

Action Research and the Practice of Design

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Introduction

The pioneer design work that was carried out in Europe and America during the first half of this century blossomed in the post-war years, growing in size and prosperity as creative expertise was combined with serious business acumen. One thinks principally of the Bauhaus, together with individuals such as Peter Behrens, Jan Tschichold, Piet Zwart, Alvar Aalto, and Raymond Loewy, as people who instinctively developed a profession out of their design practice. Richard Buchanan has summarized this rapid development as three stages:¹

Design began as a trade activity, closely connected to industrialization and the emergence of mass communication.

After a period of time, professions began to emerge, with traditions of practice and conscious recognition of a distinct type of thinking and working that distinguished our profession from others. However, we are now witnessing the beginnings of the third era of design, marked by the emergence of design as a field or discipline.

Buchanan identifies the trade and professional stages as periods in which education and training inevitably followed industrial practice, a situation that is still the case for most of our schools of design. He also makes an important distinction in the third phase, in that education and industry can become partners, and education might challenge and even lead industry, an aspect to which I will return later.

It is an unfortunate accident of historical timing, but just when the design profession was becoming of age, the “crisis of confidence in the professional” became a major issue of concern.² Lawyers, scientists, teachers, and even doctors came under a barrage of criticism that questioned their expert judgment in a way that had never been dreamed of before. The long-established profession of architecture was not spared this challenge from a more empowered public. The new design profession (based, to some extent, on the concept of a mystical gift to provide creative solutions in a consumer-driven market) also came into question from a public that was (and still is) increasingly demanding accountability and responsibility from the designers of our environment.

1 Richard Buchanan, “Education and Professional Practice in Design” in *Design Issues* 14:2 (1998): 63–66.

2 Donald Schon, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983).

There is much to criticize in current design practice, and the willing contribution that design education has made to that “culture of mystique” in the creative design activity. More important, however, this paper explores research approaches that are more suited to the interpretive nature of design. Central to this, in *The Reflective Practitioner*, Schon formulates an epistemology of practice based largely on an examination of the way in which practitioners reflect on their actions during and following their work. Reflection “in action” and reflection “on action” are key concepts in Schon’s scenario. Schon talks about how problems are framed, how a situation can be changed, what norms are given priority and what possibilities are offered, quite intentionally showing a relationship to the design process. Reflection “in action” and reflection “on action” lead to “action research.” This comparatively recent evolution of a methodology of research in the social science field has significant elements that could be assimilated into design practice.

Design Practice and Research

The twentieth century practice of design grew out of an applied art tradition that encompassed architecture, furniture, and interiors to fine book production and poster designs by commercial artists. The designs of individual practitioners such as Josef Hoffmann or A.M. Cassandre are entwined in a fine arts tradition that was bound to an intuitive mode of operation which often was difficult to articulate. In part, due to the propaganda efforts on all sides in the Second World War, more rational methods for making design decisions were developed during the latter half of the twentieth century. In the 1960–70s, there was considerable thinking and writing which had an enormous impact on the concept of the method and practice of design, particularly as related to industrial design areas. The theoretical work of designers coming from an engineering background promoted a “scientific method” to be applied to design problem solving. The works of John Christopher Jones, Bruce Archer, and later, Nigel Cross became the bibles for design theorists and practitioners.³ For more than twenty years, the belief that research in design (or serious study of any kind) should be founded in scientific objectivity and positivist formulas went almost unquestioned.

Scientific positivist ideology fitted in well with the prevailing modernist view of the world of that time. Designers, like architects, tended to take a high-minded approach to the design process (designers still claim ownership of design), and carried with them an implicit attitude that their solutions must be for the positive good of the community. Postmodernist philosophy challenged this dogma and urged a more tolerant and pluralistic approach to what might be good for the end-users. The social sciences brought forth a number of alternative ways to investigate and validate research and information, alternatives that have more affinity with design processes than the science/engineering model.

