DESIGN FOR NEXT
EAD12-ROME

Design for Next

12th EAD Conference
Sapienza University of Rome
12-14 April 2017

The design movement: Two case studies from the edge of the discipline

Rebecca Price[a*], & Karla Straker[b]

[a] Delft University of Technology, Faculty of Industrial Design Engineering
[b] The University of Sydney, The Design Lab, Sydney School of Architecture, Design and Planning
*Corresponding author e-mail: r.a.price@tudelft.nl

Abstract: As the boundaries of the design profession expand so must the research paradigms scaffolding them. This paper explores two trans-disciplinary PhD research projects - both broadly aimed at exploring design value in business. The first case study reports on the implementation of the design-led innovation within an airport corporation. The second case study reports on the development of an emotional business model. Each case study involved a designer, become researcher, working within industry to formulate, test and evaluate the changing role of their own design practice. The outcome of this paper is a proposition that the next phase of design will see more hybrid design capability required, such these two 'Design Innovation Catalysts' in order to provide value to industry and academia alike. The unique capabilities of such a new hybrid design catalyst are presented through the case study comparison, providing implications for future research directions aligning to the design movement.
Keywords: catalyst, emotion, innovation, strategy

1. Introduction

The design research community has witnessed much change over time. More recently, an unprecedented demand for designers to drive economic growth, resolve complex societal tensions and translate unfamiliar technologies into liveable value has been witnessed (Muratovski, 2015; Norman & Stappers, 2015; Buchanan, 2015). There has been an embracement of change from the future-orientated – although these designers and design researchers may have heard once or twice, 'that's not design'. This type of feedback is evidence that one is operating at the edge, or even outside the discipline of design. There is much to be learnt from activities at the edge of accepted boundaries of design. Revealing these stories is critical for framing discussion on the *next* phase for the design discipline, and part of reflective practice.

This paper reports on two case studies completed at the edge of the discipline. The first case study reports on the implementation of design-led innovation within an airport corporation, a high reliability organization seeking to become a world leader but without matching

innovation capabilities. The second case study reports on the disruptive proposition that an emotional relationship between business and customer can be achieved through design principles and practices - enabling unrivalled loyalty in the digital age of customer choice. Each case study involved a designer, become researcher, working within industry to formulate, test and evaluate the changing role of their own design practice through action. The outcome of this paper is a proposition that the next phase of design will require 'hybrid design catalysts', such as the two case studies presented in this paper. The paper concludes with a final word on the capability requirements of a future hybrid designer in response to the expanding discipline of design and the evolving role of designers.

2. Literature Review

2.1 The expanding discipline of design

Muratovski (2015) notes a paradigm shift is taking place in the field of design, one responding to the unpreceded value placed on design as an economic force. The recognition of design as a way of thinking, appropriable to a diverse range of problems well outside product design has led the way for widespread interest (Brown, 2008; Bucolo, Matthews and Wrigley, 2012; Martin, 2009; Verganti, 2008). But design concerns more than *thinking*. Design concerns implementation – the *doing* (Norman & Stappers, 2015). Design as a discipline of practice is historically defined as the process of planning and creating ideas, then implementing these ideas to improve the artificial environment (Simon, 1969). Muratovski describes the predictable industry frontrunners, Apple's iPhone and Nintendo's Wii Console, that have encouraged the business community and entire governments' implementation of design in search of growth and prosperity. Interestingly, as Muratovski (2015) identifies, design as an economic force has emerged during a time of great unrest – the global financial crisis, a rebalancing of intercontinental leadership led by unrivalled development in China, an ageing population, overpopulation, mass transport demands, climate change and broad transformations toward sustainable practices.
It is this unrest that has provided bountiful subject matter for designers, those that have been willing to diversify, by stepping into areas of social and organizational reform (Buchanan, 2015). These designers have not been designing discrete products, but rather instigating the design and realisation of services, systems and entire ways of operating, holistically described by some as strategic design (Calabretta, Gemser & Karpen, 2016). Here, the expanding discipline of design is most identifiable.

