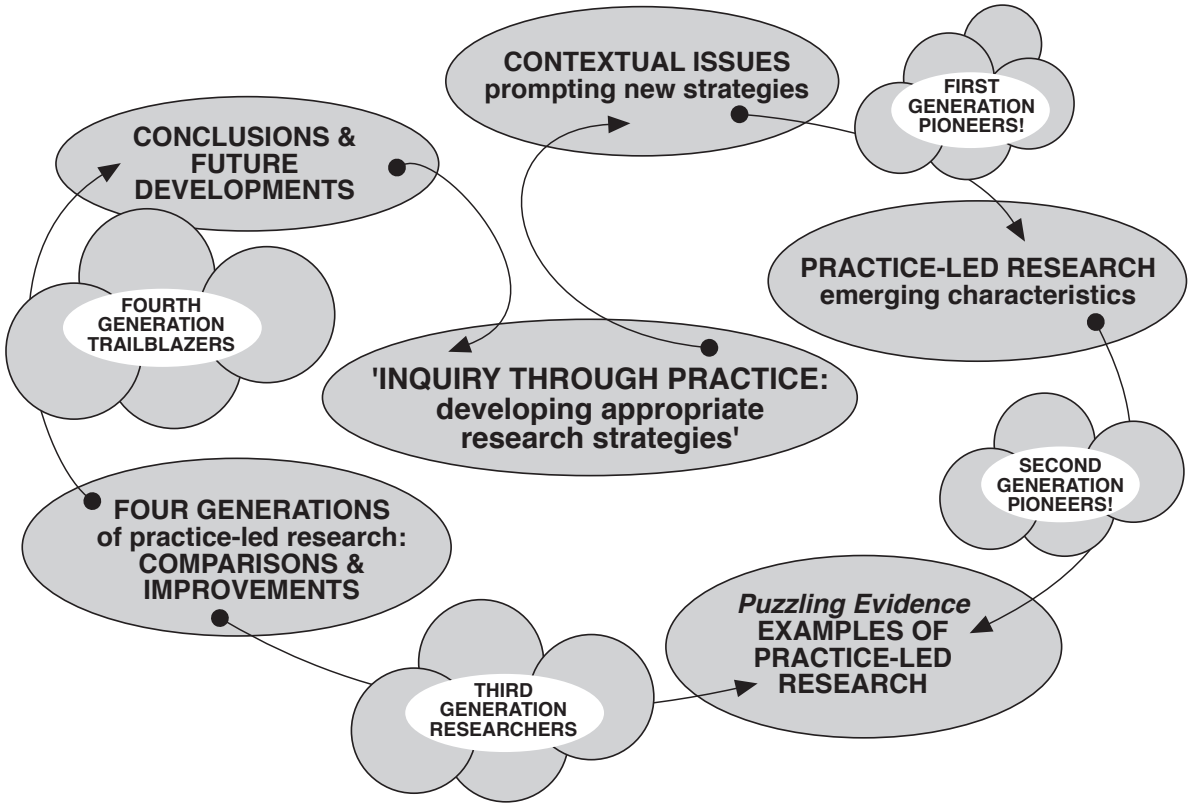
Inquiry through practice: developing appropriate research strategies

VISUAL ABSTRACT



The paper explores the concept of 'practice-led' research (that is research initiated in practice and carried out through practice) within the context of formal research for higher degrees (M.Phil. and Ph.D). This research strategy began to emerge in the 1970's and early 80's when 'first generation' pioneering artists and designers saw the potential for exploring and developing practice through the process and framework of higher degrees. This kind of disciplined inquiry was encouraged by the UK Council for National Academic Awards, who extended its research regulations to allow the inclusion of artefacts/artworks (elements of practice) as part of a submission for higher degrees, legitimising practice, and not only 'reflection on practice', as a research activity.

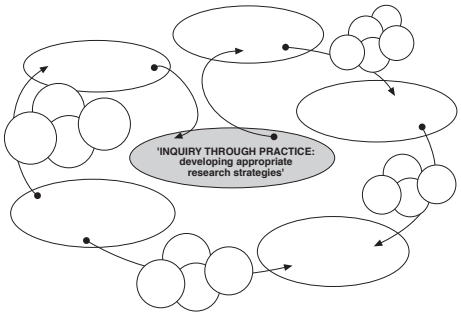
Although this was seen as 'liberating', the development of 'practice-led' research strategies has been slower than might have been anticipated; the root of this probably lies in the tensions between professional practices and 'academic' education and research, and the lack of really

appropriate research methodologies and methods for the visual arts (forcing researchers to rely on ones from other disciplines - science and social science - some of which are extremely useful, others completely distorting!). Concurrent with the emergence and development of more 'artistic' methodologies has been a 'paradigm shift' in most, if not all, areas of thinking; 'postmodern' ideas have had an impact on most aspects of culture and society, changing the way we relate, communicate, and generate knowledge. It is in this context that practice-led research is developing and to which it must respond.

Attempts have been made to describe 'practice-led' research, proposing key characteristics and methodologies; these have been formulated by studying the evidence provided by recently completed practice-based higher degrees, (characteristics of which only become clear over time), and in response to the aforementioned contextual issues. The task is somewhat like 'describing the elephant' in the Hindu story - we know it's there, but it's only perceptible in small, sometimes unrelated and very diverse parts! Second 'generation' practitioner-researchers (encouraged by the first 'generation') are now supervising research students and have responsibility for developing new research strategies. The lucky subsequent generations of researchers can now afford to take more risks, be 'methodological trailblazers', and benefit from the mistakes and successes of the pioneers and their growing peer group. By making comparisons between 'generations' it is now becoming possible to gain a perspective on the development of practice-led research, identify improvements which have taken place (albeit in a short 30 year time span), and make sensible recommendations for future research strategies.

We are now in a better position to 'describe the elephant', and better able through advances in technology (especially multimedia) and the growing network of practitioner-researchers to visualise, analyse, interrelate and communicate the 'parts'. Research is an integral element in the education of future artists as critical and creative 'reflective practitioners'. Practice-led research needs to be further defined, validated and extended as part of these strategies for 21st century research in the visual arts.

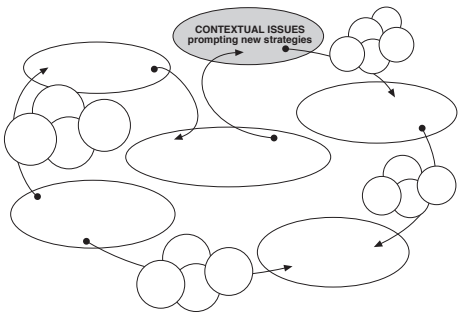
Introduction: contextual issues prompting new research strategies



This paper explores the concept of 'practice-led' research within the context of formal research for higher degrees (M.Phil. and Ph.D). By 'practice-led' I mean, firstly, research which is initiated in practice, where questions, problems, challenges are identified and formed by the needs of practice and practitioners; and secondly, that the research strategy is carried out through practice, using predominantly methodologies and specific methods familiar to us as practitioners in the visual arts.

I am assuming 'strategy' to encompass all the activities involved in the planning and conducting of formal research for higher degrees - issues of research infra-structure, resourcing, supervision, research student training, methodologies, examination, dissemination, etc.

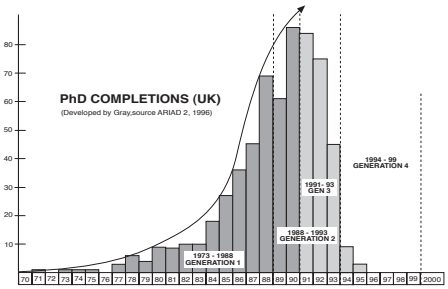
Although I cannot explore all these in any depth here, I hope to provide some ideas, especially about practice-led research, which have implications for institutional and individual research strategies.



The concept of a 'practice-based' research strategy in Art & Design began to emerge in the UK in the mid 70's and early 80's, when 'first generation' pioneering artists and designers saw the potential for exploring and developing practice through the process and framework of higher degrees. This formal research framework seemed to have the potential to raise the level of critical practice from an informed perspective, beyond that of Masters study, and in a much more rigorous and open way than professional practice might encourage, even at the highest levels. This kind of disciplined inquiry was supported by the UK Council for National Academic Awards (CNAA), who in 1989 extended its research regulations to allow the inclusion of artefacts/artworks (elements of practice) as part of a submission for higher degrees, legitimising practice and not only 'reflection on practice' as a research activity.

Prior to this most completed Ph.Ds topics in Art & Design were firmly within the research framework and methods of education, art history, and psychology - that is research conducted about (into) the visual arts from an external perspective by educationalists, historians/theoreticians, critics and psychologists - usually not primarily practising artists and designers. These approaches reflect the classic 'scientific method' where the researchable is objectified, and the researcher attempts to remain detached.