3 John Christopher Jones and Bruce Archer were notable among the first design theorists of the postwar period. Importing methodologies from the field of engineering, these two protagonists (working largely with the British Council of Industrial Design) applied rational approaches to design that established a basis of research, analysis, synthesis, production, and evaluation. J Christopher Jones’s seminal book *Design Methods: Seeds of Human Futures* (1970) and Bruce Archer’s *Systematic Methods for Designers* (1965) had a profound impact on this author and many other design practitioners and educators in the ‘60s and ‘70s, particularly in the UK. Jones’s work was published widely, and also translated into Japanese, Romanian, Russian, Polish, and Spanish. A second edition published in 1992 (Van Nostrand Reinhold) contains fascinating prefaces and reviews of previous editions by Jones, demonstrating the shifts in thinking that occurred over three decades of design development, not least, to Jones himself. Nigel Cross is Professor of Design at the Open University, UK, and has published several books and articles on design methodology. 1990.

Design is for human consumption and not bounded by the quantifiable “certainties” of the physical world. Of course, materials technology plays an important part in building and mass production. However, it is in the end usage of a designed product that belongs in the social science world. Design deals in human interactions with artifacts and situations that contain a great deal of uncertainty. Design research is tied to a domain that derives its creative energy from the ambiguities of an intuitive understanding of phenomena. And while we may criticize an imbalance of too much self-expressive art within design problem solving, the traditional root of intuition, inspired guesswork, and holistic thinking should not be lost in a revised version that contains rational judgments and processes to ensure an informed intuition.

Design research is not as quantifiable as in science and engineering and “interpretive” research is a form of qualitative research which is better suited to the behavior and sensitivities of human beings, relying more often on insight for the interpretation of human actions. Interpretive research accepts data and findings as containing bias, and that it is inevitable that many human cultural values are embedded in the interpretation of phenomena. This is much closer to the designer's personal interpretive analysis of problems, and the creation of potential solutions based on individual insight.

It is now generally accepted that there are many forms of interpretive research. The “critical” version is a further development that identifies more vehemently the potential for subjectivity to distort the understanding. Critical research often is applied to throw a spotlight on the vested interests of those who own or commission the research, although it also is recognized that it can liberate the researcher and the researched (Marxist or feminist research, for example, fits into this category). A poststructural or deconstructivist approach takes this debate even further, and sometimes can be accused of denying the existence of any truths. Taking the writings of Derrida and Foucault to their hearts, some “post-people” argue that all discourse contains many meanings, and that the interpretation depends as much on the reader as on the writer. There is a multitude of ways to construct personal knowledge, and a pluralistic approach that recognizes these dimensions is now preferred to the former positivist paradigm that sought to prescribe a universal truth.

There is a place for all these approaches to carrying out research, and there are now Ph.D. and MA students projecting interesting perspectives on varied aspects of design and, thus, also enlarging the field of design. These generally are formulated as traditional theses, and we should have no problem with the written articulation of design, the more the better for a developing field. The thesis is an accessible format that is capable of being read by people outside the design domain and, thus, is a vital channel for the cred-

ibility and external validation of design as a discipline field. It also is important to note that the thesis format does not exclude design projects. In the situation where a hypothesis is to be set up, tested, and observed and conclusions interpreted as in a traditional thesis model, it also can accommodate a design project where the design proposition becomes the hypothesis that is tested. Nonetheless, designers have shied away from this kind of research since it still seems very literally based and designers generally are more comfortable working primarily in visual media.

Visual form (as manifested in a design model) is a valid form of knowledge, albeit more problematic to verbally explain to “readers” not accustomed to seeing and understanding visual/spatial concepts. Visual literacy is the same as verbal literacy or audio (music) literacy—it requires practice and intelligence well versed in the history and concepts embedded in the form for a full interpretation and understanding. New visual forms of expression are based on developments of existing forms, enabling experienced observers to build the new forms into their understanding. A design concept that explores new visual forms to achieve intended outcomes may be immediately “read” by the informed eye, but not necessarily as easily understood by readers of conventional literate forms. Knowledge of semantics, at least in the shape of tacit understanding built from practical experience of spatial form, is a requisite for decoding the implied function that may be expressed through the shape of an object.