2.2 The evolving role of the designer

Norman and Stappers (2015) state that the real force is the ability of designers to enable implementation of disruptive innovation to create a better future. Designers convert ideas to solutions amidst social, political and cultural tensions without compromising the identity of a whole concept (Norman & Stappers, 2015). Designers are said to be well suited to socio-political complexities because they act by nature as moderators, although discussions of aesthetics and ideology prevail (Koskinen, 2016). The ability to successfully implement change has witnessed the rise of designers to positions of leadership within society (Dorst, 2015). However, once these positions have been acquired, the 'design' component is lost to within the occupational title – replaced by Mayor, or CEO, or Member of Parliament. Designers are now an invisible force. There are exceptions, of course, the Design Executive Officer (DEO) is emerging (Lee & Joo, 2016). On the other end of the spectrum, Margolin

(2015) identifies that people turn toward design practices when encountered by problems with potentially terminal individual consequences – such as overpopulation and food supply. By way of designing to improve, one must be thinking forward and importantly act to create those futures whether they are educated in design or not (Reeves, Goulden & Dingwall, 2016).

Design-led innovation (DLI) as a field demonstrates how the role of the designer changing from working in isolation to a broader role within an organisation. The DLI framework originally documented by Matthews, Bucolo and Wrigley (2012), builds upon Kolb (1984), Owen (1998), and Beckman and Barry (2007) frameworks and applies the underlying capabilities of design thinking, such as a user needs approach (empathy) not only to the end-user (or consumer) but to partners' and stakeholders' needs also.

DLI also extends the reach of design thinking from a firm's cultural philosophy, to an executable, future-driven process with the potential to drive top line growth and develop a future competitive advantage. The designers in these roles are referred to as a *Design Innovation Catalysts* (DIC)*,* first introduced by Wrigley and Bucolo (2012) and influenced by Norman's (2010) transitional engineer. These catalysts operate between business and design to translate between the abstractions of research and the realities of practice (Wrigley & Bucolo, 2011). To do so, a catalyst must act as translator, converting design research into the language of business while also translating business insights into design problems for designers to address. Wrigley (2013, 2016) presents the aim of a DIC is to understand and improve the business, requiring the regular crossing of two chasms (axes) - learning-teaching and academia-industry.

Further, Wrigley (2016) reports on these catalysts embedded in industry to demonstrate the value of design to separate businesses in Australia over a longitudinal research period. In this paper six key capabilities, such catalysts require to be successful in such an endeavor are identified. These capabilities are later built upon in Table 2. Wrigley identifies these capabilities by analyzing the research outputs from contexts such as aged care (Nusem, Wrigley, & Matthews, 2017a, 2017b), manufacturing (Doherty, Wrigley, Matthews, & Bucolo, 2015; Krabye, Wrigley, Matthews, & Bucolo, 2013), mining (Townson, Matthews, & Wrigley, 2016), collaborative consumption (Garrett, Straker, & Wrigley, 2017), and the automotive industry (Bryant & Wrigley, 2014). The design-led process undertaken by these studies is outlined in Wrigley (2017), as are the DLI principles and practices used to guide this process (Doherty, Wrigley, Matthews, & Bucolo, 2015; Krabye, Wrigley, Matthews, & Bucolo, 2013), mining, collaborative consumption, and the automotive industry. The design-led process undertaken by these studies is outlined in Wrigley (2017), as are the DLI principles and practices used to guide the evaluation of both case studies within this paper.

