

DESIGNING MEANINGFUL OBJECTS

DANIEL ORTH

Doctorate of Philosophy

Faculty of Engineering and Information Technology

University of Technology Sydney

2019

UNIVERSITY OF TECHNOLOGY SYDNEY

Certificate of Original Authorship

I, Daniel Orth declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctoral degree, in the Faculty of Engineering and Information Technology at the University of Technology Sydney. This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution. This research is supported by the Australian Government Research Training Program.

Signature:

Production Note:

Signature removed prior to publication.

Daniel Orth

12 May 2019

MATERIALISING MEMORIES

This thesis was completed as part of the Materialising Memories research program under the supervision of Professor Elise van den Hoven and Dr Clementine Thurgood. Materialising memories is a research program that investigates the effects of physical and digital media on memories in everyday life. It explores how personal media, such as photos, audio and visual recordings, are used and why people want to relive or forget memories. Using a design research approach, Materialising Memories investigates how physical and digital media can support and facilitate remembering and forgetting in the everyday, particularly during and after major life events, and for those with memory impairments. The program investigates remembering and forgetting—both results of the same process.

prof.dr. Elise van den Hoven MTD

Faculty of Engineering and Information Technology, University of Technology Sydney

Department of Industrial Design, Eindhoven University of Technology

Duncan of Jordanstone College of Art and Design, University of Dundee

ARC Centre of Excellence on Cognition and its Disorders, Macquarie University

dr. Clementine Thurgood

Faculty of Health, Arts and Design, Swinburne University of Technology

ACKNOWLEDGEMENTS

I would first like to thank everyone who participated in this research and openly shared their unique thoughts and experiences. Without your valued input, this research would not have been possible. I'd also like to thank the University of Technology Sydney for providing financial support through their Doctoral Scholarship program that allowed me to do this research.

Thank you to my supervisors for your ongoing guidance, support and much needed encouragement. To Elise, for showing me the rewarding value of design research and encouraging me to pursue this endeavour. To Clementine, for bringing sincere enthusiasm to the research and always finding time to discuss my work. You have both served as inspiring role models for my own professional development. I would also like to thank the rest of the Materialising Memories team, both in Australia and abroad for warmly welcoming me and for all the insightful discussions we had over the years. Special thanks to Joe for sharing your unique perspective of design and research. I particularly enjoyed collaborating with you and being a part of your research projects. Further thanks go to Clayton for taking a chance on hiring me as a designer, continually being supportive of my research pursuits and instilling a work ethic without which, this thesis may have taken twice as long.

I'd also like to thank my family for always being there for me. To my mum and dad for encouraging me to pursue my own interests and being unconditionally supportive of the choices I make. To my siblings, Jared, Domonique, Kyle and Jordan for helping in any way you could and sharing much needed down time outside of the PhD. Finally, thank you to Shirley for always reassuring me and making each milestone a celebration. You make every day better than I could hope for.

CONTENTS

1	INTRODUCTION	1
1.1	What Makes Objects Meaningful?	2
1.2	How Can Designers Influence Object Meaningfulness?	4
1.3	Research Motivation	6
1.3.1	Meaningful Objects and Self-Extension	6
1.3.2	Meaningful Objects and Sustainable Consumption	7
1.3.3	Meaningful Objects and Design Practice	8
1.3.4	Personal Motivation	9
1.4	Research Objectives	10
1.5	Research Approach	11
1.5.1	Theoretical Framework	11
1.5.2	Methodologies	14
1.6	Thesis Structure	19
2	OVERVIEW OF OBJECT MEANINGFULNESS	20
2.1	Meaningfulness and Attachment	21
2.1.1	Differentiating Meaningfulness and Attachment	21
2.1.2	Definition of Product Attachment	21
2.1.3	Constructs Related to Product Attachment	23
2.1.4	Evoking Attachment	27
2.1.5	Outcomes of Product Attachment	27
2.2	Objects and Identity	29
2.2.1	Objects as a Source of Meaning	29
2.2.2	Facets of the Self	30
2.2.3	Object-Identity Associations	32
2.3	Meaningful Objects in the Digital Age	33
2.3.1	Attachment to Digital Items	34
2.3.2	Attachment to Physical-Digital Products	35