Research in design may seek to demonstrate the result of systematic inquiry as a tangible design product. Mike Press⁴ suggests that “A designed artifact is a researched proposition for changing reality.” This is not likely to be contested by designers who can justifiably see their creations as the result of weeks, months, or years of sifting through information and ideas in both verbal and visual forms. However, how designers explain their research in purely visual terms is an issue of considerable debate among academics and practitioners. There exists a fierce defense of the idea that the artifact is sufficient evidence of its purpose and existence, although a majority of academics insist on the visual expression being complemented by substantial verbal explanation.⁵ It is not my intention to review these arguments here. The important point is that visual form is a form of knowledge. It is a means of encapsulating ideas and, indeed, some ideas are expressed more powerfully through the visual medium than via any other form of communication.

The Design Process

In order to relate action research as a compatible methodology for approaching research “for” design, I will briefly review the design process. Literature on the design process is well covered elsewhere, emanating from the works of Jones, et al. I have assumed that we

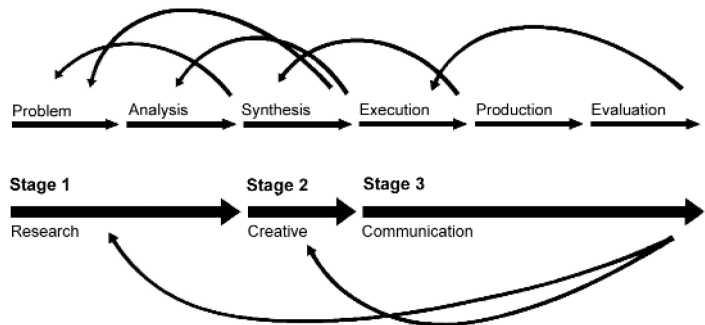
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- 4 Mike Press, “It’s research, Jim...,” Proceedings of the European Academy of Design Conference *Design Interfaces*,” University of Salford, UK, 1995.
- 5 A number of conferences have occurred in recent years that have addressed this concern, beginning with the Ohio Conference in 1998 *Doctoral Education in Design* organized by *Design Issues* and Ohio State University. The follow-up conference in La Clusaz in France in 2000 *Foundations for the Future* continued the Ohio discussion and many more threads conducted by electronic means on the Design Research Society mailing list, now located at: WWW.PHD-DESIGN@JISCMAIL.AC.UK. Archive material of the email discussion can be obtained via the Design Research Society at: www.drs.org.uk. A summary of this debate also is available in the School of Design Journal of Curtin University of Technology: Terry Love, “Research and Practice in the University Education of Designers,” *Journal* 5 (Curtin University of Technology, Perth, Australia).

share a consensus view of the basic elements along the following lines:

Problem/research – analysis – synthesis – execution – production – evaluation.

In such broad outline, it clearly follows a familiar research process that primarily is empirical, but more important, it is not linear as the above suggests. The design process is iterative. It can only be effective if it is a constant process of revisiting the problem, re-analyzing it and synthesizing revised solutions. A more descriptive model is provided in Figure 1:

Figure 1



Research might be simply regarded as an early stage in design, but the significant difference to research per se is emphasized in that crucial moment of synthesis, when all the problem parts are brought together in a holistic solution. The difference between the scientific method and the designers' approach to problem-solving is summarized by Nigel Cross:⁶

A research study by Lawson (1984) compared the ways in which designers (in this case architects) and scientists solved the same problem, in order to look for underlying rules which would enable them to generate the correct, or optimum, solution. In contrast, the designers tended to suggest a variety of possible solutions until they found one that was good or satisfactory. The evidence from the experiments suggested that scientists problem-solve by analysis, whereas designers problem-solve by synthesis; scientists use "problem-focused" strategies and designers use "solution-focused" strategies.

The "act" of designing is a problem-solving "performance" that is not necessarily the same as research and analysis. Prospective solutions can even be generated without any research (in the usual sense). It may be performed without the designer being involved in the research stage or stages. More often than not, research in materials technology and/or marketing already has been done, so the designer's task is to synthesize the numerous factors and to create a

6 Nigel Cross, *Engineering Design Methods* (England: John Wiley, 1989). Cross provides a good review of a range of design methodologies that have been proposed in recent years. This excerpt is from Brian Lawson's "Cognitive Strategies in Architectural Design," in N. Cross, ed. *Developments in Design Methodology*, (New York: John Wiley, 1984).

solution. It is this “special” creative step that designers take which has enabled our fast problem-solving abilities to develop as a saleable culture in a commercial world.

