

## Studies in Material Thinking

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*Communication Design: Material  
Artefact, Immaterial Influence*

### PAPER 03

*Visualisation and the  
Service Sector: Why Visual  
Communication Design is Central  
to Designing the Immaterial*

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### ABSTRACT

*This paper reports on a series of experimental research projects undertaken over several years by groups of visual communication design students with the Customer Experience (CX) team at Westpac Bank, Australia's second largest bank by market capitalisation. The premise for running these projects was simple: 'What value could the visualisation and research skills of visual communication designers bring to the CX design process?' In reporting on these projects the authors argue that the problem solving model of design is increasingly redundant in service economies, although they note it is a pragmatic way of describing the complexity of design scenarios.*

*More significantly the authors argue that with the growing trend in the use of visualisation techniques, for research and communication in service enterprises, that visual communication design is now the meta design discipline.*

### KEY WORDS

*Visual Storytelling,  
Visual Research Methods,  
Customer Experience  
Design, Service Economy,  
Visualisation.*

## INTRODUCTION

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*Design envisions the future by taking a felt need or problem or what is a vague and often abstract idea and making it tangible - making it exist in the world so that various stakeholders in the idea can imagine together, socially and interactively, what 'it' might be like. (Poggenpohl, 2002, p.2)*

The graphic design industry emerged in the late nineteenth century as the Industrial Revolution got into full swing across parts of Europe and the USA. With the growth in the production of manufactured consumer goods during the nineteenth-century phase of the Industrial Revolution, graphic design became integral in marketing and advertising these goods to consumers (McCoy, 2001). The graphic design education that evolved in the early twentieth century was concerned primarily with learning both the manual technical skills required to prepare artwork for print reproduction and the visual skills required to make that artwork visually appealing to the consumers of manufactured goods. During the mid-twentieth century many countries with an advanced industrial base witnessed the emergence of the services sector economy (Kim, 2006). Changes in the nature of the manufacturing base of industrialised countries have been offset by the growth and diversification of the service sector as these countries moved to a post-industrial footing and more diversified and complex economies (Kim, 2006). Reflecting this complexity and diversity, graphic design became subsumed, as one particular commercial visual practice amongst a diverse field, into the more overarching term 'visual communication design'.

In Australia the service economy is worth approximately 75% of gross domestic product (GDP), and the financial and insurance service sector is the largest contributor to that, worth approximately 10% of overall national GDP (APH, 2007, p.7). Because of the pressures of commercial competition, post-industrial economies can be characterised as suffering from a condition of excess resulting from the 'multiplication of images and services offered and to the accelerated introduction of the "new"' (Manzini, 1992, p.6). In these circumstances people become less concerned with consuming things and more concerned with the experiences they have, for the key thing being sold is not a product to own but an experience to be had. For an industry such as design, that has largely been built on designing manufactured products for people to buy—and in the case of visual communication design, designing the messages to get people to buy these products—this poses the question 'What do we design?'. In a conventional consumer-driven logic, visual communication design has adapted to this by shifting its focus to designing messages to get people to experience these services. However, at the cutting edge of visual communication design practice are multidisciplinary teams working in the fields of service design, customer experience design, interaction design, experience design and visual storytelling. Contested though these terms may be, what they share is the idea that visual representation is an important part of conducting research into, and telling the stories of, the experiences people have and want to have of the world they live in. In the Australian context the financial services sector leads the way in developing and implementing a research driven approach to

the use of visual communication within a customer experience (CX) framework with the Westpac CX team at the forefront in doing so. The Westpac CX team consists of 25 full-time permanent staff and 22 full-time contract staff.

### **DESIGN AND THE IMMATERIAL**

Reflecting the growth of the service economy in post-industrial society, Jorge Frascara argues that designers have begun to let go of their

*exclusive obsession with products, materials and manufacturing processes, and have become more concerned with the contexts in which objects and communications are used by people, and with the consequences that the existence of those design creations have on people in general. (Frascara, 2002, p.38)*