2.3 Research Gap

One can readily look up a multitude of design ideation approaches from academic and industry intuitions alike to learn from expert designers – Stanford D School and IDEO come to mind. Comparatively, there is a lack of knowledge regarding how designers implement design-led innovations, with the capabilities to withstand challenges from political, social and cultural fronts. A lack of empirical evidence regarding the evolving role of the designer and the capabilities in this age of the design movement is an avenue for non-traditional research methodologies (Dong, 2015). To this research gap, this study reports on two non-traditional case studies of design practice and research. These two case studies have

challenged the discipline of design and have placed the designer in a context traditionally foreign to designers.

3.Case Studies

3.1 Case Study 1 – Implementing design-led innovation in an airport corporation

DLI is a framework which harnesses the methods central to the discipline of design to create product and service solutions that are integrated, anticipate future user needs, build future proposals and encourage feedback (Bucolo et al. 2012). Operating as an innovation catalyst (Wrigley, 2013; 2016), the researcher worked within an Australian Airport Corporation (AAC) to disseminate DLI as an alternative framework for creating and capturing value (Myers, 2009).

A participatory action research design effected through action research enabled the innovation catalyst to be embedded within the AAC for eighteen months, leading three projects through DLI (Zuber-Skerrit, 2012). These three projects outcomes resulted in one world-first solution in addition to positive customer and stakeholder feedback. The AAC received various awards directly attributed to project outcomes as recognition of the organization taking leadership in digital innovation.

Qualitative data was collected throughout the eighteen months supporting the study of complex strategic process (Bansal & Corley, 2011). Research methods applied were semi structured interview, focus group discussion, field notes and record of the innovation catalyst's journey through a reflective journal. Overall, twenty-two participants, multiple AAC stakeholders, took part in data collection through interviews and focus groups. These participants ranged from senior management to coordinators within the AAC. At the completion of all AR cycles, a thematic analysis approach described by Ezzy (2002), was applied involving open coding, axial coding and selective coding.

The findings reveal how the designer morphed to best contribute to value within the AAC context, drawing from other disciplines, thereby shaping the edge of their own practice. In the implementation of DLI at the operational level, continuous and varied storytelling, using three design narrative methods of DLI was applied (Price, & Wrigley, 2016). These three narrative methods, (low-fidelity (lo-fi) narratives, realistic narratives and strategy narratives were used in a sequence that corresponded with the framework of DLI and achieved sensemaking of previously uncertain subject matter. To do so, the innovation catalyst drew from fields such as information systems, strategic management and consumer psychology to enhance the approach. From an industry perspective, DLI provided an alternative strategy toward innovation within the AAC — one promoting an innovation-generating culture within the organization, even during uncertainty.

Not only did this research approach provide rich insight into the pragmatic action required to implement DLI, but it fulfilled a vital research gap. This research concerned the organizational – context specific outcomes and opportunities arising from the implementation of DLI. The unique role of the innovation catalyst as a blended position of practice and research, with the responsibility to improve the organization inherent within action research – enabled such rich research outcomes to be achieved.

3.2 Case Study 2 – Designing emotional digital engagements

The emergence of new technologies has revolutionized the way companies interact, engage and build relationships with customers. Digital channels are technology-based platforms that use the Internet to connect with customers to provide and facilitate communication, playing a vital role in influencing customer emotions and experiences. As technology continues to drive connectivity at an increasing speed, becoming aware of emotions and understanding customers' digital relationships with companies becomes key in providing knowledge in this area.

This research investigated what digital channels companies are using and how these digital channels could be designed to form emotional engagements with customers. Theoretical approaches from the fields of design, psychology, marketing and information systems were analyzed and integrated into a conceptual framework (Straker, Wrigley, & Rosemann, 2015a). The validity of the framework was investigated and the knowledge base was deepened via four research stages: i) content analysis, ii) business study, iii) case study (macro) and iv) case study (micro). In addition to a mixed methods approach to this research, the collection of primary and secondary data was analyzed.