The designer often is operating on a different cognitive mechanism from the human rationale model that is expressed in the problem-solving approach of the scientific method. Alan Fletcher, a founding partner of Pentagram clearly operates on a solution-focused strategy, with some interesting insights:

For myself, I try to sum up the situation, back in edgeways, and cast around for ideas on which to hang further ideas. It's an intuitive process involving search, discovery, recognition, and evaluation. Rejection or development. There are no specific rules or recipes. One might slip through a sequence of actions in seconds, sweat through step by step, start backwards, move randomly from one point to another, or do what surfers call “hang ten”—get your toes in the board and ride the crest of the wave.⁷

The designer often telescopes a mass of fragmented bits of information and then—usually after a period of incubation— invents a coherent and often elegant proposition that embodies all or most of the rag-bag of bits. Fletcher describes the “search, discovery, recognition and evaluation” in research terms, but calls it an intuitive process that can be accessed in any order. This somewhat chaotic cascade of thoughts is what also has been described as a right-brain way of processing information. The right and left hemispheres of the human brain have been acknowledged as holding different cognitive processing mechanisms where the left-brain accommodates deductive and sequential reasoning, and the right brain handles the nonverbal, visual/spatial holistic thinking.⁸

The question that might be asked is “But is holistic thinking research?” Although perhaps not within the conventional notions of research which makes “objectivity” a benchmark for validation, but, in reality, science generally recognizes the part that hunches, intuition, and flashes of insight play in the research process. Without an imaginative insight into what data “might” mean and the variety of ways in which it “could” be interpreted, science would have made little progress in extending the body of knowledge.

The primary difference between science and design centers around the problem-focused approach versus the solution-focused approach. It must be clear that both science and design bring right brain thinking into the research process, but science (generally speaking) keeps it under strict harness and drives mainly on the left side of the brain. Design, on the other hand, gives the right brain full gallop as often as possible, to mix a few metaphors! The process essentially is the same, only the emphasis is different. Press sums it up as “The initial leap of faith which is explicit in the artistic method would appear to be implicit to that of science.”

7 Jeremy Myerson, *Beware Wet Paint* (London: Phaidon, 1996).

8 My paragraph is a simplistic interpretation of a complex process, but the notion of right- and left-brain modes of thinking is a convenient shorthand for two contrasting styles of thinking that is generally accepted at a basic level. More detailed explanations may be found in such standard works as: Sally Springer and Georg Deutsch, *Left Brian, Right Brain* (San Francisco: Freeman, 1981).

The design process is a research process. Figure 1 shows a process that will be familiar to researchers in any field. The action of designing is the same as the moment of synthesis that occurs in all forms of research, when the various parts of the data and analysis begin to make sense. "Serendipity," as many social science researchers call it, is an essential element of the journey through the research process. As Press points out, creative and artistic "researchers" revel in the intuitive stage (synthesis), whereas it is customary for scientists to play down the subjective interpretation of evidence. This can be seen in the extent to which the language in science is objective and in the third person. Discoveries are made to appear self-evident. In design, this moment of synthesis is the main focus—to be celebrated and widely communicated as "inspired." This moment of synthesis may be expressed as visual spatial knowledge in action. The design process traditionally is seen to be an action process centered round the synthesis stage. However, for this process to be recognized as a research activity, it must be made visible and this is where action research methodology adds two essential ingredients.

Action Research and Designing

Action research arises from a problem, dilemma, or ambiguity in the situation in which practitioners find themselves. It is a practical research methodology that usually is described as requiring three conditions to be met. First, its subject matter normally is situated in a social practice that needs to be changed; second, it is a participatory activity where the researchers work in equitable collaboration; and third, the project proceeds through a spiral of cycles of planning, acting, observing, and reflecting in a systematic and documented study.⁹

Ortrun Zuber-Skerritt¹⁰ has written extensively on action research. This is her summary of its origins and process:

The process of action research was first conceptualized by Lewin (1952) and further developed by Kolb (1984), Carr, and Kemmis (1986) and others. In brief it is a spiral of cycles of action and research consisting of four major moments: plan, act, observe, and reflect. The plan includes problem analysis and a strategic plan; action refers to the implementation of the strategic plan; observation includes an evaluation of the action by appropriate methods and techniques; and reflection means reflecting on the result of the evaluation and on the whole action and research process, which may lead to the identification of a new problem or problems and hence a new cycle of planning, acting, observing and reflecting.

