

# Invisibility of Design Research in Practice.

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## **Introduction**

Communities of practice that focus on research or professional practice within the same discipline are often distinct and can easily fail to intersect. Each forms its own discourse and protects specific territory. An example of such a separation is research and practice in design. With the growth of graduate programs and particularly Ph.D.s in design, it is reasonable to expect the development of research useful to design and expect an increase in sophisticated performance-in-practice based on research. Or is it?

Varieties of research are not only based on different presuppositions, they also function in different ways. Research based on history and criticism form a backdrop for performance – such research does not lend itself to direct application in practice. Empirical research based on case studies is rather limited in its application, but it also provides general context for practice. However, empirical research based on experimentation and research development relating to methods, theory, or tools lend their results to practical performance. These are the research results on which this paper focuses.

## **Objective**

The objective of this paper is to explore the possibility of building a bridge between the communities of research and practice. Dissemination of research results in starchy research journals, directed to other researchers, inhibits broad understanding of how research results are applicable in practice. Further, it inhibits discourse from practitioners that might challenge or limit application of results as understood through a practice filter. A consequence of this is that practical concerns that might extend research or open entirely new directions go missing. The lack of understanding and dialogue between research and practice reinforces their separation as distinct communities of practice.

The formal style of research reporting and documentation serves other researchers, but not practitioners. The order of presentation, lengthy discussion of methodology, and complete lack of connection to design problems in practice inhibits the design practitioner from spending the time necessary to find something of use. Another, complementary form of research reporting directed to the practitioner can be created. This would focus immediately on the research results, point to the formal research paper for deep background, connect to practical problems, and invite commentary from practitioners on use of the research.

The differences between these two modes of access are that the first (journal papers directed to researchers) is archival and the other is evolutionary (results-in-use directed to practitioners). The static-dynamic nature of this pair mirror the differences in development cycle, slower research development versus rapid research application and solution development, as well as the singular focus (research) versus multiple focus of research use (practice).

## **Approach/Method**

High level design practitioners are interviewed with regard to:

- use of design research
- accessibility of research
- characteristics that make research useful.

From the synthesis of interview findings, a database is modeled that is a results-oriented or practice-oriented database. This research is speculative with a prototype based on interviews with practitioners. The database presents information drawn from doctoral research, but is presented in the context of practitioner need.

## **Nature of Findings**

The resulting database prototype is a proof of concept demonstration that opens the door to further development and (hopefully) funding. What is needed is a bridge between research and practice. One such bridge, a results-oriented or practice-oriented database, is suggested.

## Futureground Conference

### Invisibility of Design Research in Practice

Communities of practice within the same discipline, such as practitioners and academics, intersect infrequently; they form their own discourse and protect their territory. With the growth of graduate programs and particularly Ph.D.s in design, it is reasonable to expect the development of research useful to design practice and expect an increase in sophisticated performance based on research. Or is it?

Dissemination of research results in starchy research journals directed to other researchers inhibits broad understanding of how research results are applicable in practice. Further, it inhibits discourse between practitioners and academics that might challenge, and thus limit or extend results in application. A consequence of this is that practical concerns that might extend research or open entirely new directions from both perspectives go missing. The lack of understanding and dialogue between research and practice reinforces their separation as distinct communities of practice.

Varieties of research are not only based on different presuppositions, they also function in different ways. Research based on history or criticism forms a backdrop for performance that often escapes direct application in practice. Empirical research based on case studies is rather limited in its application, but it also provides general context for practice. Empirical research based on experimentation or qualitative research gathered and analyzed in many different ways together with research development relating to methods, theory, or tools, lend their results to practical performance somewhat more directly. These were the research results the author was thinking about as she began this investigation.

As more research is done in doctoral programs in design worldwide, the question of its use naturally arises. The research investigation that follows, a pilot study, presumes that design researchers in an academic setting create and publish their research results in the service of the design discipline — including not only other academics, but practitioners who may enhance performance through its use. The question this research seeks to explore is whether or not those in practice seek out and use scholarly publications and whether the patterns of practitioner research application works towards or against such access and use. An outcome of this investigation may be a repositioning of research reporting in terms of access or a restructuring of research reports themselves.