The findings from this research have clarified and defined digital channels, identifying a hierarchical relation among them (typologies) (Straker, Wrigley, & Rosemann, 2015b). In particular the findings provide an understanding of how successful implementation of emotional awareness can occur within an organization via a process of collecting and analyzing customers' emotions (Straker & Wrigley, 2016a, 2016b). The sum of these findings assists in building an understanding of emotions and their role in designing digital channel engagements. Not only did this research approach provide rich insight into the pragmatic action required for implementing emotion into the design of their digital strategy and customer channels, but also it fulfilled a vital research gap.

3.3 Case Study Comparison

A comparison of these two case studies is outlined in Table 1, detailing the research focus, theoretical constructs, research question, methods and outcomes of each. As previously stated the research focus of both studies was outside the scope of a 'traditional' design researcher, in these cases it an orientation toward business strategy, technology and marketing were present. This required theories from fields such as business, marketing and psychology to be implemented into the research approach. Research questions aimed to answer *what* and *how* questions, allowing for implementation of results within the company.

Many of the methods used in both case studies originate from a user-centered design approach and include user observations, journey mapping, narratives, personas and storyboarding (Prahalad & Ramaswamy, 2004). However, in a business context these tools allow companies to understand, connect and create value with their customers extending beyond just pleasing superficial needs. Unlike traditional market research methods, the goal is not to evaluate a particular feature or experience of an existing product, but understand the customers' why through deep customer insights. The use of these methods allowed a business to place themselves in the position of the customer, by not questioning their needs but trying to understand values that underpinned their experience.

Table 1. Comparison of Case Studies

Item	Case Study 1	Case Study 2
Research Focus	Business Strategy: Aviation	Business Strategy: Digital Engagements
Theoretical Constructs	Design Technology Business	Design Psychology Marketing Information Systems
Research Question/s	1.How is design-led innovation implemented in an Australian Airport Corporation? 2.What are the outcomes and opportunities arising from this implementation?	1. What digital channels are companies using to engage with customers? 2. How can companies use digital channels to design emotional engagements with customers?
Research Method	Action Research DLI Process	Content Analysis Case Studies
Data Collected	40 x Stakeholder Interviews 2x Focus group discussion Field notes – 160 entries Reflective journal – approx. 5000 words	100 Companies (Mixed Industries) use of digital channels 1 company, 5 digital campaigns, 20 customer comments 100 Airports use of digital channels 200 passenger engagements 2-hour interview with business owner Analysis of Instagram account 541 posts, 56,590 comments, 2,037,077 'likes'
Data Type	Primary Qualitative	Primary Secondary Qualitative Quantitative
Analysis	Thematic analysis	SPSS Thematic Analysis
Design Methods	Storytelling Narratives Personas Visualisation Rapid concept development and testing	Visualisation Journey Mapping Rapid concept development and testing Co-creation
Outcomes	Theoretical Practical	Theoretical Practical

4. Expanding Design Disciplinary Capabilities

Based on the case studies previously described, the 'design innovation catalyst' capabilities (Wrigley, 2016; 2013) were used to reflect on if and how such capabilities were demonstrated inside such a hybrid design project (see Table 2). In addition to these capabilities, the key academic outputs of the two case studies are presented for the purpose of further reading.

Table 2. Design Innovation Catalysts Capabilities

Capability	Case Study 1	Case Study 2
1. Design Knowledge and Skills	Design visualisation of complex systems, ability to gather insights from customers and stakeholders, and ability to remain empathetic during value creation	Design and emotion expertise, with practical skills to visualise and then test project outcomes through context based design research
2. Business Knowledge and Under-standing	Translation of operational insights into propositions to drive performance. Translation of concepts into strategic directives, particularly within digital business context	Understanding of strategy and drivers for adoption of digital technology. Translation of marketing, psychology and information systems perspectives of business literature and management practices
3. Cognitive Abilities	An ability to think originally by reframing existing problems to form new perspectives	An ability to challenge fundamental perceptions, constraints and ideas
4. Customer and Stakeholder Centricity	Customer and stakeholder advocacy through empathetic perspective. This advocacy was required during meetings where the customer was not present	Advocating customer emotion as a designable element of a business model. Developing a theoretical framework to realise such advocacy through concrete methods
5. Personal Qualities	Observant but explorative. Sensitive but resilient within the airport organization	Tolerant of uncertainty. The ability to provoke and disrupt existing business model theory
6. Research Knowledge and Skills	Ability to apply design research methods with rigour within context to gather customer insights while balancing academic dissemination	Mixed methods research capability – transdisciplinary integration from fields of psychology, marketing, design and information systems