The above cyclical approach is very familiar to designers because it bears a strong resemblance to the design process outlined earlier: problem/research–analysis–synthesis–evaluation (plan–act

9 D. Kember and M. Kelly, "Green Guide" 14. *Improving Teaching through Action Research* (Higher Education Research and Development Society of Australasia Inc., Campbelltown Australia, 1993).

10 Ortrun Zuber-Skerritt, *Action Research in Higher Education* (London: Kogan Page, 1992).

–observe–reflect). Design seldom takes place as a single flash of inspiration that resolves all the pieces in one go. It usually requires several cycles to review, amend, adapt, and refine before the initial concept is worked out, and the execution of a design solution can be made. For any designer who has carried out an action research project (however loosely), the similarity to a consciously “designed” approach to the task in hand is very striking.

This similarity is accentuated by the notion of *action* combining with “research” as an interplay of forces in the process of the activity, and this is precisely what designing is about. This interplay may have different emphasis at different times, sometimes the action is paramount and sometimes the research is more important. Bob Dick¹¹ expresses it as:

I regard action research as a methodology which is intended to have both action outcomes and research outcomes. I recognize, too that, in some action research the research component mostly takes the form of understanding on the part of those involved. The action is primary. In distinction, there are some forms of action research where research is the main emphasis and the action is almost a fringe benefit.

I suggest that action research and the action of designing are so close that it would require only a few words to be substituted for the theoretical frameworks of action research to make it applicable to design. Action research has been described as a program for change in a social situation, and this is an equally valid description of design (note the striking similarity to Press's “a researched proposition for changing reality”). However, to apply the second and third conditions of action research to the design field (emancipatory participation and systematic reflection) presents more challenging concerns for current design practice. My argument is that design already is moving in this direction and could be fortified by adopting principles which in action research have had time to develop and mature.

The “totality” of the collaborative nature of action research is probably more than many designers would accept within the present professional paradigm. They may support the development of team skills for working on multidisciplinary design projects, but few will genuinely include the users, consumers, and the public into the circle of participants, although this is beginning to occur. Participation and collaboration in action research requires that all those participants share in the developmental process in an emancipatory role. Action research has been applied extensively in teaching practice. Robin McTaggart¹² of Deakin University has observed, “Unfortunately there is still a reasonable expectation that academics will be imperialistic in their relationship with workers...” and this

11 Bob Dick, “A Beginners Guide to Action Research” at [www: major-domo@psy.qu.oz.au](http://www.major-domo@psy.qu.oz.au). ‘Artist’ file, 1995.

12 Robin McTaggart, “Principles for Participatory Action Research.” Paper presented to The Third World Encounter on Participatory Research, Nicaragua, 1989.

could very easily be translated to the traditionally imperialistic role of the designer or architect.

Authentic collaboration in research is more than just a multi-disciplinary design team approach. The users of design should be genuine “collaborators,” and not merely co-opted for token comments in an illusion of collaboration. Recent moves in the design field toward user-centered designing imply a more serious commitment to what is meant by collaborative working in design—or action research. Evaluation of their own work by designers must be more than *prima donna* personal preference. A more genuine form of collaboration should apply to designers, whether they are working in teams or as sole practitioners.

It could be argued that collaborative participation in the design process is more difficult to attain because designers often are operating as sole practitioners for individual clients. I had the opportunity to discuss the “collaborative” condition of action research with Stephen Kemmis, one of the main protagonists of action research in Australia.¹³ He was quick to point out that no one actually works in isolation (“no one is an island.”) and that we are all subject to the social mindsets that are the frameworks for our personal constructs of knowledge and how we act on that knowledge. It seems clear that individual acts of creativity are incremental hops along a set of socially embedded interactivities that are an inescapable condition in which the creative concept occurs. This kind of “social collaboration” is a universal condition from which we cannot escape. In any event, it does not prevent designers from collaborating with the end-users.