1980, Rorty, deconstructing philosophy;
1981, Schön, reflective practitioner;
1984, Yin, case study;
1985, Lincoln & Guba, naturalistic inquiry;
1986, Eco, hyperreality;
1988, Gleick, chaos;
Feyerabend, 'Against Method';
1990, Guba, alternative research paradigms;
Irigaray, difference;
1992, Waldrop, complexity;
Jencks, postmodern(ity);
1993, Robson, real world research.



Art & Design Ph.D completions, UK, 1970 - 1995.
(developed by Gray, source: ARIAD 2, 1996)

In addition, two projects used a 'naturalistic' methodology (both education Ph.Ds); and 64 used an 'experimental' methodology (mostly in psychology, and in design disciplines, where a few practice-based elements, for example designed products, were an outcome of the research).

Andrew Stonyer, temperature-sensitive kinetic sculpture

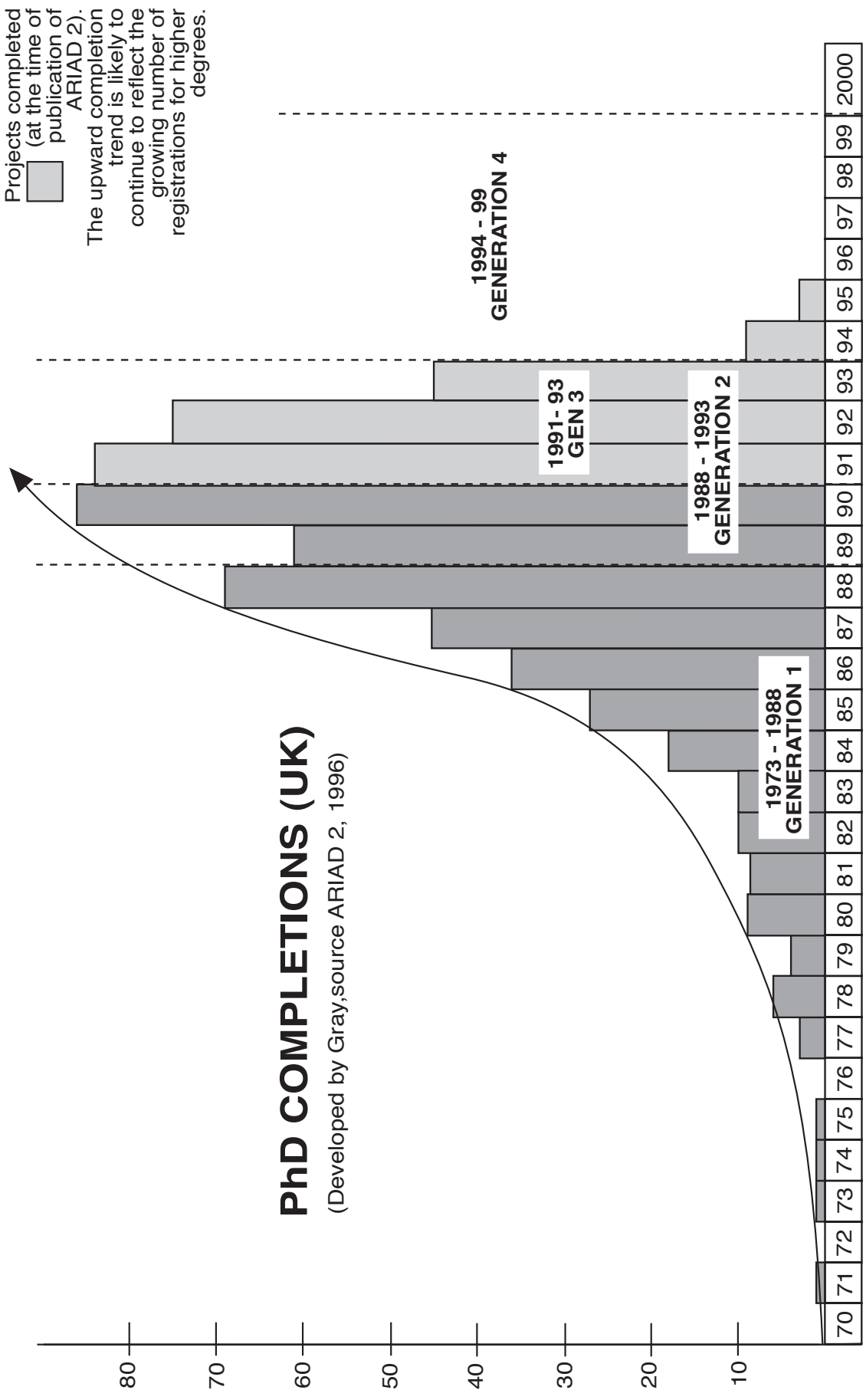
Developments in social science methodology, contemporary science, and philosophy coincidentally can be related chronologically to the development of research in Art & Design. These have provided us with examples of much more appropriate methodological approaches, and have validated 'naturalistic inquiry', which places the researcher firmly within the research process, often as 'participant'. Research approaches now in the visual arts can be much more pro-active, involving practitioners researching through 'action', and 'reflecting in and on action', an important concept developed by Donald Schön.

According to the second edition of the Allison Research Index of Art & Design (1996), 612 Ph.Ds in Art & Design have been completed in the UK (and I apologise for this UK biased emphasis in the paper). The CNAA's 'liberating' initiative in the late 80's is perhaps responsible for the the rapid increase in registrations and completions, most marked in the mid to late 80's, with 27 completions in 1985, 45 in 1987, and 86 in 1990 (ARIAD 2, 1996).

The Index offers seven main methodologies with which to classify the main methodology of research projects - descriptive, historical, experimental, practical, philosophical, comparative, and naturalistic. Of these 612 completions only 4 projects used what the ARIAD Index terms a 'practical' methodology. The Index is not completely comprehensive and to my knowledge there are certainly other 'practice-based' Ph.Ds not included in it, or which have not been classified as 'practical' (perhaps their authors preferring other terms like 'experimental').

This term 'practical' is not clearly defined. The first ARIAD Index in 1992 suggests that it encompasses 'creative', 'expressive', 'productive' research, and even 'teaching aids' and 'learning packages', so some redefinition or expansion of the term is required in order to more fully describe 'practice-led' research. Still, by far the most popular research methodologies in the discipline as a whole are historical, descriptive, philosophical and comparative, according to the Index. I am sure that this pattern may change within the next ten years.

However, it is possible to identify examples of 'pioneers' who used their own practice as a vehicle for inquiry. Andrew Stonyer's Ph.D completed in 1978 - "The development of kinetic sculpture by the utilization of solar energy" - demonstrates the beginnings of inquiry through practice. The project was concerned with the


Projects completed (at the time of publication of ARIAD 2).
The upward completion trend is likely to continue to reflect the growing number of registrations for higher degrees.
1994 - 99 GENERATION 4
1991- 93 GEN 3
1988 - 1993 GENERATION 2
1973 - 1988 GENERATION 1
PhD COMPLETIONS (UK)
(Developed by Gray,source ARIAD 2, 1996)
70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 2000
10 20 30 40 50 60 70 80

Andrew Stonyer, temperature-sensitive kinetic sculpture

development of kinetic sculpture in which movement is a response to the light and heat from the sun. The investigation resulted in the construction of maquettes, control mechanisms and a temperature sensitive kinetic sound sculpture, in which *"patterns of kinetic movement express the existence of states of wholeness between the sun and the technology."* A written text explored the theoretical and methodological framework of the research, reflecting on practice, bringing the thesis to resolution.

In the following ten years at least a dozen more Ph.Ds and M.Phils were completed, all involving the development of some 'experimental', creative practice. Some examples are:

Details of these can be found in ARIAD 2, 1996

1980 Raz, Fashion & Textiles;
Connor, Newling (both M.Phil), Fine Art;
1981 Saleh, in Graphic Design;
1982 Cooper, Graphic Design;
Scrivener, Computer-aided Graphic Design;
Goodwin, Painting;
Newton (M.Phil) Fine Art/computing
1983 Tebby, Sculpture;
1984 Greenhill (M.Phil), Sculpture;
1985 Onyeneke (M.Phil), Fashion & Textiles;
1986 Jerrard, Industrial Design;
1987 Rivlin, Graphic Design;
Miszewska (M.Phil), Sculpture;
1988 Pepper, Fine Art /holography;
Power (M.Phil), Sculpture

(For an excellent critical review of UK Art & Design research policy and completed research in Fine Art read Chris Brighton's 1992 Ph.D "Research in Fine Art: an epistemological and empirical study".)

Despite the CNAA's liberating policy, through the inclusion of artworks in clear relation to a written text, and the surge of interest in research in Art & Design, the development of true 'practice-led' research strategies has been slower than might have been anticipated. Apart from the natural struggle to define and develop any new research approach (and we are indebted to these 'pioneers' for this), the root of this probably lies in the tensions between professional practices and 'academic' education and research.

