



CURATION-IN-ACTION

DESIGN FOR PHOTO CURATION
TO SUPPORT SHARED REMEMBERING

MENDEL BROEKHUIJSEN



CURATION-IN-ACTION

DESIGN FOR PHOTO CURATION TO SUPPORT SHARED REMEMBERING

DOCTORAL DISSERTATION

by

MENDEL JOHANNES BROEKHUIJSEN

Department of Industrial Design

Eindhoven University of Technology

&

School of Software

Faculty of Engineering and Information Technology

University of Technology Sydney

Cover: Exhibition: 24 HRS IN PHOTOS by Erik Kessels

Photographer: Gijs van den Berg

A catalogue record is available from the Eindhoven University of Technology Library

ISBN: 978-90-386-4604-6

PhD thesis Eindhoven University of Technology, Eindhoven, the Netherlands &
University of Technology Sydney, Sydney, Australia

Copyright © 2018 Mendel Johannes Broekhuijsen

All rights reserved. No parts of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system without permission from the author.



Printed by: Gildeprint – the Netherlands



CURATION-IN-ACTION

DESIGN FOR PHOTO CURATION TO SUPPORT SHARED REMEMBERING

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan de Technische Universiteit Eindhoven,
op gezag van de rector magnificus prof.dr.ir. F.P.T. Baaijens, voor een commissie
aangewezen door het College voor Promoties, in het openbaar te verdedigen op
maandag 22 oktober 2018 om 11:00 uur

door

MENDEL JOHANNES BROEKHUIJSEN

geboren te Zutphen

Dit proefschrift is goedgekeurd door de promotoren en de samenstelling van de promotiecommissie is als volgt:

VOORZITTER

prof. dr. L. Chen

1^e PROMOTOR

prof. dr. P. Markopoulos

2^e PROMOTOR

prof. dr. E.A.W.H. van den Hoven MTD (University of Technology Sydney)

LEDEN

prof. dr. ir. J.H. Eggen

prof. dr. D.M. Frohlich (University of Surrey)

dr. ir. B. Bongers (University of Technology Sydney)

prof. dr. J. van Dijck (Universiteit Utrecht)

Het onderzoek of ontwerp dat in dit proefschrift wordt beschreven is uitgevoerd in overeenstemming met de TU/e Gedragscode Wetenschapsbeoefening.

CERTIFICATE OF ORIGINAL AUTHORSHIP

This thesis is the result of a research candidature conducted jointly with Eindhoven University of Technology and University of Technology Sydney as part of a Joint PhD degree.

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 part of the collaborative doctoral degree and/or 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.

Production Note:

Signature of Student: Signature removed prior to publication.

Date: September 10, 2018



“Deftness and speed in working do not impart to the work an abiding weight of influence nor an exactness of beauty; whereas the time which is put out to loan in laboriously creating, pays a large and generous interest in the preservation of the creation.”

Plutarchus in *Life of Pericles* (p. 41)

ABSTRACT

Nowadays people deal with unprecedented quantities of personal digital media. This thesis focuses on digital photos, one of the most prevalent digital records people keep. The photos that people capture or collect for their personal collections often acquire personal value as external representations of experiences that can cue autobiographical remembering. The autobiographical value of photos can support remote and especially collocated interactions with others.

As a result of technological developments in capturing moments and experiences, people have too many photos to manage, and they lack the time, tools and motivation to curate them effectively which hinders them from using their photos. This thesis aims to inform the design of photo curation tools to support the use of photos, specifically for collocated shared remembering practices.

Through three qualitative user studies with a focus on design, we have explored several aspects of the curation challenge. We gained insights into current photo practices, social sharing practices, multi-user interaction, shared remembering, and requirements for curation. Based on these insights this thesis contributes a different perspective on design for curation that specifically focuses on collocated social practices: we introduce our approach to photo curation that we call *Curation-in-Action*, which by definition integrates curation tasks into the social practices that motivate them.