Action research requires the research process to be made visible. It demands public accountability and visible self-evaluation, an issue that is assuming increasing importance for current professional design practice. Surely the days are gone when only the designer and client approve a design. The public is having an increasing say in validating the design, environmental concerns being an obvious example of the way that public dialogue is impinging on design. There should be no qualms about design benefiting from the need for practitioners to make their processes visible and socially responsible. That's what documented research does, it legitimizes the proposition. If a design is going to “change reality,” as Press suggests, it inevitably requires considerable investment in time and money, and the public should have the means to understanding the developmental process. It is through increased understanding of creativity—demystifying the process—that the community is likely to develop more respect for designers and their role in society.

Systematically documenting this process is more than a chore for design consultant, who generally are not trained in these skills, and it might appear to demystify the special skill that is being marketed. Abandoning the sacred cow of “creative mystique”

13 During a private conversation, I explored a number of avenues relating design practice and action research with this well-known Australian author. For a standard action research text see: W. Carr and S. Kemmis, *Becoming Critical: Education, Knowledge and Action Research* (Lewes: Falmer, 1986).

would be a hard act for the design agencies to perform, since most have neither the will nor the research skills to change the working practice.

But “systematic and documented study” is a failing which design practice has perpetuated for many years. The profession, on the one hand, bemoans the public's lack of understanding and appreciation of the benefits of design to the community, both economically and culturally. At the same time, it has done little to articulate those benefits for the education of the general community. Too often, designers scorn writing about their practice in anything other than journalistic and celebratory terms. Writing and documenting design success stories is left to the magazines, who take a fairly superficial, glossy view of design practice. Case studies that have been a staple diet in the business world are almost nonexistent in design (a notable exception being the Boston Design Management Institute series¹⁴).

Action research has an established methodology for documentation that can serve as a useful model for design. Zuber-Skerritt, in 1992, acknowledged earlier authors of the action research operation, and offered her own version with the CRASP model:

Critical (and self critical) collaborative inquiry by
Reflective practitioners being
Accountable and making the results of their inquiry made public
Self-evaluating their practice and engaged in
Participative problem solving and continuing professional development.

CRASP provides a ready-made formula that is very easily adapted to the design situation. Many design consultants already work as teams and hold regular meetings at which progress is reported to members and discussed in an open and collaborative atmosphere. Action research methodology works on the same principle, but adds a more rigorous dimension to the operational ground rules, and assists in the formal documentation of the proceedings. The cyclical nature of the methodology involves group discussion, trialing of ideas, reflection, evaluation, and action in an iterative, evolutionary design process—a mode of working which design teams find familiar and comfortable. Action research is an appropriate methodology for any design project where the final outcome is undefined. The implicit process becomes explicit, and members of the design team learn consciously from each project and thus become empowered through the process.

To make this design/reflection process visible, the process has to be structured and should adhere to something along the following lines (adapted from Zuber-Skerritt):

14 The Design Management Institute (DMI) in Boston is one of the few organizations that has taken design management as its central feature of activity. The DMI publishes a regular newsletter and a series of design case studies that adhere to a management model. More information may be obtained from their Website: www.designmgt.org.

Data gathering by the participants
Participation and power-sharing in decision-making
Collaboration as a critical community
Self-reflection, self-evaluation, and self-management
Learning progressively by doing and making (mistakes) in
a “self-reflective cycle”
Reflection and communication to the broader community.

The iterative process of plan–act–observe–reflect entails reflection in-action as a description of how members deal with the act of doing things “on-the-fly,” followed by the reflection on-action as a more considered hindsight view. This process parallels the conventional design approach, but is enhanced by the transparent structuring. Significantly, action research also is practical–participative–emancipatory–interpretive, and this involves the team reflecting on the process as a collaborative and emancipatory exercise—including the users in addition to the client. There should be no “outsiders” in this collaborative process.

Records should be made and each project fully documented, monitored, and evaluated. These records become the case studies of a design consultant’s practice. They are likely to be confidential during the period of development and, in many cases, may only be used in-house and for client information. Collaboration with users also may need special negotiation to ensure confidentiality, but this is not new to academics in institutions where university ethics committees now keep an anxious eye on research activities and have protocols for carrying out a wide variety of projects. At some point in time (if not immediately), the confidential nature of the material will be a less important issue. Case studies can be communicated to colleagues and the wider community through publication in design journals and the popular press in order to promote “best-practice” design projects to the benefit of the profession and the education of a more literate design public.

