

ANNOTATED
DESIGN
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OVERVIEW
PROCESS

Annotated Design Research Bibliography Process Overview

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This Annotated Design Research Bibliography brings together a network of design scholars to select the most relevant bibliographical references for the field of design. The books that appear annotated are selected through two analytical approaches: the essentialness of the book determined through a design community on-line ranking survey, and the discipline distribution through field-keyword analysis. Annotations were collected from the volunteer on-line survey participants and a more focused community of individuals targeted for each particular section including members of the Ph.D. listserv, the Ph.D. community at the Institute of Design and its database. The project consists of ninety books in three essential areas of design study: 1) Philosophy and Theory of Design, 2) Principles and Methods of Design Research, 3) Theory and Practice in Design. Interpretations of the observations from the data collected from the on-line bibliographic survey also are suggestive of the state of design as a discipline.

Annotated Design Research Bibliography

Process Overview

Design has a long but undistinguished history. Academicians have spoken and published on the subject almost from the time design was first considered an actual subject, as early as architectural design theories were written in Roman times. Yet, design as a discipline is still immature and has not developed the internal structures and understanding that older disciplines have. In short, there is little to point to as a theoretical base for design. Although design has its own purposes, values, measures and procedures (Owen, 1994), they have not been extensively investigated, formalized or codified or even significantly entered into the literature created for the field. As a result, those who seek to work more rigorously look to other scientific and scholarly models for guidance, and we find references to 'design science' and examples of 'design research' that seem to fit more appropriately in other fields (Owen, 1994) — such is the current state of research and discourse in design.

THE NEED FOR A DESIGN RESEARCH BIBLIOGRAPHY

Despite prominent individual efforts — including major contributions in modern times by design theorists in the UK — the degree of interest in design literature among design disciplines has been quite uneven, ranging from more than a little in engineering design, to some in architectural and product design, to not very much in the fields of design most closely associated with the arts and crafts.

Thus, design integrates several fields with different research traditions and competing methodological claims, 'Not surprisingly, design as a knowledge domain is invisible, dispersed within other classifications' (Poggenpohl, 1998).

Design

Research

There is no database and/or Library of Congress (LC) classification: Design. Design literature resources are organized under databases of related fields such as architecture, psychology, business and economics, marketing, humanities, and engineering. For example, the sub-category Industrial Design is organized under the LC classification of 'Technology,' while Graphic Design is under 'Art.' In addition, in a Dialogweb search, Design literature is found under the datastar of ARCHITEC, ARTS, BUSECON, ECON, ECOLOGY, EDUCAT, ENG, ENVIRON, HUMANIT, PRODINFO, PRODUCTS, MANAGE, MKTRES, PSYCH. 'Design' as a keyword search itself does not usually lead to useful design literature. The search for design literature (as an appendage to other dominant classifications) poses a challenging problem for the design community. This leads to a lack of foundation on which to build a discipline.

Communities of knowledge and research-based communities of practice involve sharing information which requires a literature. Klaus Krippendorff's (1998) article in the *Proceedings of the Ohio Conference on Doctoral Education in Design* considered how — and why — scholarly communication builds a field. Tore Kristensen's (1999) Helsinki presentation and many of the papers at La Clusaz and other conferences have addressed the same issue. The ADC (Asian Design Conference) series of international conferences also shows a readiness to develop a more serious approach to design discourse. The information shared in scholarly and scientific communications, thus, becomes part of the common heritage of human knowledge, building the foundation for disciplinary development and sharing ideas and information more broadly, across disciplines.

As Ken Friedman stated in *Design Research News*, December 2001:

“This half-decade has been a period of dramatic growth and visible development. We had only a few journals six years ago. Now we have several: some established, some new and more in development. Six years ago, we managed an occasional conference from time to time. Now, we have several international conferences on a regular schedule and many regional and nation conferences. Next year, we will hold our first global design research conference. Where we had a handful of research books and no textbooks, we now have a small shelf of solid monographs, a few textbooks and more of each under way. Where we had two or three online discussions groups, we now have over a dozen. The most active of these have between six and seven hundred subscribers each. Research centers and professional associations of many kinds meet different needs, and research education is blossoming along with doctoral education.”

Design as a discipline with its own literature is growing. To build an intellectual design culture we need to develop design bibliographies as a systematic resource for locating literature in books and journals, professional and research conferences, seminars that encourage information sharing and exchange among design practitioners and researchers around the world.