He calls this the ‘dematerialization of design’ (2002, p.38). Similarly, companies that still manufacture goods (material objects) see their physical products as largely incidental to ‘the benefit or “value” which customers derive from the product, and associated services’ (Pawar, Beltagui & Riedel, 2008, p.469). The shift from a product-based economy to a service-based economy is a shift away from concern with the material reality of a product, as object, towards a focus on the immateriality of the service as experience. For companies that don’t manufacture physical products, are entirely service-oriented and dealing with this immateriality as core to their business, it is easy to imagine that beyond the use of visual communication design to sell their services there is no scope for the

use of design. Yet there is growing evidence that such companies are leading the way in the use of design, most particularly the use of design thinking to develop business strategy and new services (Kelley & Littman, 2001; Brown, 2009; Lockwood, 2009; Martin, 2009). In these circumstances design thinking is used to design things that have no physical or material properties but nonetheless need to take an embodied form in order to be communicated and understood. We make the claim, and will argue, that it is visual communication design that appears to be best placed to do this.

### **VISUAL COMMUNICATION DESIGN AND THE DESIGN OF THE IMMATERIAL**

The Design Methods movement was concerned with the use of design thinking and the design process in addressing the increasingly complex design ‘problems’ encountered at the systems level. Systems level design emerged in engineering oriented disciplines to address large scale, technological challenges (Rittel, 1972, p.5; Simon, 1969 p.118), then spread into business schools as management science (Simon, 1969, p.58) and into urban planning in the guise of human behaviour research (Rowe, 1987, pp.158-162). It evolved from being concerned with designing complex systems of technology (as ensembles of material objects) to being concerned with the management of decision-making systems (as immaterial networks of human relations) in which those material objects were situated. This parallels the move from industrial manufacturing economies to post-industrial service economies, from the material to the immaterial.

Advocates of Design Methods argued that a scientific and procedurally-based design process

was required to deal with systems level problems, as was a more explicit understanding, as opposed to intuitive use, of design thinking. Design problems that are not visible are typical of systems level design, and in particular immaterial systems. It was conceded by those in Design Methods that design-by-drawing was an improvement on pre-industrial craft production (Jones, 1970/1992, p.20) but argued that design problems that are not visible do not attract the attention of designers who rely on intuition and drawing (Lawson, 1980, p.18). John Chris Jones argued that traditional drawing would 'utterly inhibit innovation at the systems level' but acknowledged that without something analogous to it, the designer 'has no medium in which to communicate the essence of the mental imagery with which he could conceive of a tentative solution' (Jones, 1970/1992, p.42). Herbert Simon argued that visual perception, visual memory, and visual representation are central to the process of design thinking and that the precondition for success in working with complex design problems, at the systems level, was the development of a taxonomy of abstract visual representations (Simon, 1969, pp.131-135). His taxonomy included flow chart diagrams, mapping techniques, and mathematical equations (Simon, 1969, p.133). Design Methods' ongoing development of this taxonomy was most clearly articulated by Christopher Alexander (1964) and Jones (1970/1992).

Alexander developed a representational form of language, or method, based on mathematics called the 'mathematical treatment of decomposition' (Alexander, 1964, p.174) to eliminate 'the bias of language and experience' from the design process and leave only the abstract structural features of the problem visible

(Alexander, 1964, p.78). Jones developed an array of representational methods that included photo and video observation and analysis, flow chart diagrams, decision-making trees, charts, and graphs (Jones, 1970/1992). Many of these methods were used to represent concepts, relationships, decision-making options, variables, and processes (Jones, 1970/1992, pp.75-396) that had no concrete, visible, manifestation. Despite the well-documented critiques of Design Methods (Downton, 2003, pp.39-47; Hillier, 1996, pp.10-19; Lawson, 1980, pp18-19 & pp.55-58; Rowe, 1987, pp.110-111) it is significant that its proponents recognised that visual representation is central to design research and practice, and that such representation is concerned with the fundamentally abstract realm of ideas and experiences.

## *...visual representation is central to design research and practice...*

Design Methods was developed to address the relationships between products, the systems they are produced in and circulated through, 'and the political and social aspects of user behaviour' (Jones, 1970/1992, p.31) typical of societies with post-industrial, service oriented economies. Exploring relationships between objects and people in this guise takes a fairly mechanical view of the world, and research into the interaction between people and objects was premised on issues around functionality and performance. Jones'