Starting from the position that formal, i.e., scholarly design research is largely invisible to design practice, this research seeks to broaden the perspective on

research user's needs in design research by focusing on practitioners rather than on other academics.

### **Research structure and method**

This is research about the *use* of research. The research reported is a pilot study that investigates the current situation with regard to construction and use of design research among those engaged in design practice. Telephone interviews were conducted with twelve design consultancies and eight internal design departments in large corporations within the United States. The consultancies and corporations were chosen for their known use of research. The people interviewed span a range of positions from those responsible for doing the actual research, with titles like senior design researcher or usability engineer, to those who set policy with regard to research, with titles like principle or partner in a design consultancy or vice president for strategy and innovation in a corporation, for instance. The nature of the work done by both the consultancies and corporations was broad, spanning, for example, consumer product development, branding, investment management, software development, and web design. All participants were interviewed on the basis of personal and institutional anonymity. Thus the interview cases when represented are labeled with meaningless numerical tags.

The telephone interviews were semi-structured with a set of questions that required a combination of open-ended and yes/no responses. They lasted from ten to twenty minutes depending on how extensively the participant answered the open-ended questions. The interviews were tape-recorded and literally transcribed for analysis. Developing questions that were not leading yet could uncover the information desired was often challenging; table 1 lists the questions. Participants were not informed about the goal of the research. They were solicited via email with follow-up telephone appointments made upon their agreement to participate. The interviews took place during early 2004.

Interview based research is effective in generating data about participant's concerns, feelings, and/or perceptions. The fifteen questions on which the interviews were based generated a substantial amount of information — not all of which can be presented in this paper. The following analyses are presented. Cross-situational generalizations are formed contrasting corporate and consultant positions on characterization of research with which they were engaged (question 1) and their understanding of design research (question 2). Responses to what is good (question 13), problematic (question 14), or characterizes a really useful scholarly paper (question 15) are aggregated and discussed. Finally a response matrix is constructed as a means to look for patterns regarding the character of research use. Yes/no questions form the basis for this analysis: do you initiate your own research study (question 3); search for existing research (question 4); archive research results (question 7);

and return to archived results (question 8). An additional value was added to the matrix regarding research sophistication; this is discussed later.

**Table 1** Questions

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**Some of the questions are open-ended, please respond to them in any way you feel is appropriate.**

**Some are yes/no questions, I will mention which these are. Feel free to add to these answers if you like.**

- 1) How would you characterize the research you do or use?
- 2) What is your understanding of design research?

**[The next two questions need a Yes or No.]**

- 3) Do you typically initiate your own research study?
- 4) Do you typically search for existing research results?
- 5) Under what circumstances do you construct your own research?
- 6) Under what circumstances do you consult existing research?

**[The next three questions need a Yes or No.]**

- 7) If you do your own research, do you archive the study and its results?
- 8) Are these studies ever returned to for use or expanded by additional data or analysis?
- 9) Could these studies be archived and accessed publicly?
- 10) When you search for existing research — where do you look?

**[The next question needs a Yes or No.]**

- 11) Do you read research papers in scholarly journals?  
If no, 12) What prevents you from reading them?  
If yes, 13) In your opinion what is good about such research reports?  
If yes, 14) Is anything about these reports difficult or problematic?  
If yes, 15) What characterizes a really useful paper?
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## **Analyses**

Data produced by interviews are social constructs. Regarding the lack of specific context for the interview and the questions and their interpretation, some repair of misconception was necessary. Goffman observes "...that we act in such a way as not to disconfirm the assumption of our sanity by those around us. In effect, we are obliged to participate in the everydayness of everyday life or be regarded as incompetent, deranged, disordered, and generally unfit to be around right-thinking people" (Miller, 1997, 56). The interview is an artifact; an elicitation of accounts that often requires careful repair.

### *Comparison of research use between corporations and consultancies*

The context within which corporations use design research and the context of consultancies are significantly different. Those working in corporations have a

more singular focus and are concerned with development over longer time spans. In contrast, consultancies engage in diverse projects with limited and often overlapping time spans. While this is not remarkable news, it informs some of the differences in research approach.

