

University of Technology, Sydney

Faculty of Design Architecture and Building

702-730 Harris Street

Ultimo NSW 2007

Ph: +61 2 9514 8978

www.dab.uts.edu.au

Master of Design (by Research) Thesis

Self-initiated Design Projects: Avenues for Implementation and Practice

Student: Roderick Walden

Principal Supervisor: Professor Kees Dorst

Co-supervisor: Professor Peter McNeil

Date of Submission: 8th May 2015

Certificate of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text. I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Roderick Walden

Date: **8th May 2015**

給摯愛的

Acknowledgements

Foremost, I would like to express my special appreciation and thanks to my principal supervisor Professor Kees Dorst for his kind and generous mentorship, encouragement and patience during the development of this research. I sincerely enjoy our conversations and hope we shall have many more. I would also like to thank my co-supervisor Professor Peter McNeil for his tremendous guidance and compassion - particularly in helping me to understand the significance of this project in career terms. To my former co-supervisor, Dr. Mark Stiles, I would like to thank you for helping me to structure my thoughts in the early stages of this project. Time spent with you was very valuable and, as you recommended, I never did waste a piece of writing. To my colleagues in the Integrated Product Design program at UTS, Berto, Cathy, Vasilije, Stefan and Anton, thank you for your care and support throughout this process both in terms of simply taking interest in the topic and facilitating my need to structure work around this project.

To my family I extend a warm and special thank you for your thoughts and understanding throughout this entire process. Without you, this would not have been possible.

Preface

This study forms an important part of my research into the contemporary methods and practice of professional industrial design. My principal areas of interest lie in professional practice, design methods, expertise in design and design thinking. After graduation I worked as a product designer and production engineer for a range of manufacturers in the commercial office furniture industry, designing products for local as well as international companies Herman Miller US, Wilkhahn and K&N Germany. The products I designed for these companies were mostly workstations, shelving and cable management systems. After several years in that industry, I started my own design consultancy, Walden Design Pty Ltd in 2003 where we designed a range of products for the Australian manufacturing industry more broadly. At that time, fueled by confidence, we designed a wide range of products including a ballet sneaker, a manual override safety mechanism for stadium doors and even a new type of beehive frame for an apiary in outback NSW. As a rough estimate I had worked on around 40 plus design projects by the time I started my academic career. While there is very diverse range of design projects I worked on, the process was always the same - a Brief at the start, concept development, refinement, technical documentation, prototyping and production. The process described in this way is actually a guide or a series of gateways because in reality the circumstances of every project are different and the approach taken must be adjusted every time. The process also, doesn't account for iteration loops that are always there but could never be pinned down precisely. Despite these things, the process serves to establish a partnership with the client by

outlining steps to which time can be assigned. The client often provided a support network upfront that had the authority to approve the innovations developed, as they were the ones with the 'keys' to production. There was always a Brief created at the start and documentation generated all the way through to record progress. That system seems work. Shortly after I started my work in academia I began investigating design process and its underlying complexity. A colleague and I worked together on a research project to develop a set of simple products together. Our goal was to examine the way two designers working together on their own individual designs might 'converge' thoughts and ideas. We wanted to see if that convergence was evident in the final outcomes even though the designs were very different from each other - one a set of leather office accessories and the other a multi-tool for mountain bike riders. After the project, I reviewed the process. The original question of 'convergence' was interesting but something more compelling emerged. In the Convergence project, there was no Brief, we didn't write anything down during the project (we audio recorded our design sessions) and the designs were almost entirely generated by sketch modeling in cardboard. The support network needed for commercialisation procedures, arrived late in the project well after we had completed the designs. We broke many 'rules' of the design process but in the end there were a good outcomes and more freedom in the way we worked. Reflecting on Convergence, I realised that it was 'self-initiated' and that similar projects were being conducted by design consultancies. This research seeks to better understand the implementation and practice of **self-initiated** product design.

Table of Contents

Abstract	xi
1. Chapter 1: Introduction	1
1.1. Introduction	2
1.2. Positioning Self-initiated Product Design	4
1.3. The Client Design Process	7
1.4. Background and Need	16
1.5. Purpose of the Study	22
1.6. Summary	26
2. Chapter 2: Literature Review	27
2.1. Introduction	28
2.2. Novelty	32
2.3. Design and Business	37
2.4. Problem Framing	43
2.5. Primary Generators	47
2.6. Background Knowledge	48
2.7. Summary	50
3. Chapter 3: Methods	53
3.1. Introduction	54
3.2. Review of Methods	54
3.3. Interviews	70
3.4. Setting	71
3.5. Sampling	72
3.6. Data Collection	74