2.3.3	Meaningful Integration of the Physical and Digital	36
2.4	Designing for Product Attachment	41
2.4.1	Design Strategies	42
2.4.2	Design Examples	42
2.4.3	Meaningful Associations	44
2.5	Conclusion	47
3	MEANINGFUL OBJECTS	48
3.1	Introduction	49
3.2	Method	49
3.2.1	Participants	50
3.2.2	Procedure	51
3.2.3	Data Collection and Analysis	53
3.3	Findings	54
3.3.1	Identity Timelines	55
3.3.2	Object Interventions	56
3.3.3	Interviews	59
3.3.4	Perceptions of Meaningful Digital Objects	61
3.4	Discussion	62
3.4.1	Physical and Digital Objects	62
3.4.2	Diverse Meanings	63
3.4.3	Insights for Design	64
3.5	Conclusion	66
4	DESIGNING MEANINGFUL OBJECTS	67
4.1	Introduction	68
4.2	Method	69
4.2.1	Participants	69
4.2.2	Phase 1: Inspiration	69
4.2.3	Phase 2: Creation	70
4.2.4	Phase 3: Evaluation	71

4.3	Design Process and Findings	73
4.3.1	Phase 1: Inspiration	73
4.3.2	Phase 2: Creation	74
4.3.3	Phase 3: Evaluation	81
4.4	Discussion	86
4.4.1	Opportunities and Considerations in Designing for Product Attachment	87
4.4.2	Reflecting on Our Design Process	88
4.4.3	Creating Meaning	89
4.5	Conclusion	91
5	MEANINGFUL PHYSICAL-DIGITAL OBJECTS	92
5.1	Introduction	93
5.2	Method	94
5.2.1	Participants	96
5.2.2	Procedure	96
5.2.3	Data Collection and Analysis	100
5.3	Findings	102
5.3.1	Association Cards	103
5.3.2	Meaningfulness Ratings	105
5.3.3	Characteristics of Attachment to Physical-Digital Products	108
5.4	Discussion	113
5.4.1	Reflections on our Adaptation of Probe Methodology	113
5.4.2	Designing Lasting Physical-Digital Products	115
5.5	Conclusion	122
6	DESIGNING MEANINGFUL PHYSICAL-DIGITAL OBJECTS	123
6.1	Introduction	124
6.2	Method	125
6.2.1	Idea Development	125
6.2.2	Participant	127
6.2.3	Phase 1: Inspiration	128

6.2.4	Phase 2: Creation	130
6.2.5	Phase 3: Evaluation	131
6.3	Design Process and Findings	132
6.3.1	Phase 1: Inspiration	132
6.3.2	Phase 2: Creation	138
6.3.3	Phase 3: Evaluation	143
6.4	Discussion	148
6.4.1	Opportunities and Considerations in Designing Meaningful Materiality	148
6.4.2	Embodying Meaningful Digital Media	149
6.5	Conclusion	151
7	DISCUSSION	152
7.1	Summary of Key Contributions	153
7.2	The Divide Between Physical and Digital Meaning	154
7.2.1	Descriptive Overview	155
7.2.2	Issues and Implications	157
7.2.3	Narrowing the Physical-Digital Divide	158
7.3	Meaningful Associations	159
7.3.1	Defining Meaningful Associations	160
7.3.2	A Design Strategy for Promoting Product Attachment	160
7.3.3	Benefits and Limitations	165
7.4	Reflections on our Design Processes and Material Outcomes	167
7.4.1	Adapting Probe Methodology	167
7.4.2	Creating Research Products	170
7.5	Considerations for Designing Meaningful Objects	174
7.5.1	Meaning is Unique to the Individual	174
7.5.2	Meaning Manifests in Countless Ways	175
7.5.3	Product Function Influences Meaning	176
7.5.4	Association Specificity Influences Clarity of Meaning	176
7.5.5	Object Meaningfulness Influences Material Consumption	177

7.5.6	Materiality has Inherent Meaning	179
7.6	Directions for Future Research	180
7.6.1	Object Associations	180
7.6.2	Probe Methodology	181
7.6.3	Attachment and Detachment	181
7.6.4	Individuals in Need of Self-Extension	182
SUMMARY		183
REFERENCES		185
APPENDICES		198
	Appendix A: Study 1 Interview Guide	198
	Appendix B: Study 1 Information and Consent Form	199
	Appendix C: Study 2 Interview Guide	201
	Appendix D: Study 2 Information and Consent Form	203
	Appendix E: Study 3 Interview Guide	205
	Appendix F: Study 3 Information and Consent Form	207
	Appendix G: Study 4 Interview Guide	209
	Appendix H: Study 4 Information and Consent Form	213
LIST OF PUBLICATIONS		216
CURRICULUM VITAE		217

LIST OF TABLES

Table 1. Participant number, gender and age.	51
Table 2. Thematic Analysis themes, sub-themes and descriptions.	59
Table 3. Association categories coding scheme derived from Csikszentmihalyi and Rochberg-Halton's (1981) meaning categories and Richins' (1994) possession value categories.	101
Table 4. Descriptions and examples of responses coded in each association category.	102
Table 5. Most frequently selected categories of devices and media.	102
Table 6. Levels of abstraction in physical-digital products.	156
Table 7. Overview of a process for designing meaningful objects.	162
Table 8. Suitability of product categories for bespoke product design processes.	178