General research patterns among corporations included: extensive and sophisticated use of research that is very focused to their industry, but tempered by broad research interest related to social and economic trends. Their own internal research was confidential and proprietary; it was structured to support design iteratively and was both exploratory and generative as well as evaluative. Users of products and services and their behavior figured prominently in corporate descriptions of research characterization.

There appeared to be greater variation in research patterns among consultancies. While some followed a project completely through development, others focused on early generative development or later evaluation. In order to put design into an appropriate business, technology, and organizational context, most used their client's research as a starting point and then developed research plans to fill in missing information. They could then sometimes triangulate their research findings against existing research including that supplied by their client. Consultants kept a sharp focus on research that advanced design development; often this meant the research was qualitative, user-centered and focused on research results that were actionable from a design perspective. They were often engaged to help a client understand user values, behaviors, and attitudes.

To contrast the difference between corporate and consultant answers the following quotes are offered. From the corporate perspective: "Our research is both strategic and tactical. It's critical to the design development and marketing, and central to a lot of the business decisions and company strategies." From the consultant perspective: "...we're calling it user experience planning with more emphasis on the user than on business opportunities or market positioning or things like that...we focus much attention on understanding user patterns of behavior, trends, needs, and emotions."

#### *Comparison of design research characterizations*

When asked to share their understanding of "design research," there was considerable difference among those interviewed in corporations. Characterizations ranged from none (unanswerable) to an understanding of design as an art (consequently design *research* was not sensible) to its characterization as an iterative process that helped develop products and communications through understanding a target audience and industry specific insights. It was also considered user-centered and qualitative in nature, taking a holistic and longitudinal approach to development. The last two statements were in good agreement across the remaining corporate participants.

Consultants understood design research to be research that leads to the creation of something; actionable research that helps to develop products, services, and systems that are human-centered. In general they mentioned qualitative work (separate from market research) that was an assembly of techniques including: secondary research, sociological field work, behavioral observation, interviews, category analysis, analysis of design language, perceptual studies, human factors, ergonomics, biomechanics, cultural research, and information architecture, to name some of the specifics. One participant said design research was not part of his lexicon, yet his discussion of projects and research within his firm demonstrated varieties of design research. There was considerable overlap in consultant response to questions one and two, their characterization of their research activity was design research.

To characterize the difference between corporate and consultant response, the following quotes are offered. From the corporate perspective: "...design [research] really has to do with the A-Z of moving from an idea to actually implementing and refining it and specifying and creating or developing it...it is a highly inclusive activity." From the consultant perspective: "...design research is research that supports understanding the user and the process of design for the goal of creating easier to use and more appropriate experiences for an audience or a user."

#### *Comparison of good, problematic, and really useful scholarly papers*

In the following tables 2 through 4, corporate and consultant response are coded by source and classified into three categories: reflections on research itself, communication quality, and integration and complementary nature with regard to the participant's work. Table 2 focuses on "what's good"; under "research itself" there were contrasting approaches between corporations and consultants; corporations were interested in what is new or suggests the future, while consultants were interested in the past or the reliability of the research. Under the classification "communication quality," corporations and consultancies shared interest in objectivity and the descriptive character (well written and illustrated) of the communication. Showing or suggesting research application was a corporate desire while qualities of thoroughness in aggregating information and the presence of a substantial bibliography interested consultants. Under the classification "integration with own work," while the specifics were different, they shared a reflective nature in which honesty, perspective, and confidence were the issues.