3.7. Data Analysis	79
3.8. Summary	82
4. Chapter 4: Results.....	83
4.1. Introduction	84
4.2. Thematic Analysis.....	84
4.3. Diagrams	85
4.4. Overview of Themes.....	86
4.5. Analysis of Interview Data: An Overview	90
4.5.1. Workstation	93
4.5.2. Poster Hanger.....	101
4.5.3. Polymer Wallet.....	103
4.5.4. Easter Egg Maker	109
4.5.5. Portable Photo Studio.....	113
4.5.6. Room Divider	117
4.5.7. Swim Goggles.....	120
4.5.8. Teapot.....	124
4.5.9. Lounge	127
4.5.10. Cafe Stool.....	128
4.5.11. JH Trolley.....	132
4.5.12. Outdoor Chair.....	135
4.5.13. Children's Toy	138
4.6. Summary	142
5. Chapter 5: Discussion.....	153
5.1. Introduction	154

5.2. A structure but no process	155
5.3. Common features of Self-initiated Design.....	158
5.4. Development of the model.....	163
5.5. Typologies of Self-initiated (Product) Design	166
5.6. The Development of a Mapping Method	172
5.6.1. Swim Goggles: Typology Mapping Sequence	173
5.6.2. Convergence: Typology Mapping Sequence	176
5.7. Summary	181
6. Chapter 6: Conclusion	183
6.1. Introduction	184
6.2. Research Question 1 / Response	184
6.3. Research Question 2 / Response	188
6.3.1. Using the Typologies of SIPD model.....	191
6.4. Speculation.....	196
Appendices	205
References	237

List of Figures

1. Nu Lifestyle Card Holder.....	5
2. Knog Bicycle Accessories.....	6
3. Conventional Design Process.....	8
4. Convergence: Self-initiated Design Process	18
5. Convergence: Brake Lever Multi-tool.....	22
6. Convergence: Office Accessories.....	22
7. Competing Constraints	39
8. Ways to Grow Matrix.....	42
9. Action Research Cycle.....	61
10. Blue Sky Design Process Diagram	77
11. Overview of Data Matrix.....	93
12. Steven: Design Process.....	96
13. DCM: Workstation	99
14. DCM: Poster Hanger.....	103
15. DCM: Polymer Wallet.....	108
16. Anthony: IP-Revenue Design Process.....	110
17. DCM: Easter Egg Maker	112
18. DCM: Portable Photo Studio	116
19. DCM: Room Divider	119
20. DCM: Swim Goggles.....	124
21. DCM: Teapot.....	127
22. DCM: Lounge	128
23. Studio S: SIPD Process	131

24. DCM: Cafe Stool.....	132
25. Keith: Design Process	133
26. David: Design Process.....	139
27. DCM: Successful Project Cases.....	147
28. DCM: Successful Project Cases Collated.....	148
29. DCM: Semi-successful Project Cases.....	149
30. DCM: Semi-successful Project Cases Collated.....	150
31. DCM: Unsuccessful Project Cases	151
32. DCM: Unsuccessful Project Cases Collated	151
33. DCM: Swim Goggles.....	159
34. EK-N Swim Goggles / Start of project	160
35. EK-N / EK-C / SK-S Swim Goggles / Part way through project.....	161
36. DSK-N-S-C-SK Swim Goggles / Completion point.....	162
37. A model for Self-initiated Product Design	166
38. A successful Self-initiated Design Typology	167
39. A semi-successful Self-initiated Design Typology.....	169
40. Unsuccessful Self-initiated Design Typology	171
41. Typology Sequence: Swim Goggles EK-N	173
42. Typology Sequence: Swim Goggles EK-N-C	174
43. Typology Sequence: Swim Goggles EK-N-C-S-SK	174
44. Typology Sequence: Swim Goggles DSK-N & SK-C-S.....	174
45. Typology Sequence: Swim Goggles DSK-N-S-C-SK	175
46. Typology Sequence: Convergence EK-N-C- -S.....	177
47. Typology Sequence: Convergence DSK-N-C- -S	178

48. Typology Sequence: Convergence DSK-N-C-S-EK	178
49. Typology Sequence: Convergence DSK-N & C-S-SK	178
50. Typology Sequence: Convergence DSK-N-S-C-SK	179
51. A model for Self-initiated Product Design	191
52. SIPD Configuration A for Photo Studio.....	192
53. SIPD Re-configuration B for Photo Studio	193
54. SIPD Re-configuration C for Photo Studio	194
55. SIPD Re-configuration D for Photo Studio.....	195
56. IPA: Asynchronous Practice in SIPD	202
57. IPA: Asynchronous Intentions in SIPD	202

List of Tables

1. Exploration and Exploitation by Roger Martin (2009)	41
2. Thematic Analysis.....	82

Abstract

The purpose of the study is to determine and define structure in self-initiated product design projects conducted by experienced industrial design consultants. The research included the conduct of semi-structured interviews with leading designers that required them to compare their client-based and self-initiated design processes. Literature review of academic research on design methods, design thinking and knowledge application in design supports the interview analysis. The study finds that designers engaged in self-initiated design, independently generate the resources necessary for new product development and that there *is* structure to this method, dependent on the development of background knowledge. A model for **Typologies of Self-initiated Design** has been developed to describe this structure and to provide a means for designers to comprehend the progression of self-initiated design projects.