observational methods were primarily concerned with ergonomics and measuring human performance, and then testing these in experimental and actual scenarios (Jones, 1970/1992, pp.233-239). Whilst this indicates consideration of people as users of objects the idea of user experience, beyond the experience of functionality, is largely absent. This changed in the 1980s as a humanistic approach developed, through the use of social science methods, in what was generally described as user-centred design. Henry Sanoff sought to develop a deeper understanding of people's perception of their environment and provide an opportunity for a dialogue with users as part of the design process (Sanoff, 1991, pp.xi-xii). Likewise John Zeisel developed a 'people-centred and evidence-based' approach (Zeisel, 1984/2005, p.13). Similarly, Elizabeth Sanders drew on psychology and anthropology to develop a research approach 'that entails the active and direct involvement of all product stakeholders in and throughout the design process' (Sanders, 1992, p.53). What these approaches have in common is an interest in user experience that extends beyond mechanical issues of functionality, and encompasses less tangible dimensions of meaning, and broader social experience. The methods developed during this period are used to access understanding and insight into such meaning, offering a 'route to experience' and each route revealing 'a different story or picture' (Sanders, 2002, p.3). Many of the methods developed as user-centred design has evolved have a strong visual dimension.

This brief summary of visual taxonomy used in research-driven approaches to design charts a move away from a rationalist approach to the use of specialised forms of visual methods towards an

interpretative use of commonly experienced visual forms. Mark Roxburgh has critiqued the specialist nature of Design Methods' visual taxonomy as having little resonance with non-specialists and argued that visual methods that are more commonly experienced by the vast majority of designers and users will have greater resonance with them (Roxburgh, 2005). To put it another way, designers and users alike do not have to learn a highly specialised form of visual language to communicate with and through, they simply use the commonly available forms of visual language they are immersed in throughout their daily lives. However, it is not simply a case of familiarity with media and resistance to rationalism that has driven this move. Recent neurological research indicates that there are two parts of the brain—Broca's area and Wernicke's area—that deal with factual information and language (Ramachandran, 2011, pp.159-160), whereas there are at least thirty areas of the brain that deal with visual perception suggesting that we are more neurologically pre-disposed towards visual perception (Ramachandran, 2011, p.47) and communication than we are towards linguistic interpretation and communication. Furthermore, Vilayanur Ramachandran argues that the line between 'visual perception and visual imagination' is blurred and that there is a clear link between perception and action (Ramachandran, 2011, p.70). It can be argued then, as Roxburgh (2013a) does, that the relationship between perception, imagination and action is fundamental to design creativity and that the imagining of future states and scenarios, which is what design does, is 'a transformative, creative, and imaginative inevitability' that is 'bound up in our perceptual synthesis' (Roxburgh, 2013a, p.12). When

understood like this design is not a problem solving activity but is the active transformation of the world that we perceive, in its current and seemingly factual state, and imagine in a fictive and future state. The visual image, in all its manifestations, and the stories we tell through it are central to this transformation.

### **PROJECT OVERVIEW**

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At Westpac the CX team researches the relationship between their customers' experiences of the bank, the meanings their customers make of those experiences, and the narrative dimension of that. The team is focused on end-to-end customer experience across the banks' customer touch-points including web-based media and services, ATMs, and communication campaigns to ensure positive customer experiences (Westpac CX Team, 2012). Research is communicated to various internal groups (stakeholders) in the bank to guide business decisions. The CX team had identified issues around the effective communication of their 'research insights to stakeholders (business, technical and designers) within the bank' (Cox, 2011a, p.1). These 'stakeholders had different internalised perspectives on information about customers' (Cox, 2011a, p.1) and acted like internal 'business silos' (Cox, 2011b). Between 2010 and 2012 we—the authors—ran a series of experimental student research projects at Westpac to determine the efficacy of visual communication designers using visual research methods in a CX context. In 2010 sixteen students participated, in 2011 twenty, and in 2012 just one.<sup>1</sup> Our research was framed as a phenomenological heuristic and naturalistic enquiry. Phenomenological heuristic research is interpretative with research findings based upon

'the discoveries, personal insights, and reflections of the researchers' (Patton, 2002, p.107). The research was naturalistic because 'the phenomenon of interest unfolds naturally in that it has no predetermined course established by and for the researcher' (Patton, 2002, p.39). Although we didn't establish a predetermined course of research we did give students a fairly simple research question and introduced them to a variety of research methods they could select from, modify or reject. In this regard their brief was like a cultural probe in that it was 'designed to provoke inspirational responses' (Gaver, Dunne & Pacenti, 1999, p. 22) from the students conducting the research and resulted in an array of visual artefacts and reports for us to evaluate. It was also fitting this approach was taken, as cultural probes are a common method employed in user-centred design.