The discipline of Art & Design (in the UK at least) has always sat uneasily within the academic framework of higher education, and at the research level this is even more pronounced. We all must have struggled at some point in University Research Committees to promote and defend research projects in Art & Design to a perplexed audience of 'classical' researchers. We all must have sometimes despaired at the apparent rigid and reductive

frameworks of the predominant 'scientific' method, into which our research used to squash itself.

Struggles also exist at an individual level; if the practitioner is also the researcher tensions arise in the apparent duality of the role - subjectivity versus objectivity, internal versus external, doing versus thinking and writing, intuition versus logic. These polarities can be seen as outdated modernist simplifications (or even a peculiarly British attitude in separating idea and form!); everyone knows that in a complex, changing post-postmodern world nothing is black and white, everything is grey! The practitioner-researcher does not wear two alternate hats, but one hat which integrates or at least allows difference to co-exist. In this respect the training of practitioner-researchers has an important part to play, and the external perception of this multi-facted 'new Renaissance' role needs to be promoted widely.

Gray, C. & Pirie, I.
'"Artistic" Research Methodology: Research at the Edge of Chaos?',
in: 'Design Interfaces' Conference Proceedings,
European Academy of Design, Vol 3, 1995

Despite these struggles and tensions (or perhaps as a result of them!) formal research in Art & Design is enjoying unprecedented popularity. No doubt some of this is externally driven, for example as a response the UK's Research Assessment Exercise, to governmental initiatives like 'Technology Foresight', or to external industrial funding, etc. However, I would like to believe that there are real intrinsic motives for practitioners to engage in disciplined inquiry - namely, that there is a real need for research to help resolve the problems and challenges of practice, and create an intellectual social dialogue. In his speech at the 1995 UK Turner Prize ceremony, Brian Eno claims that we are not meeting these challenges. He states:

Eno, B.
'A Year with Swollen Appendices',
pp 258-259,
faber & faber, 1996

> *"The Turner prize is justly celebrated for raising all sorts of questions in the public mind about art and its place in our lives. Unfortunately, however, the intellectual climate surrounding the fine arts is so vaporous and self-satisfied that few of these questions are ever actually addressed, let alone answered .... the arts routinely produce some of the loosest thinking and worst writing known to history .... Why has the art world been unable to articulate any kind of useful paradigm for what it is doing now?"*

Eno goes on to talk about how contemporary science has been able to engage the public and broaden social dialogue about complex issues, and bemoans the fact that no equivalent dialogue has happened in the arts. He says:

> *"The making of new culture ... is just about our only growth industry aside from heritage cream teas and land-mines, but the lack of a clear connection between all that creative activity and the intellectual life of the society leaves the whole project poorly understood, poorly supported and poorly exploited."*

Practice-led research is uniquely placed to respond to these criticisms, through asking questions of ourselves about the place and value of the visual arts in society and encouraging an intellectual social dialogue; through clear and critical thinking and expression; through the articulation of a paradigm, in order to make 'new culture', and gain the understanding and support of society for this.

As we have seen traditionally 'research' (largely theoretical/critical) has been carried out *into* Art & Design, *on* artists & designers, *for* Art & Design primarily by non-artists & designers! We have usually been content to practice and allow others to critique that practice.

Gray, C.
'Artistic Research Methodology',
working group report in:
'Taken at the Flood: Art in our Times'
European League of Institutes of the Arts
Conference, Hochschule der Künste,
Berlin, (September, 1994),
Amsterdam: ELIA, 1995

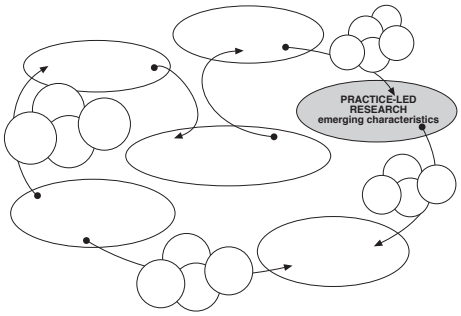
There is a contentious contemporary view that the critic is dead. More reasonably one might say that the critic/theoretician of the visual arts is no longer the primary 'objective' communicator of the quality, value and contextualisation of that work. An increasing number of practising artists and designers are claiming ownership and taking responsibility for the critical reflection and evaluation of their own and peers' practices. Undergraduate Art & Design education (in the UK at least) traditionally has not placed enough emphasis on critiqueing and locating an individual's work in a wider intellectual and philosophical context; and Masters level courses cannot perhaps address this in great depth.

I consider research for higher degrees to be the best mechanism to raise awareness of critical and contextual issues of practice, analyse and interpret ideas, and develop new cultural strategies. The death of the critic has enabled a new role to emerge - the birth of the practitioner-researcher in the visual arts. It remains to be seen whether the critic, curator, cultural administrator will create space to allow the practitioner-researcher to reposition herself.

Concurrent with the emergence and development of more 'artistic' methodologies has been a 'paradigm shift' in most, if not all, areas of thinking; 'postmodern' ideas have had an impact on most aspects of culture and society, changing the way we relate, communicate, and generate knowledge. Through technology (in conjunction with our creativity) we are able to perceive new kinds of information: we can make the invisible perceptible and visible; we can manipulate and process large volumes of complex diverse data, and present information in relational, dynamic, and multimedia formats. Perhaps for the first time researchers have the methodological tools to make inquiry through practice in a way which acknowledges and encourages the richness and complexity of those practices.

It is in this context that practice-led research is developing and to which it must respond.

Practice-led' research - emerging key characteristics and methodologies



*Poem by John Saxe on next page

'Practice-led' research is like an elephant - a large, complex thing, with many different and intriguing parts, textures, structures, and movements. In the Hindu story several blind men attempt to describe a mysterious creature they have come upon *; because the elephant was so large each only could have a partial experience of it through incomplete sets of senses, and any one individual could not fully comprehend the complete beast. Only by making analogies and sharing each others' perceptions of the mysterious creature could the totality of the beast be appreciated. And so in the case of describing and developing practice-led research; the experiences of many researchers are required to define the parts in order to form the whole picture.

However, attempts have been made to describe 'practice-led' research, proposing key characteristics and methodologies; these have been formulated by studying the evidence provided by the 'pioneers' and recently completed practice-based higher degrees. These characteristics have taken time to emerge, have been partial, and have developed in response to contextual changes (postmodern concepts) in the last 30 years, and more contemporary technological advances.

From the research completed so far, it is possible to characterise (and speculate further) as to what the emerging characteristics of practice-led research are. It is sometimes difficult to separate research from professional practice, as both involve 'disciplined inquiry'. Any practitioner who has undertaken a research degree will know that there are similarities and differences, depending on the nature of your practice and the aim of your research project. Research should not be seen as being in conflict with practitioners' methods but an expansion of them. Perhaps separation is futile, as what we are trying to do is integrate and synthesise the best aspects of each into a critical dialogue, which needs two elements to create it: practice-led research is simultaneously generative and reflective.

The Wise Men and the Elephant

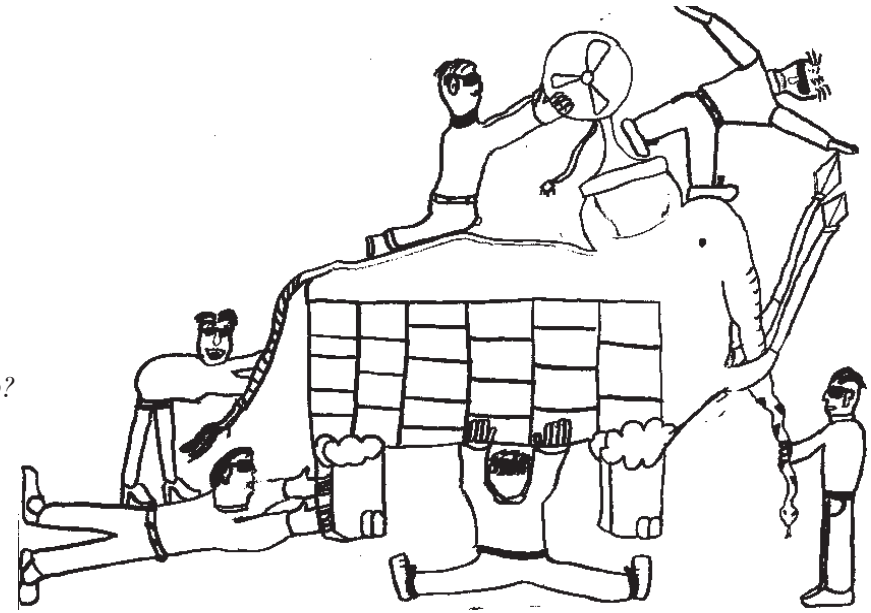
It was six men of Hindustan,
To learning much inclined,
Who went to see the elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.