Please note a longer summary is available at the end of the thesis.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	2
1.1. Introduction.....	3
1.1.1. Photo Collections.....	3
1.1.2. Photos as Memory Cue.....	5
1.1.3. Shared Remembering.....	6
1.1.4. Photo Curation	8
1.1.5. Defining Photo Curation.....	10
1.2. Challenges For Photo Curation.....	12
1.3. Research Questions & Scope	13
1.4. Approach.....	14
1.4.1. Project Context.....	18
1.5. Ethical Considerations.....	18
1.6. Thesis Outline.....	19
1.7. Conclusions.....	20
CHAPTER 2. REVIEW OF TOOLS FOR PHOTO CURATION	22
2.1. Introduction.....	23
2.2. A Review of Commercial and Experimental tools.....	23
2.2.1. Tools for Photo Capturing.....	23
2.2.2. Social Media Platforms.....	27
2.2.3. Tools for Photo Storage.....	29
2.2.4. Tools for Photo Management.....	33
2.2.5. Tools for Photo Use.....	38
2.2.6. Limitations	46
2.3. Conclusion.....	46
CHAPTER 3. A MODEL OF PHOTOUSE: EXPLORING DIGITAL PHOTO PRACTICES.....	48
3.1. Introduction.....	49
3.2. Related work.....	49
3.2.1. Photo Technology.....	49
3.2.2. Photo Activities.....	50
3.3. Field study.....	52
3.3.1. Method.....	53
3.3.2. Participants.....	53
3.3.3. Procedure.....	54
3.3.4. Analysis.....	55
3.4. Results	55
3.4.1. Photo Activities.....	56
3.4.2. Motivations for Photo Activities.....	61
3.5. Discussion.....	63
3.5.1. Limitations	63
3.5.2. New Technologies: New Behaviour.....	64
3.5.3. Composite Photo Activities.....	66
3.5.4. Photo Activity Motivations and AM	67
3.6. PhotoUse.....	68
3.7. Implications for Design	70
3.7.1. Purposive PhotoUse.....	70

3.7.2.	System-automated Curation.....	71
3.7.3.	Collaborative PhotoUse.....	71
3.7.4.	Context-Dependent PhotoUse.....	72
3.8.	Conclusions.....	73
CHAPTER 4.	DESIGN OPPORTUNITIES FOR PHOTO SHARING.....	76
4.1.	Introduction.....	77
4.2.	Related Work.....	77
4.2.1.	Collocated Remembering.....	78
4.2.2.	Media Tools.....	78
4.2.3.	Media Practices.....	79
4.2.4.	Design Challenge.....	80
4.3.	Redesign Study.....	80
4.3.1.	Method.....	80
4.3.2.	Participants.....	81
4.3.3.	Session Procedure.....	81
4.3.4.	Data gathering & analysis.....	82
4.4.	Results.....	82
4.4.1.	Sharing Scenario Analysis.....	82
4.4.2.	Resulting Redesign Concepts.....	83
4.4.3.	Photo Curation Requirements.....	84
4.4.4.	Photo Sharing Requirements.....	85
4.5.	Design Directions.....	88
4.5.1.	Concept 1: Tailored Museum.....	90
4.5.2.	Concept 2: Adaptive Album.....	90
4.5.3.	Concept 3: Single Share.....	91
4.5.4.	Concept 4: Tangible Collaging.....	92
4.6.	Discussion.....	93
4.6.1.	Limitations.....	93
4.7.	Design Tensions.....	95
4.7.1.	Tangibility vs Adaptability of Content.....	95
4.7.2.	Digital Overview vs Device Mobility.....	96
4.7.3.	Dedicated Tool vs Multifunctional Device.....	97
4.7.4.	System Automation vs Manual Tailoring.....	97
4.8.	Conclusions.....	98
CHAPTER 5.	DESIGNING FOR RECIPROCAL INTERACTION.....	102
5.1.	Introduction.....	103
5.2.	Related Work.....	104
5.2.1.	Coordinating Interaction Between Users.....	105
5.2.2.	Social Translucence.....	106
5.3.	Iteration I: Objekt, Opico and yOUR.....	108
5.3.1.	Process.....	108
5.3.2.	Design Case: Objekt.....	108
5.3.3.	Design Case: Opico.....	110
5.3.4.	Design Case: yOUR.....	112
5.4.	Iteration II: Shoto.....	114
5.4.1.	Process.....	114
5.4.2.	Design Case: Shoto.....	114
5.5.	Discussion.....	117
5.5.1.	Social Interaction Perspective.....	118
5.5.2.	System Interaction Perspective.....	119