### **VISUAL RESEARCH METHODS**

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The question we asked students to respond to was 'What is the future of banking?' and some of the methods of research they were introduced to included: affinity mapping, persona design, thematic / narrative analysis of written text, thematic / narrative analysis of visual images, and concept prototyping. The students were also required to conduct research into alternative research methods and in essence designed personalised methodological tool kits. Whilst the shortcomings of this approach may diminish the potential to evaluate the efficacy of the same methods used by different students through comparison, it is in keeping with a user-focused approach. We say this because the students were the users of the research process they designed. We were also of the view that

<sup>1</sup> – The 2010 & 2011 cohorts were from the University of Technology Sydney. The 2012 student was from the University of Newcastle.

by taking this approach we were likely to see a more diverse array of creative research methods developed and implemented.

We used Roxburgh's (in Roxburgh and Sweetapple, 2007, p.2) four framing questions for design research to guide the research process. These questions are:

1. *What do I know?*
2. *What does someone else know?*
3. *What do I know now?*
4. *What can I now imagine?*

Questions 1 – 3 help map out the knowledge and insights the researcher has about the research topic before, during and after the research process and is eventually embodied in a designed report. In many respects this is the sociological knowledge of the topic area, although it should contain various design insights and cues. Question 4 requires students to conceive of a design response to those insights and visually communicate it.

Typically the students started with auto-ethnographic methods to answer question 1 using their own experiences of banking. Auto-ethnography methods are a self-reflective way of understanding culture by connecting 'the personal to the cultural and thereby place the self in a social context' (Preston and Thomassen, 2010, p.49). By answering this question students revealed and valued their experiences as both a form of expertise and a set of assumptions to be challenged during the research. The commonest approach to question 1 was the use of visual mind-mapping methods. These are commonly used in design research and education (Edwards, 2004) and

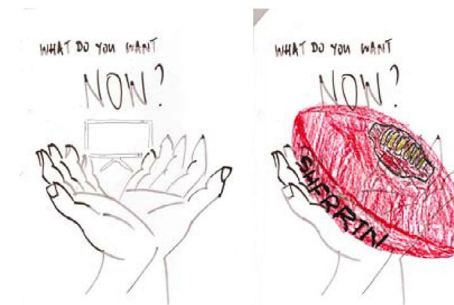
it is generally agreed they assist visual and intuitive thinkers, such as designers, to engage in the analysis of information, something they typically struggle with (Grow, 1994; Jones, 2007; Lockheart, Edwards, Raein & Raatz, 2004; Roxburgh & Sweetapple, 2007; Yee, 2003). Tony Buzan and Barry Buzan argue that the analysis of ideas that occurs during the mapping, and their radiant structure, helps identify relationships between ideas in a way that lists can't because lists disassociate 'each idea from its context' and 'act in direct opposition to the associative nature of the brain' (Buzan and Buzan, 1994/2000, p.86). Similarly Vasily Kokotovich argues that mapping ideas allows for the identification of 'complex symbiotic relationships between issues' (Kokotovich, 2008, p.55).

## *...mapping ideas allows for the identification of 'complex symbiotic relationships between issues'...*

In answering question 2, students typically undertook secondary research, in the form of literature reviews, and on becoming more fully informed about their research area they moved onto primary methods. The next most common primary method used was conventional semi-structured interviews, undertaken to gain background insight into people's experiences with banking. From these students began to identify emerging themes or trends that they explored