LIST OF FIGURES

Figure 1. My Lacoste bifold wallet.	3
Figure 2. Stain teacup by Wood (2006).	5
Figure 3. Roller blinds by Oy Vallila Interior Ab (as cited in Niinimäki & Koskinen, 2011).	5
Figure 4. Relationship between self-identity, attachment and meaningfulness.	13
Figure 5. A model of shared meaning between the physical and digital.	38
Figure 6. A model of evolving meaning that integrates static materiality and dynamic digitality.	40
Figure 7. Story Shell, a bespoke digital memorial (Moncur et al., 2015).	46
Figure 8. From left to right, five active objects: mug, tea towel, key ring, pen, lamp and five contemplative objects: plant, photo frame, sculpture, visual art and plush toy.	52
Figure 9. <i>Identity timeline</i> cards front and back.	53
Figure 10. Two participants' (P2 and P4) spatial ratings of objects from <i>no emotional attachment</i> (left label) to <i>strong emotional attachment</i> (right label) and <i>not me</i> (bottom label) to <i>me</i> (top label).	54
Figure 11. An <i>Object Associations</i> card.	72
Figure 12. Globe: a world clock.	75
Figure 13. Kiruna: a decanter.	76
Figure 14. Diramu: a candle cover.	77
Figure 15. Geo: a set of placemats and coasters.	78
Figure 16. Crater: a pendant necklace.	79
Figure 17. Dyad: a set of pot plants.	80
Figure 18. Summary of the artefacts designed for each participant.	81
Figure 19. Alex's cherished possessions: teddy bear, Russian hat and oil painting.	82

Figure 20. Louise's cherished possessions: ruby earrings, Moorcroft vase and silver hedgehog.	83
Figure 21. Karen's cherished possessions: her car and her house.	85
Figure 22. A participant's (P12) <i>object</i> , <i>collection</i> and <i>item</i> association cards describing the associations evoked by their smartphone.	98
Figure 23. A participant's (P15) spatial ratings from <i>meaningless</i> (left label) to <i>meaningful</i> (right label) for association cards relating to their smartphone, desktop computer and game console.	99
Figure 24. Percentages of listed associations coded in each category for physical objects, digital collections and digital items.	104
Figure 25. Concept for interactive music player with embodiments of digital media.	127
Figure 26. A <i>Music Associations</i> card (left) and a <i>Music Properties</i> card (right).	129
Figure 27. An <i>Object Associations</i> card.	131
Figure 28. A music poster from Andrew's cherished collection.	132
Figure 29. Developing identity-based music categories from Andrew's music library.	133
Figure 30. Mood board inspired by Andrew's <i>Youth</i> music.	134
Figure 31. Mood board inspired by Andrew's <i>Story</i> music.	135
Figure 32. Mood board inspired by Andrew's <i>Slow</i> music.	136
Figure 33. Mood board inspired by Andrew's <i>Fast</i> music.	137
Figure 34. Melo: A bespoke music player.	138
Figure 35. Plast: An object embodying Andrew's <i>Youth</i> music.	139
Figure 36. Ember: An object embodying Andrew's <i>Story</i> music.	140
Figure 37. Hide: An object embodying Andrew's <i>Slow</i> music.	141
Figure 38. Joey: An object embodying Andrew's <i>Fast</i> music.	142
Figure 39. Technical components of <i>Melo</i> : A Raspberry Pi 3, RFID reader and sound card.	143
Figure 40. Assorted probing tools and activities used to gather data.	168
Figure 41. Assorted research products created to gather data.	170

ABSTRACT

This doctoral thesis investigates the ways in which designers can create both physical and technological objects that are meaningful for their users. Through four empirical studies, this research project generated insights into the relationship between meaningful objects and a person's self-identity, the differences between attachments to physical and technological products and the ways in which objects are imbued with personal meaning. These insights informed the development and evaluation of a design strategy for promoting product attachment. The strategy involves a process of designing objects with material or interactive properties that are associated with concepts that have been identified as meaningful to the intended user. The process was implemented and evaluated with evidence indicating it brought meaning to the resulting designs in several instances. Insights highlighting the unique characteristics of attachment experiences between people and their technological possessions were used to adapt and subsequently re-evaluate the value of the design process in the development of technological products. Critical reflections on the process and resulting design reaffirmed the potential value of designing objects with meaningful associations as a strategy for promoting product attachment in the digital age and combating unsustainable material consumption.