Currently, design case studies usually are short articles couched in journalistic terms and presented as contemporary exemplars in the professional magazines. Relying largely on high quality photographs of the products, the principle aim is to publicize successful and innovative products. There is seldom serious critique from the writer, and in many cases, the text is supplied by the designer or his or her’s publicity agent. A mature profession needs to be more self-critical and more systematic in providing evidence of the process of creation from beginning to end, with methodologies in place for objective evaluation. The moment of synthesis may be highly personal and subjective, but the case study is an opportunity to reflect and record the process and product for future refinement.

Design academics in the universities are beginning to understand and employ a wide range of research methodologies that are

suitable for design research. However, most academics perceive a difference between the exercise of professional expertise (that is recorded in a case study) and research per se as the development of new knowledge. Basically, the opponents of action research say that a record of professional practice is not contributing new knowledge, which is the primary purpose of research. This is a fine-line argument. Clive Dilnot has argued that design practice as a consultative process might not be regarded as knowledge-building research, but when reflection is coupled with analytical thinking for further enactment, it can contribute new knowledge that resides within the realm of research.¹⁵ Geoffrey Caban adds:

What is needed for effective translation is a higher order of design-knowing which helps to convert the situation-limited action research into strategic or applied knowledge.¹⁶

Although the application of professional knowledge in the “situation-limited” activity of consultant work as described by Caban may not result in new knowledge, it frequently conforms to current practice. There are two points that should be taken into account in this argument. First, the recording of design practice as systematic case studies has been comparatively rare in the design field, and a substantial number of new case studies will add to the body of knowledge in design. A few examples may not provide the critical mass of studies that may begin to indicate trends or new insights gained from interpreting a larger body of data in this form. Second, professional practice can, and sometimes does, create new solutions of a higher order of design knowledge that succeeds in enlarging the body of design knowledge. An innovative design solution may adapt visual forms in novel ways that previously have not been recognized. John Langrish lists six categories¹⁷ of case studies, one of which he describes as “cor, look at that!” This is a case study that has transcended the normal “situation-limited” activity and moves into the extraordinary situation, providing new insight. Designers not infrequently invent new answers to conventional situations that transcend the ordinary, with the result of creating a higher order of thinking about that situation.

This aligns with situational action research. Bob Dick has pointed out that there are some forms of action research where research is the main emphasis and the action is almost a fringe benefit (and vice-versa.). The same applies to design practice. Action research provides a tried and tested model for immediate translation to design practice and, if adopted as a regular mode of operation, could provide a learning resource in the way that case studies have contributed to the establishment of a culture of dissemination and learning in the business world. And some case studies will qualify as research reports that create new understanding and knowledge in the field of design.

15 Clive Dilnot, "The Science of Uncertainty: The Potential Contribution of Design to Knowledge" *Proceedings of the Doctoral Education in Design Conference*, Ohio State University, 1998.

16 Geoffrey Caban, "The Implications of the 'New Scholarship' for Practice-based Research in Design" in *Proceedings of the Third European Academy of Design Conference Design Cultures* (Sheffield: Sheffield Hallam University, 1999).

17 John Langrish, "Case Studies as a Biological Research Process," *Design Studies* 14:4 (1993).

Sharing experiences in the form of substantive discourse of this nature will help design to progress as a discipline field. Investment in research and development in design is a recognized need but, unfortunately, one of the major obstacles to this development is a fear that sharing will “give away” some perceived competitive advantage. Worse, there is a prevailing culture in the profession that is quite likely to deride research. Overcoming this obstacle may take another generation or two of practitioners—to those who have experienced postgraduate study and have developed research capabilities alongside their creative professional skills.

Greater collaboration between the profession and the world of academia could establish better understanding of working practices in both research and professional practice. It might just instigate a program of change that would ultimately benefit the profession, helping to ensure its survival in a world that inevitably will demand more evidence of the quality of services it provides. Action research methodology provides a ready-made scaffold for a systematic research method that could be easily understood and adopted by designers in the translation of their professional practices into acceptable academic and public discourse.

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