INTENTION AND EXPECTATION

This design bibliography project emerged from questioning what is unique to design and what is borrowed from other disciplines. *(Pages 134-135, 172-173, 210-211 show complete charts of books with disciplinary descriptions. Table 2 in each of the three sections.)* Here we acknowledge that we borrow from other disciplines. Thus, complex design problems that require extensive inquiry and evaluation become more meaningful when they are grounded in theory and systematic inquiry from whatever appropriate source. Most importantly, this project is also aimed at building a research culture which overtime can create a base of design knowledge through the development of continuing research by designers and design teams. This project is the documentation and dissemination of research findings. It is imperative that design research is documented and disseminated in a systematic way so that others can understand design research, its outcomes and use. It is even more important that dissemination occurs so that other researchers are aware of the work that has been done and can build upon it. This project also holds promise as a stimulus to the further recording of design literatures. After years of documentation and dissemination of design research, a naturally recorded history of the design field occurs. Trends in design can be tracked through the records of design research and its impact on design performance in case studies throughout the years.

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ABOUT THIS PROJECT

This project emerged as an extension from the second conference on doctoral education in design, in July 2000 in La Clusaz, France. The Conference, Doctoral Education in Design: Foundations for the Future encouraged participants to present findings, debate ideas and propose bench marks for the future development of the doctorate in design. This conference presented many perspectives — some of which are not represented in this project. There are substantial omissions in this project such as little history and virtually no criticism.

There are many ways to develop a bibliography — through professional subject specialists (who are rare or nonexistent for Design), through citation searching (whose shortcoming is inadequate representation of recent literature and the shortcomings of a more formalized Design discourse itself), through ideosyncratic approaches like the American Center for Design Bibliographies (Davis, 1997) which represent a series of singular points of view. In this project, after trying the citation search method which failed to produce adequate results, the decision was to engage a community of scholars.

This bibliography project is an effort to bring together a network of design scholars to select the most relevant bibliographical references for the field of design. Especially, the scholars who participated in the La Clusaz Conference and who are in a position to influence the future of design education.

The project consists of selected literature review in three essential areas of design study (based on the La Clusaz Conference proceeding): 1) Philosophy and Theory of Design, 2) Principles and Methods of Design Research, 3) Theory and Practice in Design. The focus is on advanced thinking in design whether from a theoretical, methodological or practical perspective.

The books that appear annotated in the bibliographic references for design are selected through two analytical approaches:

- 1) *The essentialness of the books to the design community — members of the design community ranked books on-line*
- 2) *The discipline distribution (the fields that a book covers) by field-keyword analysis*

1. Design community book ranking (on-line survey)

To find consensus among the design community on the most relevant design books, an on-line survey with an initial list of books consisting of three areas of design study mentioned above: 1) Philosophy and Theory of Design, 2) Principles and Methods of Design Research, 3) Theory and Practice in Design was developed for its contribution to and assessment by the design community.

For each section, an initial list of about sixty books, selected from the La Clusaz Conference proceeding references, experts' suggestions and a literature survey, was presented for the participants to rate/rank the essential character of each book. Four questions were asked:

- 1) *Have you heard of this book?*
- 2) *Do you recognize the author?*
- 3) *Have you read this book?*
- 4) *Do you recommend this book?*

Annotated Philosophy and Theory of Design List

Annotated Principles and Methods of Design Research List

Annotated Theory and Practice in Design List

Design book

Address: http://www.id.it.edu/phd/design/design.php

Design Books in Philosophy

Philosophy of Design: No.1-40
 Principles and Methods of Design: No. 41-80
 Design Research and Practice: No. 81-120

Selected by category

Instruction

- 1) Select at least one of the three lists. You are welcome to contribute to more than one list and can return at a later time to respond to another list.
- 2) Mark the box if you are in agreement, otherwise leave it blank. If you want more information about a book, you can click on its title and a new window will open connecting you to the publisher or distributor.
- 3) To recommend a book, enter the information for the book in the spaces provided in the section "My Recommendations" at the end of each list. If you wish to volunteer to write a 125 word annotation for any of your recommended book(s), select the appropriate box to confirm your intention.
- 4) When finished answering as many lists as you wish and adding your recommended books, press the button "Send my answers" and a note confirming that your message was received will be presented.