These skills represent the complexity accompanying the transdisciplinary practice. The challenge of such a diverse skill set is maintaining generalist and specific knowledge in tune with progress to best practice standards within other disciplines. For this reason, the designer of the future must be driven by a constant thirst for knowledge that is translated into the identified capabilities in Table 2. Such a broad knowledge base is developed through multidisciplinary education, with specific regard to business topics and technology. This education is then sharpened through practice. Here, lies a pitiful of the current system to develop the next hybrid designer. Designers who graduate are led into traditional roles of process and aesthetic purpose by necessity of employment. Universities must play a great role in incubating a broad range of skills and domain knowledge required by the hybrid designer to allow them to flourish into new industry positions. Observation of current leading design universities suggests that post-graduate programs will be key in future, to developing hybrid capabilities of the designer through industry projects that also create awareness within industry of this new form of design capability.

Current literature lacks insight into how and why a designer's capabilities are expanded. Analysis of the two case studies outlining approaches required within transdisciplinary research contexts addresses this gap in knowledge. Key to this approach is understanding the strengths and weakness of different research methods and approaches (Price, Wrigley & Straker, 2015), in order to direct the research to not only appropriately answer the research question/s but also provide industry and or business solutions to be realized. Both research case studies required the researchers to obtain knowledge outside of the field of design,

including a deep understanding of certain industry practices and standards, technology potential, company cultures and customer trends and needs. However, even with the implementation of differing methods and theories – the core design process was observed to remain largely unchanged.

The design approach offers a systematic approach to exploring opportunities in a way that traditional problem-solving approaches cannot, by striving towards the best possible solution through collaborative processes (Moggride & Atkinson, 2007). A design approach keeps the end user or stakeholder's emotions, experiences and needs at the centre of the value creation process. Brown (2009) articulates the value of design as 'accelerating innovation to create better solutions to the challenges facing business and society'. Introducing design methods and processes to industry problems can obtain practical and theoretical outcomes. The aim of transdisciplinary research is to encourage dialogue among different fields, share knowledge, techniques and experience during the cooperative process, push forward the boundaries, solve problems with wider, multi-dimensional concepts and afford greater explanatory power and societal value (Chou & Wong, 2015).

5. Conclusion

To thrive in a rapidly changing world, the future designer will require a hybrid skillset representing the truly transdisciplinary nature of design as connector and mediator of differences. In addition to a new set of capabilities, the hybrid designer of the future must draw on knowledge from fields such strategic management and information systems - given the shift of the design discipline toward business strategy and sensemaking of digital technology. Importantly, designers' within the discipline who operate in what could be considered traditional design practice and design research must embrace change at the periphery of the discipline. The two case studies presented within this paper articulate the changing role of the designer from a capability perspective, in the context of the shifting discipline of design. To conclude, we return to design theory. As the problem develops, so does the solution; and it is this openness to change that will be important in developing the future hybrid design practitioners – that are capable of creating value in response to a dynamic and increasingly complex world.

6. References

Bansal, P., & Corley, K. (2011). The Coming of Age for Qualitative Research: Embracing Diversity of Qualitative Methods. *Academy of Management Journal, 54*(2), 233-237.

Borja de Mozota, B. (2010). Design management as core competency: from "design you can see" to "design you can't see". *The Journal of Design Strategies*, *4*(1), 91-98.