The first approached the elephant,
And, happening to fall
Against its broad and sturdy side,
At once began to bawl:
'Why bless me! but the elephant
Is very like a wall!'

The second, feeling at the tusk
Cried, 'Ho! what have we here
So very round and smooth and sharp?
To me its mighty clear
This wonder of an elephant
Is very like a spear!'

The third approached the animal,
And, happening to take
The squirming trunk within his hands,
Thus boldly up he spake:
'I see', quoth he, 'the elephant
Is very like a snake!'

The fourth reached out his eager hand,
And felt about its knee
'What most this wondrous beast is like
Is mighty plain', quoth he;
'Tis clear enough the elephant
Is very like a tree!'



Drawing by Thomas Pattison, age 11

The fifth, who chanced to touch the ear,
Said, 'E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an elephant
Is very like a fan!'

The sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope
'I see', quoth he, 'the elephant
Is very like a rope!'

And so these wise men of Hindustan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong;
Though each was partly in the right,
They all were in the wrong!

At least these men of Hindustan,
Who none of them had sight,
After quarelling about the elephant,
Over different parts they did fight.
When all these parts together came,
They all of them were right!

And so we see when arguing
The best of things to do
is listen to the other men
And see their points of view!

by John Saxe

Research context, the principal methodology, and appropriate specific methods of practice-led research

Research context - general

Not every practitioner may wish to do formal research (either research for higher degrees or structured shorter projects). Indeed, only those with a real desire or need to carry out 'disciplined inquiry' for the right motives should consider it. In making this decision one is accepting that the whole process will be intentional, deliberate, accessible and creative - a contribution to knowledge is an act of creation. The work is carried out in relation to a formal framework, which usually requires an explicit/written proposal, a designated timescale, monitoring procedures and achievement criteria. This usually means that other practitioners, researchers, supervisors are involved for practical support, criticism and encouragement. Immediately ideas and experiences are open to exchange and sharing, and the venture is collaborative to a lesser or greater degree. The research requires resources - funding and facilities, provided usually by an academic institution, a research centre or by other bodies, so the project has an organisational context with a culture of inquiry. All this is fairly common to any research discipline, but may seem sufficiently alien to deter any practitioner, especially the strong affiliation to an institution! However, the pattern so far in Art & Design research has been to adopt and adapt useful structures, and invent where necessary, and this relates as much to the development of the research context as it does to struggles with methodology.

Principal research methodology - practice-led

Guba, E.
'The Paradigm Dialog',
Sage, 1990

There are two initial philosophical considerations before practically structuring a practice-led project and methodology. According to Egon Guba the choice of methodology should be a consequence of ontology and epistemology - that is to say methodology is evolved in awareness of what the researcher considers 'knowable' in the discipline (or potentially knowable through hunches and obsessive questions) - what can be researched, or is unresolvable by practice alone; and, in an awareness of the nature of the relationship between the researcher and the 'knowable'.

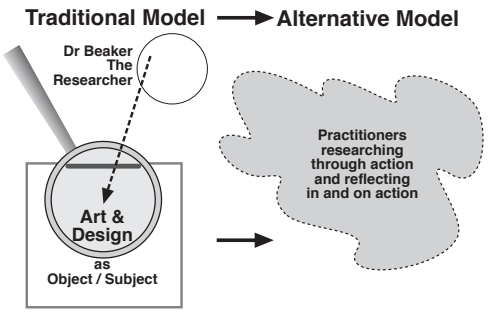
For instance, the positivist paradigm of inquiry is characterised by a realist ontology (reality exists 'out there'), and an objectivist epistemology (the researcher is detached); methodology is therefore experimental and manipulative; in contrast, the constructivist paradigm is

characterised by a relativist ontology (multiple realities exist as personal and social constructions) and the epistemology is subjectivist; methodologies are hermeneutic (interpretative) and dialectic.

What might characterise an 'artistic' paradigm of inquiry? It is our task to develop this, and will require contributions from many practitioner-researchers over a number of years. Guba's analysis of both positivist and post-positivist paradigms provides us with a framework to help describe and contextualise in philosophical terms the research we do, and uncover our motives for actually doing research.

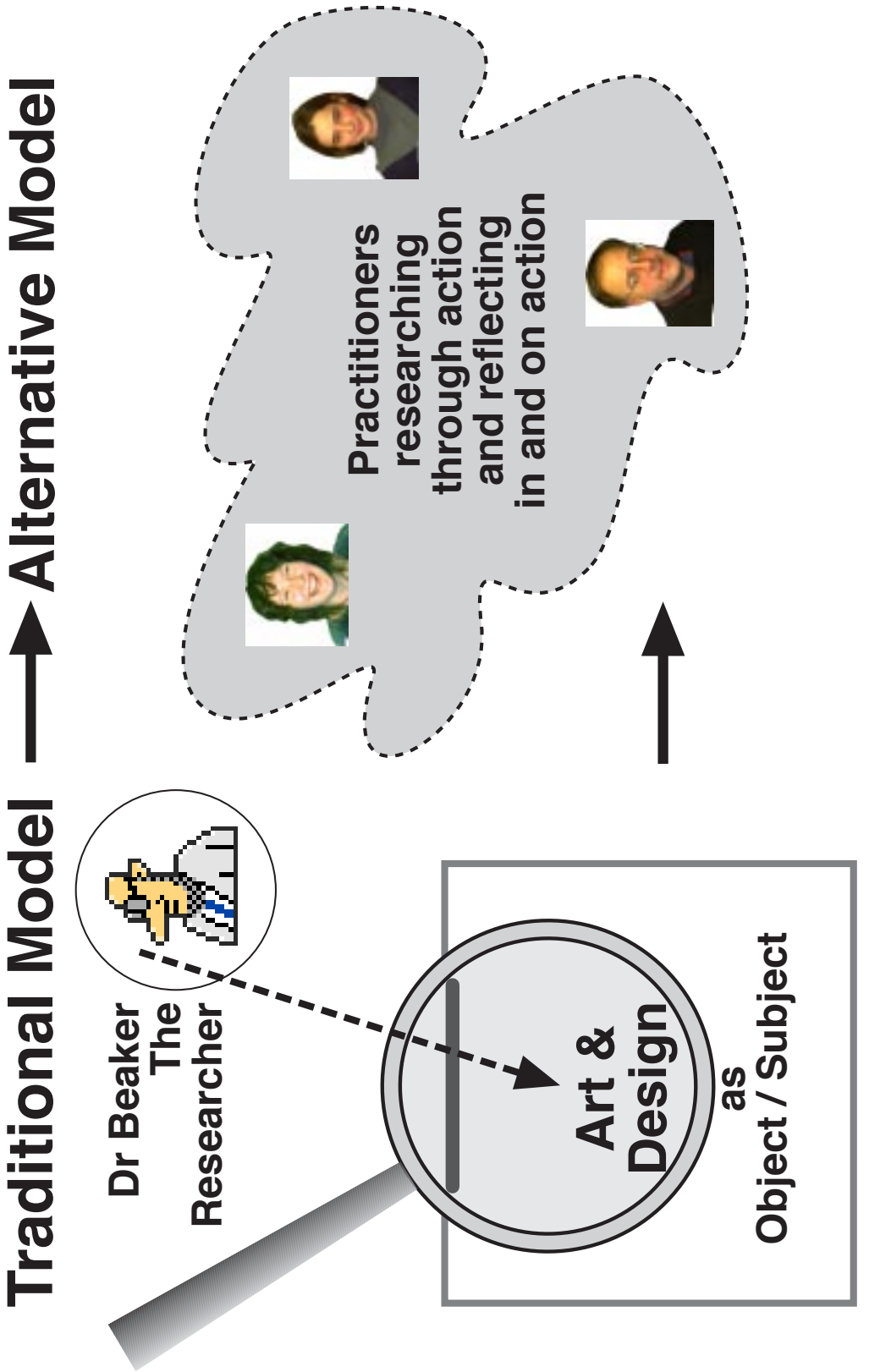
From an evaluation of previous and ongoing research in Art & Design a series of characteristics emerge which help to define practice-led research, in terms of ontology, epistemology and methodology:

With regard to the 'knowable' the kinds of projects that have been tackled seem to embrace both positivist and constructivist research ontologies, exploring 'what's out there' in an external 'realist' sense (especially in relation to technological issues e.g. Andrew Stonyer's research), as well as investigations of personal creative constructions - the many and diverse relative interpretations of practice in the visual arts (e.g. Anna Miszewska's research on 'The Intelligible Practice of Sculpture').