No.	Author (Last Name, First Name)	Title	Publisher	I have read this book	I have heard of this book	I know of this author	I recommend this book	I would like to write an annotation for this book
1	Ackoff, Russell L.	The Art of Problem Solving	John Wiley, 1978	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Appadurai, Arjun	The Social Life of Things: Commodities in Cultural Perspectives	Cambridge University Press, 1986	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Argyris, C.	Inner Contradictions of Rigorous Research	Academic Press, 1980	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Argyris, C., Putnam, Retai	Action Science	Jossey-Bass Publishers, 1995	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Attfield, Judy	Utility Reassessed: The Role of Ethics in the Practice of Design (Studies in Design and Material Culture)	Manchester University Press, 1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Attfield, Judy	World Things: The Material Culture of Everyday Life	Berg Pub Ltd., 2000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Cross, N., Dorst, K. et al	Research to Design Thinking	Delft University Press, 1992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Dart, Tim	Material Culture in the Social World	Buckingham: Open University Press, 1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Dasgupta, Subrata	Creativity in Invention and Design: Conceptual and Cognitive Explorations of Technological Originality. Consciousness Explained	Cambridge University Press, 1994	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Demet, Daniel C.	Design with Complexity	Little Brown & Co., 1992	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Flood, R. L., Carson, E.R.	Design with Complexity	Fleerum Press, 1993	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Flood, R. L., Jackson, M.C.	Creative Problem Solving	Wiley, 1991	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Flores, Vilen	The Shape of Things	Reaktion Books, 1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Glasser, B. G., Strauss, A. L.	The Discovery of Grounded Theory: Strategies for Qualitative Research	Aldine de Gruyter, 1980	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Gurwitsch, Aron	The Field of Consciousness	Duquesne University, 1964	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Harnly, D. W.	In and Out of the Black Box: On the Philosophy of Cognition	Basel Blackwell Ltd., 1990	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Jantich, E.	Design for Evolution: Self-Organization and Planning in the Life of Human Systems	George Braziller Inc., 1975	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Johnson, Victor S.	Why We Feel: The Science of human emotions	Helix Books, 1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Knack, Fritz	Knowledge and Information	Piterson University Press, 1979	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
101	Salvendy, Giovanni	Handbook of Human Factors and Ergonomics	John Wiley & Sons, 1997	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
132	Savoff, Henry	Integrating Programming, Evaluation and Participation in Urban & Housing Research (Urban paper 347)	Adaptive Publishing Company, 1992	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
133	Schmuck, Richard A.	Practical Action Research for Change	IRI/Slaylight, 1997	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
134	Schon, Donald A.	The Reflective Practitioner: How Professionals Think in Action	New York: Basic Books, 1983	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
135	Schneekloth, Lynda H.	Place-making: The Art and Practice of Building Communities	John Wiley & Sons, 1995	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
136	Stake, Robert E.	The Art of Case Study Research	Sage Publications, 1995	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
137	Stringer, Ernest T.	Action Research: A Handbook for Practitioners	Sage Publications, Incorporated, 1996	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
138	Warfield, John N.	A Science of Generic Design	Iowa State University Press, 1994	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
139	Waring, Alan	Practical Systems Thinking	Thomson Learning Europe, 1997	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
140	Wenger, Etienne	Communities of Practice: Learning, Meaning, and Identity	Cambridge University Press, 1999	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

No.	Author (Last Name, First Name)	Title	Publisher	I have read this book	I have heard of this book	I know of this author	I recommend this book	I would like to write my annotation for this book
141	Woodson, Wesley E.	Human Factors Design Handbook: Information and Guidelines for the Design of Systems, Facilities, Equipment and Products for Human Use	McGraw Hill Text, 1991	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
142	Yin, Robert K.	Case Study Research: Design and Methods	Sage Publications, 1994	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Send my answers

Add books important to Philosophy of Design.

Rank edit books test others Home

Link: http://www.id.it.edu/phd/design/feedback.php

Figure 1 is a snapshot of the on-line survey website. Participants could choose to rank and/or recommend the books for a particular section or for all three sections: Philosophy and Theory of Design, Principles and Methods of Design Research and Theory and Practice in Design.

Participants

The on-line bibliographic survey was sent to 502 recipients who are members of the PhD Listserv [LISTSERV@JISCMAIL.AC.UK emailing address] and the results were collected within a five week period. Participants were encouraged to pass on the survey address to other interested people, so the exact number exposed to the survey is uncertain. There was no attempt to engage practicing designer participation through professional organizations. Few practitioners engage in research and even fewer are interested in philosophy. The final survey results were based on a total of eighty-two respondents who participated in the on-line ranking. The greatest response was to the Theory and Practice in Design list. Philosophy and Theory of Design yielded a modest response. The weakest response was to the Principles and Methods of Design Research list.

