

Escaping the search box:

Developing digital interfaces that encourage exploration and discovery in cultural heritage collections.

Ben Ennis Butler
2016

A thesis submitted for the degree of
Doctor of Philosophy in Communication
University of Canberra



**UNIVERSITY OF
CANBERRA**

Abstract

Over the past decade there has been a huge push by cultural institutions to digitise their collection material and facilitate access to it on the Web. In the process of doing this, many galleries and museums have taken their existing catalogue style systems and replicated them online. Most rely on a keyword-based method that is targeted at a user who already knows collections, understands how they are structured and how to search them effectively. There is little room for the non-specialist, the visitor who just wants to have a look around, to browse, explore and play. I ask, is it possible to create a digital collection access interface that allows exploration and discovery to occur?

Taking advantage of new technologies I have created six innovative and experimental interfaces using data from the National Gallery of Australia's Australian Prints + Printmaking website and combined data visualisation techniques with modern web design methods to create new ways of accessing the collection. They emphasise relationships within the collection and provide displays that are denser and richer than conventional Web pages. Results from a mixed-method evaluation study show how the interfaces allow for serendipitous discovery and free-form exploration to occur in ways that are beneficial to the user.

In the development of these rich visual interfaces the research project addresses a number of challenges and issues, from the reliability of data to the limits of the Web browser and traditional evaluation techniques.

The research project demonstrates that it is possible to develop effective Web-based generous interfaces that encourage free-form exploration and serendipitous discovery within digital cultural heritage collections.

Acknowledgements

My project would not have been possible without assistance from the Department of Australian Prints and Drawings at the National Gallery of Australia. I give my thanks to them for providing access to the data and their ongoing support of the project.

To the friends of the project, and those I met at conferences along the way, I have appreciated your feedback and thoughtful reflections. I would like to give particular acknowledgement to Marian Dörk, Tim Hart and Jonny Brownbill.

Special acknowledgment must go to my colleagues at the University of Canberra, particularly Tim Sherratt and Erin Hinton, as well as Jen Webb, Tracy Ireland and the Creative and Cultural Practice staff who provided support and encouragement throughout my candidature.

Special thanks also to Ann, Lisa, Sarah and all at The Garden, who kept me sane and provided a wonderful non-computer focused work environment in the early years of my PhD. Also, to Paulie, Prue and the Tilley's staff, I have greatly appreciated your support over the past four and a half years.

Since the start of my research project in August 2011, many of my friends have attempted to understand what I actually do. Despite their uncertainty they have continued to encourage me and provided invaluable friendship and continuous support along the way. To Caito, Georgia, Huey and Darren, Katy and Chris, Kelly, Mimosa and Ken, Matt, Meg, Myles, Miranda, Sophie and Cathy, I give my thanks. Additional, extra special gratitude, goes to Rosa and Beas, Jude and Eliza.

To my supervisory panel, Sam Hinton and Geoff Hinchcliffe, thank you for everything, I appreciate all that you have done for me. To my primary supervisor, Mitchell Whitelaw, thank you for convincing me to go down this path and providing unwavering support and encouragement along the way. I will forever be

grateful of your assistance, generosity, trust and guidance.

I give special thanks to Laura (Soddy), and my extended family, Carolyn, Russell and Harry.

I would not have achieved any of this if it were not for my wonderful family, Helen and Roger, Jack and Amy and Helen Maxwell, who have been there for me at every stage of the process. I am truly thankful for all that they have given me.

Finally, to Rose, for everything.

Online material

Access to the six interfaces and the two websites described in Chapter six is available via the following website:

<http://phd.beneb.com>

Alternatively, the direct links to the creative works are:

Works and Networks:

<http://printsandprintmaking.gov.au/explore/works-and-networks>

Decade Summary:

<http://printsandprintmaking.gov.au/explore/decade-summary>

All Artists:

<http://printsandprintmaking.gov.au/explore/all-artists>

The Fader:

<http://printsandprintmaking.gov.au/explore/the-fader>

Subjects Explorer:

<http://printsandprintmaking.gov.au/explore/subjects-explorer>

Timeline:

<http://printsandprintmaking.gov.au/explore/timeline>

Table of Contents

1	Introduction	1
2	Practice Review	7
3	Literature Review	43
4	Methodology	75
5	The Works	93
6	Evaluation	139
7	Reflections	191
8	Conclusion	217
9	Bibliography	221