With regard to epistemological issues the practitioner is the researcher; from this informed perspective, they identify researchable problems raised in practice, and respond through practice. The role is multifaceted - sometimes generator of the research material - art/design works, and participant in the creative process; sometimes self-observer through reflection on action and in action, and through discussion with others; sometimes observer of others for placing the research in context, and gaining other perspectives; sometimes co-researcher, facilitator and research manager, especially of a collaborative project.

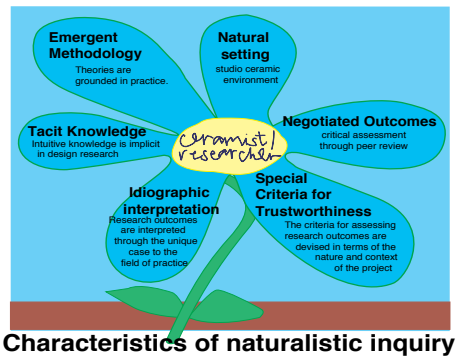
In the role of 'practitioner-researcher' subjectivity, involvement, reflexivity is acknowledged; the interaction of the researcher with the research material is recognised. Knowledge is negotiated (intersubjective?), context bound, and is as a result of personal construction. Research material may not necessarily be replicated, but can be made accessible, communicated and understood. This requires the methodology to be explicit and transparent (documentation is essential) and transferable in principle (if not specifics).


Traditional Model
Alternative Model
Dr Beaker
The
Researcher
Art &
Design
as
Object / Subject
Practitioners
researching
through action
and reflecting
in and on action
© Julian Malins & Carole Gray, 1995

From these basic philosophical positions it is clear that researchers have been characteristically eclectic, diverse and creative in the methodologies they have adopted. When necessary, they have drawn on positivist experimental methodologies, constructivist interpretation and reflection, and invented hybrid methodologies involving a synthesis of many diverse research methods and techniques. So a characteristic of 'artistic' methodology is a pluralist approach and use of a multi-method technique, tailored to the individual project. Increasingly this has involved the use of multimedia to integrate visual, tactile, kinaesthetic, experiential data into 'rich' information.

Many projects have been collaborative and inter-disciplinary, either by design or necessity; this may be as a result of the complexity of Art & Design research projects. It also demonstrates a willingness to examine other fields and make sensible connections. It requires an outward-looking attitude and an awareness of other research cultures and paradigms.

Characteristics of Naturalistic Inquiry, developed by Katie Bunnell, 1995 (source Robson, 1993)



Characteristics of naturalistic inquiry

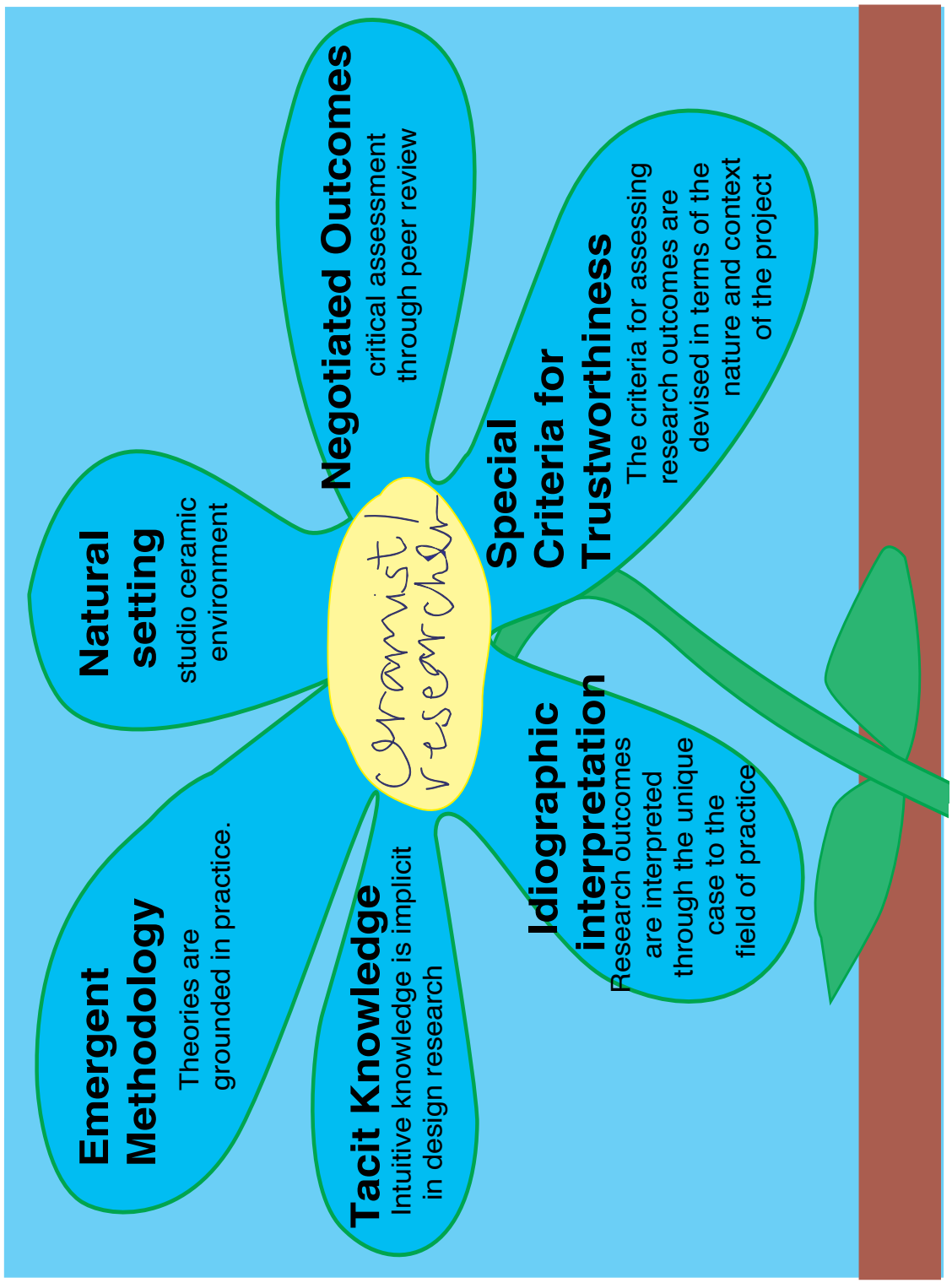
The main methodology is responsive, driven by the requirements of practice and the creative dynamic of the artwork. It is essentially qualitative and naturalistic. It acknowledges complexity and real experience and practice - it is 'real world research', and all 'mistakes' are revealed and acknowledged for the sake of methodological transparency. This kind of research has implications for resources: ideally a studio space for the practitioner-researcher; access to workshop facilities; support with materials and specialist equipment; access to technology and communications; access to a peer group and critical debate. Practice and theory are reciprocal. Critical practice should generate theory and theory should inform practice.

Specific research methods

Example of a visual diary, Carine Maestrini, MA in Art & Design course, Gray's School of Art, 1996

Characteristic is the use of visual and multi media methods of information gathering, selection, analysis, synthesis, presentation/communication. Specific research methods used are:

- making art/design work
- observation and drawing (in all forms)
- sketchbook/notebook, idiosyncratic notation/symbol
- visual diaries/self reflection/personal narrative/ critical writing
- photography, video, sound
- models/maquettes, experimentation with materials



Characteristics of Naturalistic Inquiry
developed by Katie Bunnell, 1995
(source Robson, 1993)

Concept map, Don Addison, 1995

- concept mapping, diagrams
- use of metaphor and analogy
- organisational and analytical matrices, flow charts, story boards
- multimedia/hypermedia applications
- modelling/simulations, soft systems
- electronic databases, visual and textual glossaries and archives.

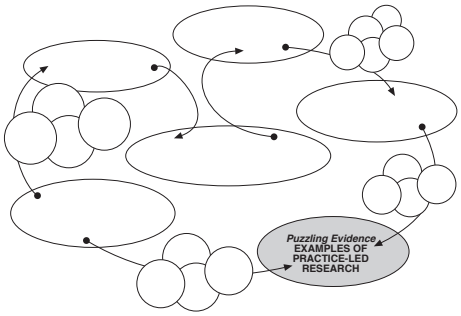
These have been augmented with useful social science methods, usually adapted in some way, e.g.:

- case study
- participant-observation
- personal constructs
- interviews, questionnaires
- multidimensional analysis
- evaluative techniques like semantic differential, multiple sorting.

An expanding battery of appropriate specific methods have now been rigorously used, validated, or are currently being tested.

What researchers in Art & Design now have are the beginnings of a dynamic and evolving procedure for inquiry, which places practice and the practitioner at the very heart of research.