2. Field-keyword analysis

To ensure an appropriate disciplinary distribution of the final book selection 'field-keyword analysis' was employed. Design and design related books are organized under many different disciplinary keywords. In this analysis, the fields of the books are identified by the keywords indicated in the on-line literature reference (Amazon.com). For example, *The Design of Everyday Things*, by Donald A. Norman is found under keywords such as design, industrial, psychological aspects, human engineering, technology and industrial arts, technology, industrial design – general, cognitive psychology and consumer behavior. This set of keywords indicates that the book is a combination of social science, technological science and industrial design.

Keywords

In this analysis the disciplinary distribution (or combinations) were compared through eight fields: natural science, social science, technology science, education, business, architecture and environmental design, industrial design, and communication design. These eight fields are indicated by the example keywords listed below:

Natural science includes keywords related to biology, mathematics, physics

Social science includes keywords such as anthropology, sociology, psychology, social systems, social engineering, social change, sociological theory, sociology, social science, sociology-general, sociology-social theory, action research, philosophy and social aspects, popular culture, anthropology-cultural, cognitive psychology

Technology science includes keywords such as software engineering, electronic data processing, structured techniques, software design, computer books: general, language/programming, software development, operating systems, computer-aided design

Education includes: teaching, training, studying, study and teaching, learning, psychology of transfer of training, educational reform research, teaching methods and materials

Business includes: business, economics, finance, management, organizational development, marketing, creative ability in business, industrial management, customer services, success in business, management

Architecture and environmental design includes keywords such as architecture, symbolism in architecture, city planning, architectural design, architectural practice, design and drafting, urban and community development, urban planning, interior design

Industrial design includes: design, industrial, new products, industrial design, production management, production planning, production engineering

Communication design includes: visual perception, interactivity and multimedia, typography, media studies, visualization

After analyzing the disciplinary combination for each book, the percentages of the discipline distribution were calculated for the whole list. The percentage of each field is calculated from the number of the books in the field divided by the total field counted as shown on the discipline distribution table (*table 1 in each section*). Based on the discipline distribution/comparison of the initial book list and the additional book list recommended by the design community, the final list of the most relevant bibliographic references for design were selected and adjusted according to the appropriate disciplinary distribution. The books selected for the final list represent good coverage for all the relevant disciplines specific to each section.

The discipline distribution and the essentialness of each book are indicated on the comparison tables (*table 2 provided for each section*). Greater detail regarding book selections and adjustments to the bibliography are discussed further in each of the three sections.

ANNOTATION

Following the on-line survey, participants were asked if they would volunteer to write a brief annotation for various books. Additional annotations were also collected from a more focused community of individuals targeted for each particular section. Philosophy and Theory of Design annotations came from the academic community. Principles and Methods of Design Research came largely from the Ph.D. community and Theory and Practice in Design from a variety of sources including some selected from the Institute of Design database, OD3 (Online Design Document Database www.ir.iit.edu/id).

CONCLUSION

Interpretations of the observations from the data collected from the online bibliographic survey are suggestive of the state of design as a discipline. The greatest response was to the Theory and Practice list. Since practice is the dominant activity in a young discipline, this came as no surprise. Interestingly, the Methods and Principles of Design Research section yielded the weakest response even though there seems to be a growth in doctoral programs worldwide. Response to books on research methodology demonstrated that this was new territory for many. The books familiar to the design community are broad and practical. Most of the in-depth theoretical books are not ranked very high. Not surprisingly, there was little response to Philosophy of Design. Admittedly there are very few specifically philosophical investigations of Design. In fact few designers might recognize the need to acknowledge a philosophical perspective, but we need to ask what might constitute an ontology, epistemology or even a teleology of Design. Those engaged in research are surely asking such questions — and asking them in the current vacuum.

The online survey took the measure of the discipline and found it severely fragmented. Without a community with shared knowledge resources and understanding it is impossible to even begin to develop consensus on essential literature much less found a discipline.

Conclusion

From the on-line survey with little consensus with regard to ranking, the editors, all of which are Ph.D. candidates at the Institute of Design, IIT, exercised judgment based on specific criteria to form the final list. The program at the Institute of Design emphasizes user-centered design, design planning and design research, which influenced decision making on the final book selection. This is a research Ph.D. that takes an ecumenical approach to research methods but expects substantial evidence to be developed in whatever research question is investigated, by whatever research method.

The editors of this bibliography recognize this is a beginning, and it is surely an arguable one. Individual readers may find their favorite resource missing. But the editors hope this work will stir others to take action and develop other even more specialized bibliographies that will help give shape and definition to the field.

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DESIGNRESEARCH@JISMAIL.AC.UK

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