List of Figures

Figure 1	Timeline of early gallery and museum websites	13
Figure 2	Screenshot of UCMP search page from the Internet Archive	17
Figure 3	Screenshot of <i>The Thinker</i> from the Internet Archive	18
Figure 4	Screenshot of search interface from United States Holocaust Memorial Museum from the Internet Archive	18
Figure 5	Screenshot of the NGA search page in 2000 from the Internet Archive	19
Figure 6	Screenshot of the first printsandprintmaking site from the Internet Archive	20
Figure 7	SFMOMA's <i>ArtScope</i>	23
Figure 8	Preservation of Favoured Traces	25
Figure 9	<i>Visible Archive: A1 Explorer</i>	27
Figure 10	<i>Visible Archive: Series Browser</i>	27
Figure 11	<i>commonsExplorer</i>	29
Figure 12	Walker Art Center	30
Figure 13	Google Art Project Te Papa Collection page	32
Figure 14	Google Art Project Musee D'Orsay Virtual Tour	33
Figure 15	Circus Oz: <i>The Living Archive</i>	35
Figure 16	<i>Rijks Studio</i>	37
Figure 17	Cooper Hewitt Collections interface	39
Figure 18	Cooper Hewitt data-driven copy	40
Figure 19	Cooper Hewitt object page	41
Figure 20	V&A ceramics display	67
Figure 21	Barr's cubism and abstract art chart	69
Figure 22	MOMA's Inventing Abstraction interactive visualisation	70
Figure 23	Sullivan's braid	79
Figure 24	Wireframe for Balboa Park website	80
Figure 25	Flat design for Balboa Park website	80
Figure 26	The braid re-imagined	91
Figure 27	<i>Works and Networks</i>	94
Figure 28	Early network graph	96
Figure 29	Flow diagram showing NGA collection search process compared to Works and Networks process	97
Figure 30	NGA Collections interface 2008	98
Figure 31	NGA Collections interface 2010	98
Figure 32	NGA Collections interface 2016	98
Figure 33	Three pane display in <i>Works and Networks</i> , showing highlighted relationships between creator and artworks.	100
Figure 34	<i>Decade Summary</i>	102
Figure 35	Detail of timeline of artworks sorted by decade produced as part of my Honours project in 2010	104
Figure 36	Detail of <i>Decade Summary</i> bar chart	105
Figure 37	Detail of tool-tip showing hint to open artist in different interface	108

Figure 38	Detail of cropped thumbnails of planographic prints from the 1850s	108
Figure 39	Detail of cropped thumbnails of relief prints from the 1990s.	108
Figure 40	<i>All Artists</i>	110
Figure 41	Detail of an opened artist container in <i>All Artists</i>	112
Figure 42	Detail of selected facets in <i>All Artists</i>	113
Figure 43	<i>The Fader</i>	114
Figure 44	Spidering process in <i>The Fader</i>	116
Figure 45	<i>The Fader</i> running on a television	117
Figure 46	Landscape artwork displayed in <i>The Fader</i>	118
Figure 47	<i>Subjects Explorer</i>	121
Figure 48	Detail of a selected artwork showing related subjects in left pane	122
Figure 49	Instructions in <i>Subjects Explorer</i>	124
Figure 50	<i>Subjects Explorer</i> data loading process	129
Figure 51	<i>Timeline</i> for Robin White	131
Figure 52	Detail of expanded artwork amongst thumbnails of other artworks	134
Figure 53	Detail of expanded exhibition view in artist <i>Timeline</i>	135
Figure 54	Detail of data-driven descriptive text in <i>Timeline</i>	136
Figure 55	Think-aloud component of evaluation website	144
Figure 56	VEE website: welcome page	148
Figure 57	VEE website: about page	148
Figure 58	VEE website: start of survey	148
Figure 59	VEE website: survey interface	148
Figure 60	Think-aloud component of evaluation website	150
Figure 61	Example of segmented data	153
Figure 62	Behaviour flow for <i>Works and Networks</i>	181
Figure 63	Artists with highest click rate	184
Figure 64	Behaviour flow for <i>All Artists</i>	185
Figure 65	Detail of data descriptive text from Cooper Hewitt	198
Figure 66	Detail of data descriptive text in <i>Timeline</i>	199
Figure 67	Experimental <i>Works and Networks</i> data visualisation showing relationships between artists	201

List of Graphs

Graph 1	User behaviour: Scanning use per participant	160
Graph 2	User behaviour: Search & Browse use per participant	161
Graph 3	User behaviour: Methodical use per participant	162
Graph 4	User behaviour: Chaining use per participant	163
Graph 5	User experience: Enjoyable experiences per participant	164
Graph 6	User experience: Expressions of surprise or delight per participant	165
Graph 7	User behaviour: Moments of confusion per participant	167
Graph 8	User behaviour: Moments of annoyance per participant	169
Graph 9	Overall responses by participant	172
Graph 10	Coded responses	173
Graph 11	Positive comments: sub-codes	173
Graph 12	Negative comments: sub-codes	175

List of Tables

Table 1	Survey of collection access interfaces (2010, 2011, 2016).	8
Table 2	Subject string hierarchy	124
Table 3	Think-aloud data breakdown	153
Table 4	Think-aloud behaviours	153
Table 5	Pageviews and average time in Works and Networks	180
Table 6	All Artists event triggers	183
Table 7	Top five events in All Artists	183