Puzzling Evidence - examples of practice-led research



Fortunately, we have been able to set up a presentation of practice-led research called *Puzzling Evidence*, on the 7th floor exhibition area in UIAH. This presentation involves three practitioner-researchers from the Centre for Research in Art & Design at Gray's School of Art, Aberdeen. Three levels of research are represented:

- M.Phil/Ph.D work in progress by Iain Burt
- a recently completed Fine Art Ph.D by Jon Pengelly
- postdoctoral research in progress by Anne Douglas

'Puzzling Evidence' exposition, UIAH, Helsinki, 1996

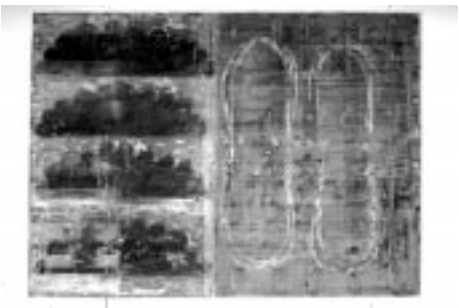
These projects present evidence (possibly puzzling!) of practice-led approaches in relation to formal research structures and criteria; in the case of Jon and Iain as Research Students - a critical evaluation of topic, an awareness and demonstration of research methods for the award of M.Phil, resulting in an independent and original contribution to knowledge for Ph.D; Anne's role, as a postdoctoral Research Fellow, has necessitated the evolution of that role in Art & Design, as well as development of research criteria at postdoctoral level.

Iain Burt, collaborations, M.Phil/Ph.D research in progress, 1996

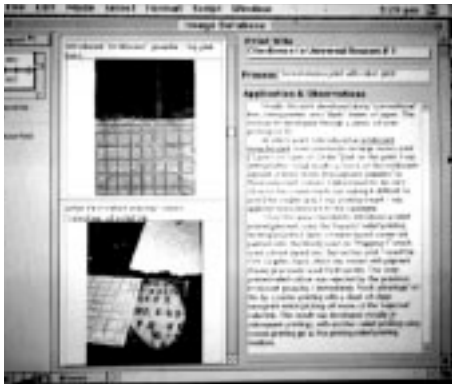
Iain Burt's research investigates how practitioners in Art & Design might use hypermedia as methodological tools to help visualise concepts and explore the integration of structure and content to reveal new connections and alternative perceptions. He presents M.Phil/Ph.D research in progress - two 'experiments', one of which is a collaboration with a Scottish poet, a multi-arts work in Finnish and English.

He is working collaboratively with other practitioners (two of whom are 'case studies' in the research), and has adopted a role of 'facilitator' for this. The results of these collaborations are real integrations - between creative minds and various media. Collaboration has ensured that Iain's ideas have been open to critical debate, and most importantly are relevant and applicable in practice.The outcomes of Iain's research will be presented as an 'electronic thesis', a completely appropriate format in response to the integrated multimedia nature of his research.

Jon Pengelly, 'Lifelike', screenprint, completed Ph.D research, 1996



Jon Pengelly presents a selection of work from his recently completed practice-led Ph.D research. The primary element is a series of large scale prints, which explore the creative possibilities of safe, environmentally sensitive and sustainable materials and processes. Although this artwork implicitly embodies and visualises the key concepts of the research, two other elements of the



Jon Pengelly, 'A Morphological Framework of Safe Printmaking Practice' (electronic database), completed Ph.D research, 1996

Ph.D submission ensure that the research is completely accessible and methodologically transparent.

The first element comprises two interactive electronic databases which support and generate environmentally sensitive solutions for the practising printmaker. This has been devised in relation to Health & Safety legislative criteria and the personal health concerns and working experiences of the researcher. This 'hazard' database is linked to another database of records of the prints in progess (visuals, evaluative texts and technical information), so that the results and analysis of safe selections of materials and techniques can be seen in relation to risk assessment and the completed artworks.

The second element is an illustrated written text (not included in the show), which allows the researcher to critically situate his work within the professional context of Fine Art printmaking, and in relation to theoretical and methodological considerations.

These three elements comprise the thesis in its true sense of the word as 'argument', and as a whole clearly demonstrate a structured yet responsive inquiry, which has been initiated in practice and involving a process of critical reflection on and an externalisation of practice. The outcome for Jon (and other printmakers involved in various collaborations with him) has been a creative, re-evaluation of practice and the development of a sustainable strategy for future printmaking practices.

Anne Douglas, 'Zig Zag 1', (sited sculpture), completed Ph.D research, 1992

Anne Douglas, 'On the Notion of Test', (multimedia essay), postdoctoral research, 1995

Anne Douglas' experience to date of practice-led research falls into three clear stages: the Ph.D stage, and two distinct postdoctoral stages. All three stages of practice-led research aim to visualise critical models of practice which are responsive to a contemporary context. The Ph.D stage was focused initially by a technological question, investigated through her own sculpture. This inquiry evolved into the philosophical issue of how artists structure practice, and how the metaphor of improvisation might allow the understanding of it.

The first stage of research at postdoctoral level reflected critically on the work of the Ph.D by further developing (collaboratively) a visual analytical method through the use of new computer-based technology. The Ph.D research itself had undergone a shift in methodology from a positivist approach to an interpretative one. This stage culminated in a multimedia essay 'On the Notion of Test'.

Anne Douglas, 'Jigsaw', postdoctoral research in progress, 1996

Part two of the current postdoctoral stage is exploratory and generative; expression of practice within multimedia in relation to developing methodology is occuring in tandem with a new body of work - the 'Jigsaw' project, which is shown in progress in the exhibition. It is a first stage in exploring the implications of game as an appropriate method by which to frame art practice and research into art practice. The game is a pro-active method which has the potential to stimulate and structure process. This potential role is exciting as it brings research and practice together as a whole activity, is traceable and therefore at least transparent, if not transferable. It also opens up the potential for open ended collaboration both within and outside the discipline.

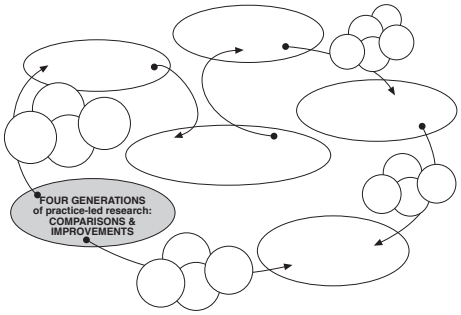
'Puzzling Evidence' exposition, UIAH, Helsinki, 1996

Puzzling Evidence is not an exhibition - rather an exposition, as it exposes different approaches and levels of practice through research. These three examples demonstrate:

- openness of methodologies through documented 'journeys'
- a high degree of contextual awareness (professionally and methodologically)
- self-critical, analytical attitudes, involving debate and feedback with a peer group
- new collaborative practices, within the framework of a Research Centre and externally, which raise questions of authorship and the role of the artists or designer
- attempts to identify and structure problems, and resolve them into formal conclusions.

Critical inquiry is conducted through practice, and externalised by predominantly visual methods. Research elements are embodied within and visualised by the artworks; both the products and processes of practice-led research are open to critique; the quality of these works is crucial in engaging and intruiging us. Go and see the work - prepare to be puzzled!

Four 'generations' of practice-led research in Art & Design - comparisons between generations and improvements



Through the analysis of completed examples of research from UK art colleges, and the recently completed and ongoing research of colleagues at the Centre for Research in Art & Design (CRiAD) at Gray's School of Art, it is now possible to identify four 'generations' of practice-led researchers in the UK.

The 'first' generation spans a ten year period from 1978 to 1988, and includes the 'pioneering' researchers cited earlier, and I have taken the liberty of including myself.

In this period the first two Matrix Research Network conferences took place in the UK (1988, 1993); the ELIA research network was established; the first version of the Allison Research Index of Art & Design was published (1992) .