**Table 2** What's good about scholarly research?

Research itself	Communication quality	Integration with own work
<ul style="list-style-type: none"> <li>• explores new research methods</li> <li>• shows where field is going</li> <li>• presents rigorous results</li> <li>• reveals what's already done</li> </ul>	<ul style="list-style-type: none"> <li>• well written &amp; illustrated</li> <li>• shows or suggests application of research</li> <li>• aggregates information</li> <li>• describes objectively &amp; thoroughly</li> <li>• presents extensive bibliography</li> </ul>	<ul style="list-style-type: none"> <li>• stimulates new ways to think</li> <li>• keeps things honest</li> <li>• provides answers to specific questions</li> <li>• provides different perspective</li> <li>• engenders confidence in own work</li> </ul>
<hr/> <ul style="list-style-type: none"> <li>• corporate answer</li> <li>• consultant answer</li> </ul>		

**Table 3** What's bad about scholarly research?

Research itself	Communication quality	Integration with own work
<ul style="list-style-type: none"> <li>• small samples</li> <li>• experimental</li> <li>• too scientific</li> <li>• too focused</li> <li>• suspect method</li> <li>• not fact driven</li> <li>• missing details</li> </ul>	<ul style="list-style-type: none"> <li>• jargon</li> <li>• too wordy</li> <li>• lacks a good summary</li> <li>• obscure language</li> <li>• boring</li> </ul>	<ul style="list-style-type: none"> <li>• lacks application</li> <li>• too general</li> <li>• not relevant</li> </ul>
<hr/> <ul style="list-style-type: none"> <li>• corporate answer</li> <li>• consultant answer</li> </ul>		

**Table 4** What's really useful about a scholarly paper?

Research itself	Communication quality	Integration with own work
<ul style="list-style-type: none"> <li>• good theoretical framework</li> <li>• do-able, repeatable research design</li> <li>• scholarly depth</li> <li>• original thought</li> <li>• opens new areas</li> <li>• experimentation</li> <li>• comparative case studies</li> <li>• important premise</li> <li>• definitive work</li> </ul>	<ul style="list-style-type: none"> <li>• insightful interpretation</li> <li>• executive summary with call-outs</li> <li>• easy to read, non-academic</li> <li>• good abstract and keywords</li> <li>• good bibliography</li> </ul>	<ul style="list-style-type: none"> <li>• reliable insights</li> <li>• analytical convergence between own research and others</li> <li>• actionable information</li> <li>• rules</li> <li>• predictions</li> <li>• some speculation</li> <li>• implications of a general nature</li> <li>• a tool</li> <li>• a high level hypothesis</li> </ul>
<hr/> <ul style="list-style-type: none"> <li>• corporate answer</li> <li>• consultant answer</li> </ul>		

Under “what’s bad” (table 3) about scholarly research and using the same classifications, again there was a difference in corporate and consultant critique of research itself. Corporations criticized the small samples and did not appreciate experimental research, rarely present in the industries they represented. In contrast, the consultants criticized the methods, and conclusions and found the research paradoxically both too scientific and insufficiently fact-driven. In the classification “communication quality,” there was considerable agreement on use of obscure language (jargon), and overly long description (boring, too wordy). To this corporations added the need for a very good summary.

When asked what characterizes a “really useful paper” (table 4) both corporations and consultants attended primarily to the classification “research itself.” Both shared interest in research methods that are do-able and repeat-able. Corporations went on to value a good theoretical framework and scholarly depth. In contrast consultancies valued original thought that opened new areas not previously studied and studies with an important (worth researching) premise. Consultancies went on to describe varieties of research focus and value such as: experimentation, exploration, definitive studies, and comparative case studies.

They shared a strong interest in communication quality with regard to clear summaries or abstracts with good call-outs or keywords. Corporations wanted insightful interpretation while consultants again desired understandable (non-academic, non-jargon) language with a good bibliography.

With regard to integration with their own work, there was no overlap between corporations and consultancies. Corporations valued analytical convergence between their own research and others, reliable insights and actionable information — their focus was on information use and confirmation. In contrast, consultants valued rules, hypotheses, tools, and predictions that could influence process and direction in their work.

There was considerable variation in answers to these questions. Some participants generalized at a high level of abstraction regarding research activities, while others discussed project examples to form an answer, perhaps also substantiating in their own minds that their research activities pointed to a particular answer. Participants, who identified themselves as former academics had access to a more complete vision of research structures, while others, without this background, knew specific research practices and their application, but lacked the larger more integrated view.