Bryant, S., & Wrigley, C. (2014). Driving Toward User-Centered Engineering in Automotive Design. *Design Management Journal*, *9*(1), 74–84. Beckman, S. L. & Barry, M. (2007). Innovation as a Learning Process: Embedding Design Thinking, *California Management Review*, *50*(1), 25-56.

Brown, T. (2009). Change by design. *How Design Thinking Can Transform Organizations*. Harper Business: New York.

Buchanan, R. (2015). Worlds in the Making: Design, Management, and the Reform of Organizational Culture. *She Ji, 1*(1), 5-21.

Bucolo, S., Wrigley, C., & Matthews, J. (2012). Gaps in organizational leadership: linking strategic and operational activities through design-led propositions. *Design Management Journal,*

7(1), 18-28.

Calabretta, G., Gemser, G., & Karpen, I. (2016). *Strategic Design* Amsterdam: BIS Publishers.

Chou, W. H., & Wong, J. J. (2015). From a Disciplinary to an Interdisciplinary Design Research: Developing an Integrative Approach for Design. *International Journal of Art & Design Education*, *34*(2), 206-223.

Denning, S. (2015). How to make the whole organization Agile. *Strategy & Leadership, 43*(6), 10-17.

Doherty, R., Wrigley, C., Matthews, J. H., & Bucolo, S. (2015). Climbing the design ladder: Step by step. *Revista D.:Design, Educação, Sociedade E Sustentabilidade*, *7*(2), 60–82.

Dorst, K. (2015). Frame Creation and Design in the Expanded Field. *She Ji, 1*(1), 22-33.

Dong, A. (2015). Design × innovation: perspective or evidence-based practices. *International Journal of Design Creativity and Innovation, 3*(3), 148-163.

Ezzy, D. (2002). *Qualitative Analysis: Practice and Innovation*: Allen & Unwin.

Garrett, A., Straker, K., & Wrigley, C. (2017). Power to the People: Community-led Technology Enabled Companies. *Journal of Research Interactive Marketing*, *11*(2), (In Press)

Kolb, D. (1984). Experiential Learning: Experience as the Source of Learning and Development. Prentice-Hall, Englewood Cliffs, NJ.

Krabye, A., Wrigley, C., Matthews, J. H., & Bucolo, S. (2013). From Production to Purpose Using Design Led Innovation to Build Strategic Potential in a Family-Owned SME. In *IEEE Tsinghua International Design Management Symposium : Design-Driven Business Innovation, Institute of Electrical and Electronics Engineers,* Shenzhen, China.

Lee, Y., & Joo, J. (2015). How a Design Executive Officer Can Craft an Organizational Culture. *Design Management Journal, 10*(1), 50-61.

Moggridge, B., & Atkinson, B. (2007). *Designing interactions* (Vol. 14). Cambridge, MA: MIT press.

Muratovski, G. (2015). Paradigm Shift: Report on the New Role of Design in Business and Society. *She Ji, 1*(2), 118-139.

Myers, M. D. (2009). *Qualitative Research in Business & Management*. London: Sage.

Norman, D., & Jan Stappers, P. (2015). DesignX: Complex Sociotechnical Systems. *She Ji, 1*(2), 83-106.

Nusem, E., Wrigley, C., & Matthews, J. (2017a). Developing Design Capability in Nonprofit Organizations. *Design Issues*, *33*(1), 61–75.

Nusem, E., Wrigley, C., & Matthews, J. (2017b). Exploring aged care business models: A typological study. *Ageing and Society*, *37*(2), 386–409.

Owen, C. (1998), Design Research: building the knowledge base, *Design Studies,* 19(1),9-20.

Price, R., & Wrigley, C. (2016). Design and a deep customer insight approach to innovation. *Journal of International Consumer Marketing*, *28*(2), 92-105.

Price, R., Wrigley, C., & Straker, K. (2015) Not just what they want, but why they want it: Traditional market research to deep customer insights. *Qualitative Market Research: An International Journal*, *18*(2), 230-248.