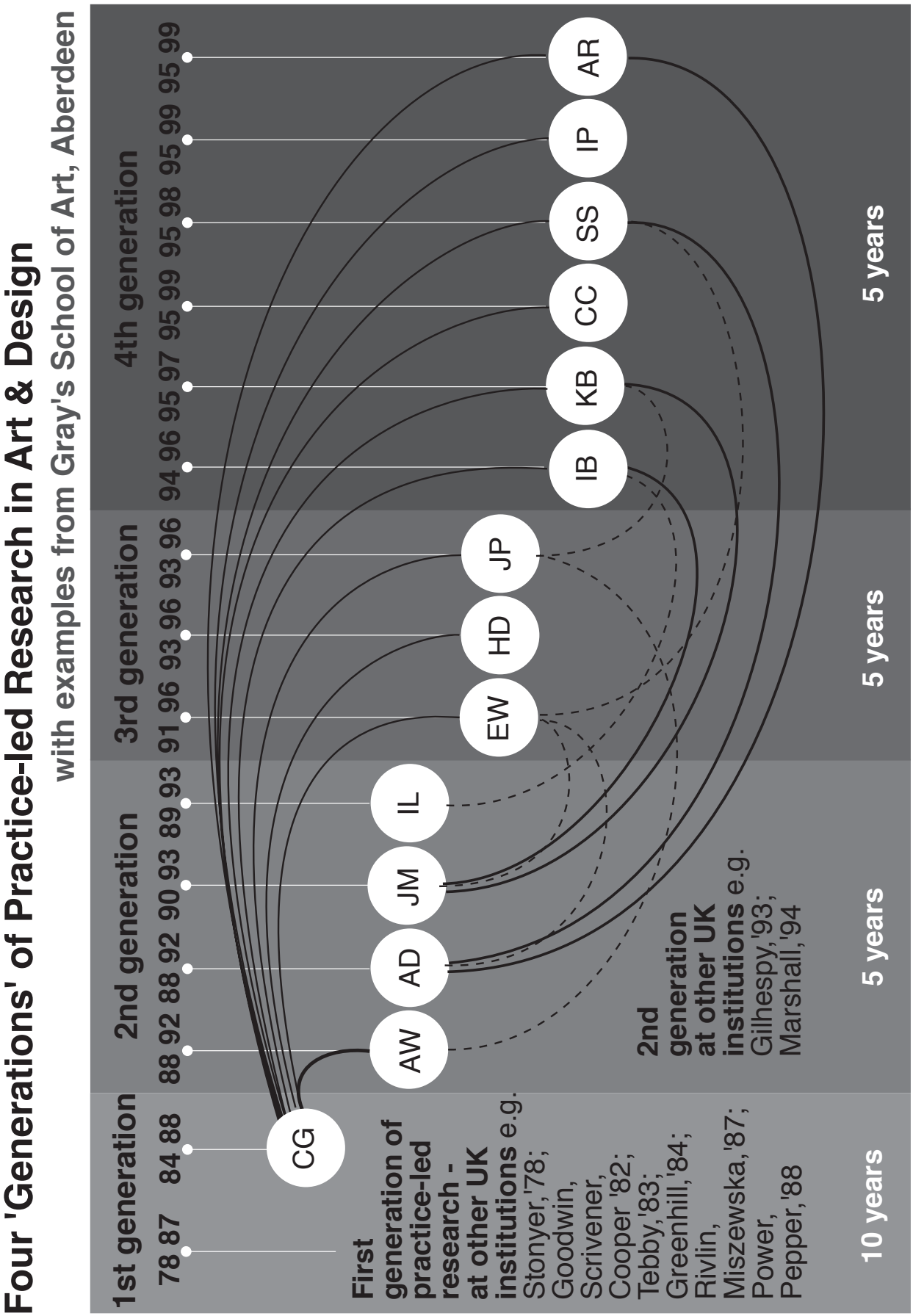
The characteristic of generation 1:
- they were true pioneers - laying the ground then walking on it (probably before it's set!) - exploring and defining research;
- they were working with little or no framework and reliant to a great extent on research structures and methodologies from other disciplines, which they adopted and/or adapted, or even invented new ones!
- their supervisors were outside the discipline, or within it with little or no experience;
- they had no formal research training/ induction, and had difficulties with registration, transfer, and examination; average completion times were 4/5 years, much longer for part-time study;
- they were isolated - no real peer group existed, no research context.

The characteristics of subsequent generations are mainly derived from an analysis of my colleagues' research at CRiAD.

This generation includes practitioner-researchers like my colleagues Allan Watson, Anne Douglas, Julian Malins, Irene Leake, as well as Gus Wylie (Ph.D, 1991, photography, RCA), Tom Gilhespy (Ph.D, 1993, sculpture, BIAD) and practice-based projects by researchers not registered for higher degrees, like Val Murray.

The characteristic of generation 2 (88-93) in terms of the general research context/strategy are:
- they were still pioneers, although at the beginning of their research the CNAA's regulations had been extended to encourage the inclusion of artworks;
- they still had many, if not all of the problems of generation 1;
- in this period several major research conferences took place and a context for debate about research was forming;
- new postdoctoral roles were being explored, as no previous structures or career paths existed e.g. Research Fellows, Readers.

As for **methodology/methods:**
- there was a realisation of the real importance of appropriate methodology;


Four 'Generations' of Practice-led Research in Art & Design
with examples from Gray's School of Art, Aberdeen
1st generation
78 87 84 88
10 years
2nd generation
88 92 88 92 90 93 89 93
5 years
3rd generation
91 96 93 96 93 96
5 years
4th generation
94 96 95 97 95 99 95 98 95 99 95 99
5 years
CG
AW
AD
JM
IL
EW
HD
JP
IB
KB
CC
SS
IP
AR
First generation of practice-led research - at other UK institutions e.g. Stonyer,'78; Goodwin, Scrivener, Cooper '82; Tebby,'83; Greenhill,'84; Rivlin, Miszewska,'87; Power, Pepper,'88
2nd generation at other UK institutions e.g. Gilhespy,'93; Marshall,'94
Solid curves = supervisory links; dotted curves = collaborative links

- the researcher took on various roles depending on the requirements of research (practitioner, critic, organiser, observer, sceptical participant-observer);
- there were attempts at 'artistic' methods e.g. drawing as a means of inquiry; and very limited use of new technology for analysis of non-verbal/sensory data.

Submissions were negotiated in reference to the CNAA regulations, and although the main outcome was usually a substantial written thesis, the presentation of artworks/artefacts (e.g. site specific sculpture, video, drawings) in the form of ad hoc presentations or formal exhibitions was fairly common.

This generation includes practitioner-researchers like my colleagues Eleanor Wheeler, Heather Delday, Jon Pengelly, as well as Nigel Marshall (Ph.D, 1994, Fashion & Textiles, RCA), Patrick Beveridge (M.Phil, 1995, Fine Art, RCA), and your own research students who are in the process of completing.

The characteristic of generation 3 (93-96) in terms of general research context/strategy are:

- they were working within a developing framework, and were less isolated; a peer group was developing, informed by previous generations; more deliberate strategy was apparent for research;
- their supervisors were mostly now within the discipline(some with experience); it was still difficult to find supervision, but there was a growing choice;
- some formal research training/induction was provided, as well as
- better training for supervisors and examiners;
- recognition of resourcing requirements e.g. better workshop and studio access.

Publication of 'ARIAD Research Supervisors & Examiners' database, 1995

A number of important conferences took place within this period e.g. RADical, 1994; European Academy of Design, 1995; Matrix 3D, 1995.

As for **methodology/methods**

- 'practice-led' methodology was now tentatively in use as a term;
- there was a greater use of qualitative methods, soft systems methodologies, 'real world' methods, and validated methods from generations 1 & 2;
- the classic 'literature review' was extended to become 'contextual review' to include non-literary but public domain reference sources;
- collaborations emerged between researchers, as a result of a peer group, and more confidence in dealing with inter-disciplinary research.

The CNAA became defunct and individual institutions generated their own research regulations; the balance of the **Ph.D Submission** was reversed - the emphasis on a body of work/exhibition and other artefacts, supported by a written text to form the thesis as a whole. The Ph.D examination began to be conducted in the exhibition, enabling theoretical concepts to be more easily related to practice.

These practitioner-researchers have benefitted from the growing confidence of the research community in Art & Design. To me they represent an important transition phase.

This generation includes practitioner-researchers like my colleagues Iain Burt, Katie Bunnell, Cameron Campbell, Susannah Silver, Ian Pirie, Anthony Rayworth, as well as your own research students who have just registered for a higher degree.

The characteristic of generation 4 (96-99) in terms of general research context/strategy are:

- they are well-informed by previous generations, and a research framework is now established;
- they are integrated into a research community; numerous Research Centres have now been established and resourced;
- registrations are quicker (some directly for PhD);
- their supervisors are all in the discipline, with a reasonable level of formal training and experience;
- they are clear about their motives for doing research;
- they have good research preparation, through formal training programmes, and an awareness of other research paradigms through interaction with research students from other disciplines;
- they are involved in collaborations with other disciplines, from a position of some confidence;
- they are aware of the importance of dissemination through public output;
- they have a growing global peer group, encouraged by new technologies.

Publication of ARIAD 2 on CD-ROM (1996); new research-oriented journals e.g. CoDesign, Point; Art & Design research electronic networks / information sources e.g. mailbase@UK.AC.mailbase

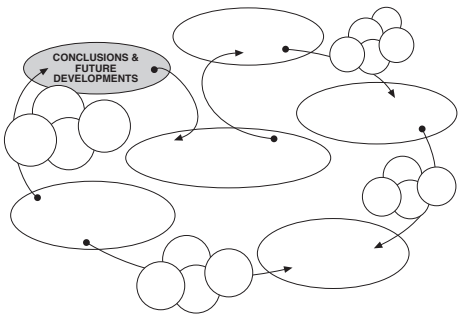
As for **methodology/methods:**

- their research is confidently named - practice-led;
- the Ph.D is designed around practice, and integrates theory (doing/writing, reflection - sometimes through electronic media);
- they are clear about their roles as researchers - that the practitioner is central to the inquiry;
- they are using a growing battery of validated methods.