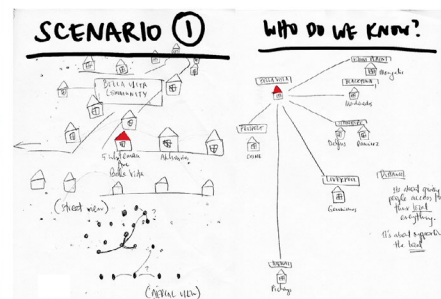
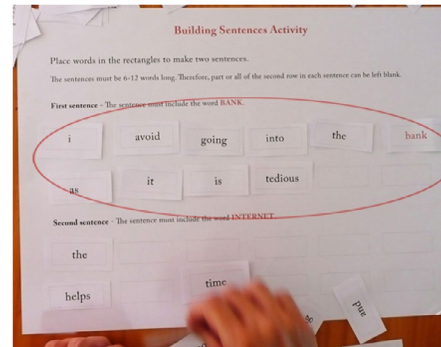
using increasingly visual methods, most commonly variations of the visual survey. Visual surveys were used to give a pictorial dimension to key themes and used for image elicitation interviews. These surveys took a variety of forms: some asked a question that required the respondent to draw or photograph the answer (Figure 1a); others asked respondents to select images, from a database, in response to the question (Figure 1b); whilst others supplied a partially drawn image and asked respondents to complete the drawing in response to the question (Figure 1c). The first, and most commonly used, approach resembled an open-ended question compared to the semi-open nature of the latter two approaches. While the latter approaches were informed by the students' prior research, it privileges their insights compared to the open approach. In the open approach the design researcher needs to be responsive to user insights and defer to their knowledge and experience, and the meaning they make of that, rather than imposing their own meaning onto it.

Draw trust... (Interview participant, 2010)



Figures: 1a (top), 1b (middle), 1c (bottom).





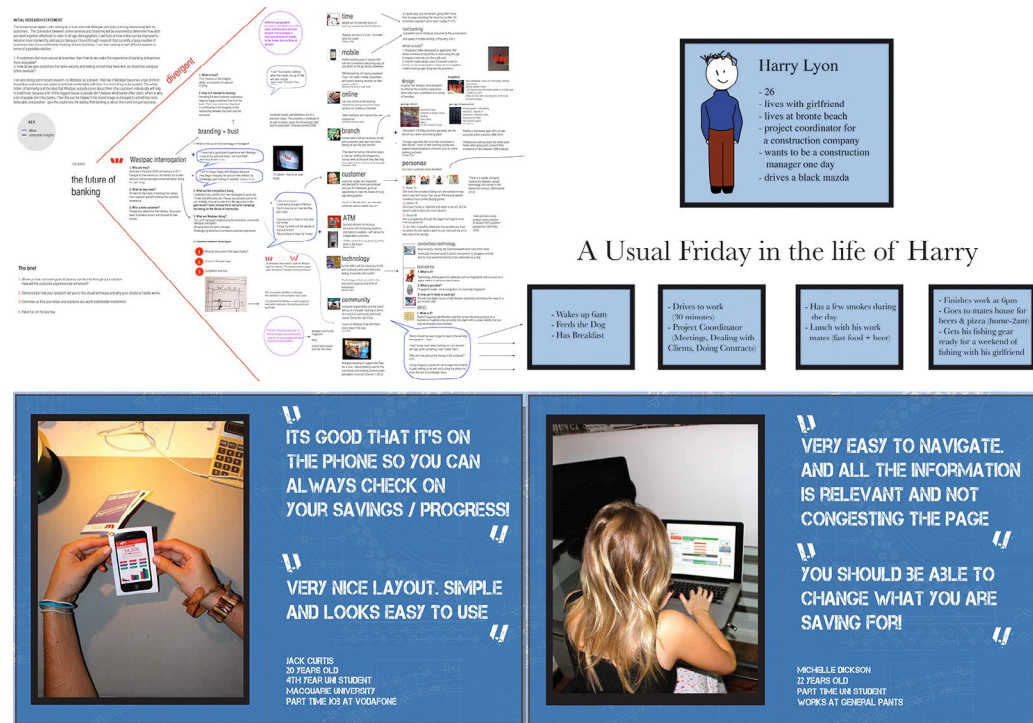
Figures: 2a (top), 2b (middle), 2c (bottom).

Other methods used at this stage included card sorting (Figure 2a), word association (Figure 2b) and scenario mapping (Figure 2c). The first of these were word based and the underlying premise is to group words or passages of text to identify recurrent themes. Although these methods are not inherently visual the kinaesthetic dimension of using them aligns with David Kolb's constructivist learning theory. Kolb (1984) describes kinaesthetic learning as occurring through feeling, and doing, and as accommodating in that it enables learners to connect abstract concepts with concrete embodied experience. The card sorting and word association methods enabled the students to gain insight through analysis by active doing, and learning from that active doing, in ways that are well suited to the kinaesthetic styles of learning they privilege (Roxburgh, 2014). Scenario mapping on the other hand is a mainly visual method, but one that also involves embodied doing and learning, that seeks to map out relationships between people, events, and objects in order to provide a kind of picture of those relationships across time and space. Scenario maps present a 'clear and simplified visualization of something that is otherwise often unseen and difficult for people to visualize' (Allen & Chudley, 2012, p.189).