Reeves, S., Goulden, M., & Dingwall, R. (2016). The Future as a Design Problem. *Design Issues, 32*(3), 6-17.

Rittel, H. W. J., & Webber, M. (1973). Dilemmas in a General Theory of Planning, *Policy Sciences*, 4, 155-169.

Simon, H. (1969). *The sciences of the artifical*. Cambridge, Mass.: MIT Press

Straker, K., Wrigley, C., & Rosemann, M. (2015a). Typologies and touchpoints: designing multi-channel digital strategies. *Journal of Research in Interactive Marketing*, *9*(2), 110-128.

Straker, K., Wrigley, C., & Rosemann, M. (2015b). The role of design in the future of digital channels: Conceptual insights and future research directions. *Journal of Retailing and Consumer Services*, *26*, 133-140.

Straker, K., & Wrigley, C. (2016a) Emotionally engaging customers in the digital age: The case study of 'Burberry love'. *Journal of Fashion Marketing and Management: An International*

Journal, *20*(3), 276-299.
Straker, K., & Wrigley, C. (2016b) Designing an emotional strategy: Strengthening digital channel engagements. *Business Horizons*, *59*(3), 339-346.
Townson, P., Matthews, J., & Wrigley, C. (2016). Outcomes from Applying Design-Led Innovation in an Australian Manufacturing Firm. *Technology Innovation Management Review*, *6*(6), 49–58.
Von Stamm, B. (2003). What are innovation, creativity and design. *Management of Innovation, Design and Creativity. John Wiley & Sons, Chichester*, 1-18.
Wrigley, C. (2017). Principles and practices of a design-led approach to innovation. *International Journal of Design Creativity and Innovation.*
Wrigley, C. (2016). Design Innovation Catalysts: Education and Impact, *She Ji: The Journal of Design, Economics, and Innovation* 2(2), (In Press).
Wrigley, C. (2013). Educating the 'Design Innovation Catalyst' for change. In Sugiyama, Kazuo (Ed.) *Consilience and Innovation in Design Proceedings and Program vol. 1*, Shibaura Institute of Technology, Tokyo, Japan, 3547-3557.
Wrigley, C., & Bucolo, S. (2011). Teaching Design Led Innovation: the future of industrial design. *Design Principles and Practices*, *5*(2), 231-240.
Wrigley, C., & Bucolo, S. (2012). New organizational leadership capabilities: transitional engineer the new designer? In *Leading Innovation through Design: Proceedings of the DMI 2012 International Research Conference,* 913-922.
Zuber-Skerritt, O. (2012). Introduction to Action Research for Sustainable Development in a Turbulent World. In O. Zuber-Skerritt (Ed.), *Action Research for Sustainable Development in a Turbulent World*. London, UK: Emerald Group Publishing Ltd. Brisbane, Australia.

7. Further Reading on Case Studies

Price, R., Wrigley, C., & Dreiling, A. (2015) Are you on board? The role of design-led innovation in strengthening key partnerships within an Australian airport. In Muratovski, Gjoko (Ed.) *Design for Business.* University of Chicago Press/Intellect Books, Bristol, 42-61.
Straker, K & Wrigley, C. (2016) Translating emotional insights into digital channel designs: Opportunities to enhance the airport experience. *Journal of Hospitality and Tourism Technology*, 135-157.

About the Authors:

Rebecca Price is a Post-Doctoral Research Fellow at Delft University of Technology, Netherlands. Her research explores the implementation of strategic design with emphasis on digital subject matter. Price is also part of the EU commissioned Horizon 2020 research project, 'PASSME'.

Karla Straker is Associate Lecture in Design Innovation at The University of Sydney, in the Sydney School of Architecture, Design and Planning. Her research explores how strong relationships with customers can be designed and sustained through a deeper understanding of emotions and digital technology.