Ph.D submissions prioritise a body of high quality work; supporting visual and textual material are sometimes integrated throughmultimedia; the thesis is holistic.

These lucky generations of researchers and future ones can now afford to really take more risks, be real 'methodological trailblazers', and benefit from their growing peer group, and the valuable experiences of the previous pioneers.

Conclusions and recommendations for developing appropriate future research strategies



The context for the development of practice-led research has been described, and its important future role proposed; the emerging key characteristics and methodologies of this mode of inquiry have been outlined, and examples of *Puzzling Evidence* offered; four 'generations' of practice-led researchers allow us to gain a perspective on the gradual but substantial improvements that have taken place, and suggest future strategies. What can we now give to generation five in the 21st century?

- A partially glimpsed 'elephant' (which hopefully is neither white nor pink!), and a better ability, through advances in technology (especially multimedia) and the growing network of practitioner-researchers, to visualise (by metaphor and analogy), analyse, interrelate and communicate the 'parts'.

- A small set of validated 'artistic' research methods and much larger set of experimental ones in development, which the current and next generations can apply and critically inhabit.

- Suggestions for sensible research infrastructures, with identified practitioner-researcher roles, some new and developing ones like postdoctoral Research Fellows and Readers; new career structures will have to be devised for these researchers, and possibly new hybrid forms of employment in a range of different contexts.

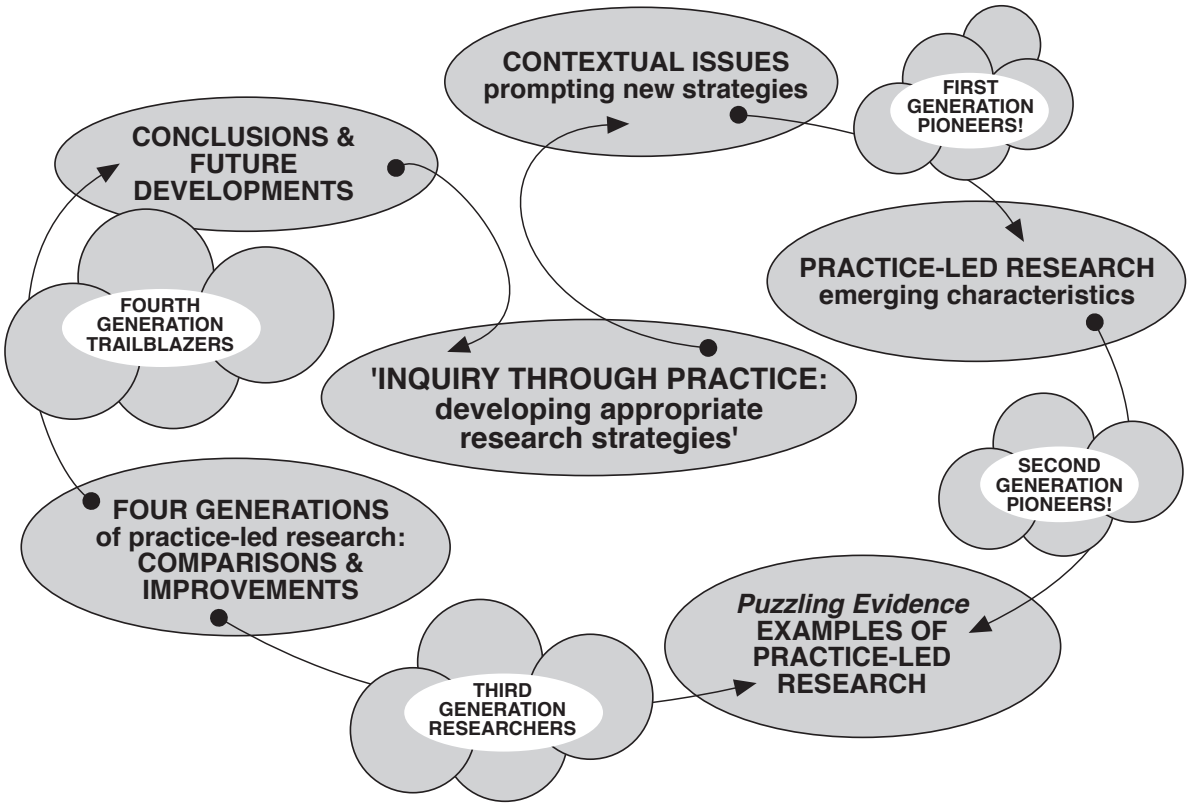
- Clearer ideas about the relationships between practice and research, which may become more symbiotic simply as a result of the growing number of practitioners who have formal research skills and experience; the 'research artist' or 'research designer' joins the more familiar research scientist.

- Implications for the education of undergraduates in the visual arts, and the importance of research skills, which might be the only skills worth having in the future. If 'knowledge keeps as well as fish', today's fact is tomorrow's stinking absurdity. What is important is learning how to learn, and metaknowledge.

- Strategic is a good word! Ongoing and recently completed research in Art & Design demonstrates the value of new or revised strategies, not necessarily the invention of 'gizmos' (e.g. a strategic framework for sustainable printmaking practices). Strategies not products are the way forward - too much can be invested in a product which probably has inherent obsolescence. Investing in a framework or

strategy - how to do things creatively, how to apply ideas in a range of different situations seems to me to be most resourceful and transferable to the next generation.

Far from having no gurus, we have many potential ones (if gurus are indeed what we want?); far from having no methods we have many, as I hope this paper has demonstrated. Research is an integral element in the education of future artists and designers in order to develop critical and creative 'reflective practitioners', who might be involved in the making of 'new culture' in the 21st century.



REFERENCES

Allison, B.
Allison Research Index of Art & Design 2
(CD-ROM)
ARIAD Associates, 1996
(see also first version 1992)

Bougourd, J., Evans, S., and Gronberg, T.
The Matrix of Research in Art & Design Education
Central Saint Martin's School of Art and Design, London, 1988

Burt, I.
Hypermedia Technologies - Implication and Applications for Research in Art & Design
registered M.Phil/Ph.D, 1994
The Robert Gordon University, Aberdeen

Council for National Academic Awards
Research and related activities in Art & Design
Committee for Art & Design, May, 1989

Eco, U.
Travels in Hyperreality
Harcourt Brace Jovanovich, 1986

Eno, B.
A Year with Swollen Appendices
faber & faber, 1996

Douglas, A.
Structure and Improvisation: The Making Aspect of Sculpture
Ph.D, Sunderland University, 1992

Gleick, J.
Chaos
Cardinal, 1987

Gray, C.
Teaching Styles in Higher Art Education
Research Communications,
Vol.3 , No.1, RGIT, 1989

Gray, C, & Malins, J.
Research Procedures / Methodology for Artists & Designers
in: 'Principles & Definitions: Five Papers by the European Postgraduate Art & Design Group',
Winchester School of Art, 1993
ISBN 0 9515904 3 X

Gray, C. & Pirie, I.
"Artistic" Research Methodology: Research at the Edge of Chaos?
in: 'Design Interfaces' Conference Proceedings, European Academy of Design, Vol 3, 1995

Guba, E. (ed.)
The Paradigm Dialog
Sage, 1990

Irigaray, L.
Je, tu, nous. Toward a Culture of Difference
Routledge, 1993

Jencks, C.
The Postmodern Reader
Academy, 1992

Lincoln, Y. & Guba, E.
Naturalistic Inquiry
Sage, 1985

Malins, J. & Gray, C.
Developing appropriate research methodologies for Artists, Designers and Craftspersons: Research as a Learning Process
full paper to 'Making It' Crafts Council conference, Woolley Hall, Wakefield, 1995;
resumé of paper in conference proceedings

Miszewska, A.
The Intelligible Practice of Sculpture
M.Phil, Nottingham Trent University, 1987

Pengelly, J.
Environmentally Sensitive Printmaking: A framework for safe practice
Ph.D, The Robert Gordon University, 1996

RADical International Research Conference Proceedings,
Gray, C. et al (eds.)
Centre for Research in Art & Design,
The Robert Gordon Uzniversity, 1996
ISBN 0 9519114 4 9

Robson, C.
Real World Research
Blackwell, 1993

REFERENCES (continued)

Rorty, R.
Philosophy and the Mirror of Nature
Blackwell, 1980

Schön, D.
The Reflective Practitioner
Jossey-Bass, 1981

Stonyer, A.
The development of kinetic sculpture by the utilisation of solar energy
Ph.D, De Montfort University, Leicester, 1978

Waldrop, M. M.
Complexity
Penguin, 1992

Yin, R.
Case Study Research
Sage, 1984