5.6.	Reflections on the Design Process	121
5.6.1.	Limitations	123
5.7.	Conclusions.....	123
CHAPTER 6.	DESIGNING FOR CURATION-IN-ACTION	126
6.1.	Introduction.....	127
6.2.	Curation-in-Action.....	127
6.3.	The Curation Arena.....	129
6.3.1.	Design Rationale.....	130
6.3.2.	Concept: Curation Arena.....	131
6.3.3.	Curation Arena contribution	133
6.3.4.	Realisation.....	134
6.4.	Lab Study.....	136
6.4.1.	Method.....	136
6.4.2.	Pilot Study.....	137
6.4.3.	Participants.....	139
6.4.4.	Procedure.....	140
6.4.5.	Analysis.....	141
6.5.	Results	143
6.5.1.	Value of The Curation Arena.....	145
6.5.2.	Strategies for Curation-in-Action	146
6.5.3.	Mnemonic Curation Considerations.....	154
6.5.4.	Aesthetic Curation Considerations.....	155
6.5.5.	Pragmatic Curation Considerations.....	157
6.5.6.	Behavioural Factors Influencing Mediation.....	159
6.5.7.	Design Factors Influencing Mediation.....	161
6.6.	Discussion.....	166
6.6.1.	Limitations	166
6.6.2.	Reciprocal PhotoUse	168
6.6.3.	Collaborative Curation.....	168
6.7.	Implications for design	169
6.7.1.	Centralise Photo Repositories.....	170
6.7.2.	Automate Basic Management	170
6.7.3.	Prioritise Reciprocal Sharing	171
6.7.4.	Support Collaborative Curation.....	171
6.8.	Conclusions.....	172
CHAPTER 7.	DISCUSSION & CONCLUSION.....	174
7.1.	Introduction.....	175
7.2.	Photo Curation	175
7.2.1.	What is Photo Curation?.....	175
7.2.2.	Curation is Changing.....	177
7.3.	Curation & Remembering	178
7.3.1.	Mediated Remembering.....	178
7.3.2.	Memory Curation.....	179
7.4.	Photo tools & Practices.....	179
7.4.1.	RQ.1 What kind of tools and practices exist around personal photos?	179
7.4.2.	RQ.2 What do people want to do with their photos to support collocated shared remembering?	182
7.4.3.	RQ.3 What kind of curation tools can support the use of photos during collocated shared remembering?	183

7.4.4. Where is Design Heading?	185
7.5. Limitations & Future Research	186
7.5.1. Limitations	186
7.5.2. Curation of Shared Photo Collection.....	187
7.5.3. Support Individual Remembering.....	188
7.5.4. Explore the Whole Media Process.....	188
7.5.5. Nostalgic Mementoes for Digital-Only Generation.....	188
7.5.6. Identity Formation Through Photo Curation.....	189
7.6. Closing Remarks.....	190
BIBLIOGRAPHY	193
APPENDIX CHAPTER 3 – INVITATION & CONSENT	200
APPENDIX CHAPTER 3 – INTERVIEW PROTOCOL	203
APPENDIX CHAPTER 4 – INVITATION & CONSENT	204
APPENDIX CHAPTER 6 – INVITATION & CONSENT	207
APPENDIX CHAPTER 6 – SESSION PROCEDURE.....	210
APPENDIX CHAPTER 6 - THEMATIC ANALYSIS	214
SUMMARY	217
PUBLICATIONS BY MENDEL BROEKHUIJSEN	221
ACKNOWLEDGEMENTS.....	223
CURRICULUM VITAE.....	226



PhD 2018
TU/e & UTS

Department of Industrial Design
Eindhoven University of Technology
&
School of Software
Faculty of Engineering and Information Technology
University of Technology Sydney