Many of the students extended the scenario mapping by visually mapping their research findings and insights (Figure 3a) in response to question 3. In sociological research terms they had ‘made knowledge of things’ and in design research terms they ‘made things of knowledge’ (Roxburgh, 2013b, p.332). Crucially it was the design making and knowing that emerged during this stage that enabled students to conceptualise design responses to the research they had conducted as much of that research took a designerly and visible form. More significant than this, however, was that the visualised research findings enabled the CX team at Westpac to rapidly comprehend

the depth and significance, or the shallowness and insignificance, of the research, as well as see its design potential. From here the students developed design responses using visual methods such as persona design (Figure 3b); concept prototyping (Figure 3c); and user-testing (Figure 3d) to refine concepts before designing a visual representation of final prototypes.

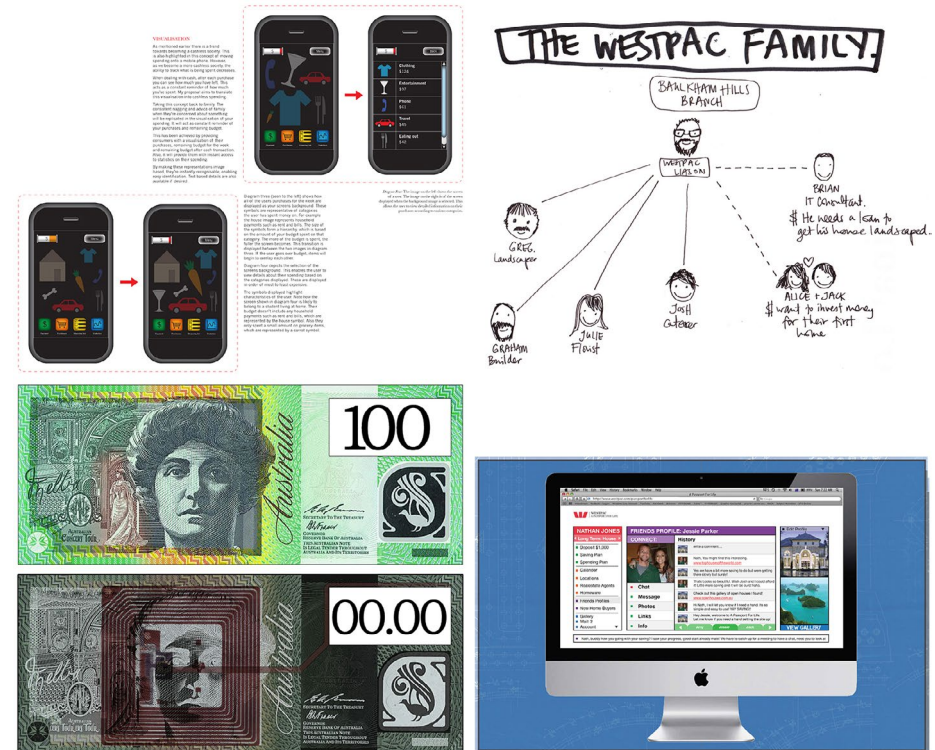
Figures: 3a (top left), 3b (top right), 3c (bottom left), 3d (bottom right).



While many of the final proposals were related to visual interfaces for banking transactions (Figure 4a), reflecting significant customer dissatisfaction with existing interfaces, some of the proposals were less to do with changing interfaces than changing the nature of relationships between the bank and its customers (Figure 4b); making cash track-able to prevent loss, theft and money laundering (Figure 4c); or enabling groups of individuals to set and share savings goals for group activities using social networking logic (Figure 4d).

After twelve weeks the students presented their research findings and design proposals to senior representatives from the various Westpac stakeholder groups. The response to the use of what were essentially visual story telling techniques from these stakeholders was very positive; it was evident that the visual methods used enabled the students to reveal and visualise abstract concepts in a way that could be readily communicated to these stakeholders in a manner that cut through the silo mentality. Furthermore, this approach enabled students to leverage their research to conceptualise new banking services that were more likely to resonate with the banks' customers. What the students were doing was conducting research, and sharing and communicating knowledge and ideas, in a way that could more readily 'translate across business silos' (Cox, 2011b) because it was presented in an accessible visual form. Given the positive response to this approach, in 2012 we embedded an honours student into the CX team for 14 weeks to more rigorously test the hypothesis that visual communication could 'ease any uncertainty' these stakeholders 'might have regarding the abstract concepts presented by the CX team' and ultimately 'lead to better business results' (Hall, 2012, p.iii).