Two related factors characterized virtually all participants: time pressure and specific information need. Few had the luxury of browsing research; their interest in research was very focused on their own information needs and the problem or project on which they worked. Several mentioned that their work was so



customized that research publications were irrelevant. Others in fast moving contexts needed information quickly — far more speedily than academic research moves.

*Examination of yes/no answers*

Comparative research strategies (Ragin, 1987) are useful to examine causal factors across case studies. The interviews under discussion are twenty case studies represented by yes/no questions (questions 3, 4, 7, 8) from the interview along with a summary analysis of research sophistication taken from a close reading of individual interviews. The close reading isolated research related terms such as quantitative analysis, ethnographic observation, or statistical analysis, for example, as they occurred spontaneously in the discourse related to the answers.

The rationale behind examining answers to these questions together with a close reading score from overall response focuses on research activity and value revealed by the participant; those that initiate and develop their own studies, search for existing research, actively archive research and re-use archived materials and who receive a “yes” (1) for research discourse may be more likely to read scholarly journals. But what is the pattern of conditions that separates readers from non-readers?

The interview matrix (table 5) presents answers to questions based on a presence/absence dichotomy with 1 indicating a yes and 0 indicating a no. Condition 1, initiates own research, is affirmative across all cases, but while it may be a necessary condition, flagging active development, it is not sufficient. Close examination of the matrix reveals two substantial patterns that account for thirteen of twenty cases. Pattern one, accounts for five cases (case numbers 1, 8, 13, 14, 16) and has affirmative answers for all conditions. Pattern two, accounts for eight cases (cases 2, 4, 7, 11, 12, 18, 19, 20) and has affirmative answers for all but research discourse sophistication. The remaining cases have more disparate patterns.

**Table 5** Interview matrix for yes/no answers

	Cases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Initiates research study <b>A</b>		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Searches for existing results <b>B</b>		1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Archives study & results <b>C</b>		1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
Returns to archived studies <b>D</b>		1	1	0	1	1	0	1	1	0	0	1	1	1	1	1	1	0	1	1	1
Research sophistication <b>E</b>		1	0	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0

Cases 1-12 are consultants  
Cases 13-20 are corporations

## **Discussion and conclusion**

Given the nature of open-ended interviews, it may be that the close reading measure (the division between sophisticated and unsophisticated based on scores above or below the average) was too crude for use. Variations in informal interaction between participant and interviewer may also account for the “tone” of the conversation and its subsequent answers. If condition E is eliminated, fourteen cases share a pattern but this pattern is not revealing. With additional interviews (cases) it may be possible to use Ragin’s comparative analysis rigorously in order to uncover more revealing causal patterns regarding research use. Additional yes/no questions such as do you submit research papers to journals may help to amplify differences in research behavior.

The informal critique of scholarly publications is perhaps the most interesting and provocative result reported here. It is interesting because the critique suggests structural change that is conceivable and in step with the need for more nimble access and evaluation of research information for use. The purpose of a pilot study is to confirm research strategy and suggest directions if things are not as revealing as the researcher would like.

This pilot study demonstrates that the researcher located the participant targets of interest, i.e., those actively engaged in design research in the practitioner community. However the questions need to be fine tuned and expanded to answer the original question: are practitioners interested and able to access and use academic research in design. Further, the profiles of difference between corporation and consultancy need to be sharpened. The outcome to this pilot study suggests the necessity of extending it through additional interviews. With a larger study in place, outcomes may include ideas regarding: 1) better positioning of academic research in terms of practitioner use; 2) a foundation for thinking about what kinds of research questions academics are uniquely suited to address; 3) identification of common ground between researcher interest and practitioner need; and 4) a revised report structure that gets important results, new methods, and applications to the forefront. An area that again emerged from this study is the need for more accessible research in terms of finding reports as previously identified by the author (Poggenpohl, 1998).

A final observation is that if design research is truly becoming more prevalent in practice both within corporations and consultancies, then design educators need to consider ways in which to embed research understanding, use, and construction throughout the stages of design education.

## **Resources**

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Ragin, Charles C. 1987. *The Comparative Method, Moving Beyond Qualitative and Quantitative Strategies*. Berkeley, CA: University of California Press.

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