Figures: 4a (top left), 4b (top right), 4c (bottom left), 4d (bottom right).



This project was different to those described in that the student—Brooke Hall—conducted ethnographic observation and interviews into the experiences and views of key members of the various stakeholder groups at Westpac, on the manner in which CX team research and research findings were currently undertaken and communicated. Based upon this research Brooke designed a project for a specific Westpac stakeholder group to determine its efficacy. This project was centred on Westpac's then emerging use of Live Chat with online customers. Business rules were 'set up to offer a chat window to users who meet certain requirements on the site' (Westpac CX Team, 2013) when they are researching Westpac products online. Brooke researched and designed a visual 'customer decision making model' based upon those rules, as well as other 'training material for call centre staff to help with sales and troubleshooting' (Westpac CX Team, 2013) (Figure 5). In essence the visual collateral was a form of storytelling designed to get the live chat team 'to put themselves in the customer's shoes' (Westpac CX Team, 2013). Prior to the implementation of this project, conversion from online customer research into the bank's services into committing to a specific service was 5%. Post implementation evaluation revealed a conversion rate of 25%, a five-fold increase in business.

## CONCLUSION

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The visual story telling techniques developed by the students through these projects had a profound impact on the CX team at Westpac and caused them to change the communication of their research to internal

stakeholders. The team became more cognisant of the cut-through that visual design had on communicating customer experience to stakeholders who would be making business and technological decisions that would affect those customer's future experiences. These projects confirmed the hunch that we had at the outset and Westpac now uses visual documentation, communication and storytelling far more extensively, transforming the manner in which the internal business silos relate and make decisions. Much of this documentation and communication takes a physical form and is posted on the walls of workspaces for easy, and embodied, reference. Although, not a direct consequence of these projects, but indicative of the value that Westpac places upon this approach of the CX team, is recent growth in their contract staff and external agency budget. In the first quarter of the Australian financial year 2014/2015 this budget was \$AUD6,500,000 up from \$AUD600,000 for the same period in the previous financial year.

Sanders notes that the tools, methods and processes used in the field of user-centred design signal 'an emerging visual language that people, all people, can use to express and interpret those ideas and feelings that are often so difficult to express in words' (Sanders, 2002, p.6). We argue then that the key design skill designers require, when working with the immaterial dimensions of meaning and experience, is the skill to discover and tell the associated stories of those meanings and experiences in visual form. But we also note that the area of design most experienced and already equipped to reveal and tell stories, that are essentially immaterial, is visual communication design. We say this because visual communication designers are experts at telling stories visually and

stories are not material objects but immaterial ideas about human experiences of the world.

We note that, historically, visual communication designers have generally been concerned with the development of their own sense of visual expression within the confines of communicating a client's message and that this approach is antithetical to a user, or in our case customer, centered approach to design. As Sanders notes, designers working in user centered design 'need to be trained to go beyond the individualized expression of visual communication' and 'learn how to become involved in the creation and construction' of new tools of research and communication (Sanders, 2002, p.6). It is our view that the student projects outlined here demonstrated that visually trained designers are well placed to create and construct those tools. In addition they are also best placed to leverage the research information, gained from their use, for design potential as many of the methods align with their kinaesthetic and visual predispositions. With this in mind the education of visual communication designers should now be oriented towards the construction and the use of such tools, in a research environment, to enable them to take a central place in the ongoing transformation of the artificial world that humankind designs.

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Mark Roxburgh is Associate Professor of Design at the University of Newcastle. Mark's research interests cover design research, visual communication theory and practice, photographic theory and practice and user experience design. His PhD explored the central role that visual images and visual perception play in design, with a specific emphasis on how photographic images condition us to perceive, experience and transform the world in a self-replicating manner. His ongoing research pursuits have been: developing a phenomenological theory of photography to counter the dominance of critical theory and semiotic deconstruction; developing a theory of design as a form of embodied perceptual synthesis to counter the dominance of the design problem solving metaphor.

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