Graphic Designers' Sense and Knowledge of the User: Is thinking differently the groundwork for acting differently?

Dr. Nicole Wragg and Dr Carolyn Barnes

A b s t r a c t

Graphic designers' lack of concrete knowledge of their audience has drawn strong criticism from within the field, without seemingly prompting broad uptake of user research in design practice. This article reports on an unanticipated and ambiguous finding from an interview-based study with nine graphic designers, which sought their views on how graphic design practice had changed through the addition of web design to the former concentration on design for print; one catalyst for the adoption of the new title of communication design. The interviews elicited many unprompted comments claiming strong knowledge of the user, but also other statements showing the designers worked with little or no actual information about their audience. Two inferences are drawn here. In discussing how the participants resolved this situation, the article proposes that despite an interest in the agenda for user-centered design, most graphic designers currently lack the enabling skills and opportunity to carry through on this. Yet seeing a simple binary division between intent and its lack of fulfilment may not be the most useful way to consider the issue of graphic designers' knowledge of the user, a changed discursive position being an important conceptual rehearsal for new approaches to graphic design practice.

Introduction

Graphic design has a rich history as a commercial and creative practice, standing today as a main design discipline that makes a significant cultural and economic contribution to societies. The field, however, is often judged to be ineffective in explaining the nature and value of its practices (e.g. Heller, 2006a; De Vries, 2010) while being reluctant to adapt these to changing cultural, social, and philosophical frameworks for design (e.g. Davis, 2008; Poggenpohl, 2009; Frascara & Nöel, 2012). Various writers attribute this to the stress on visual thinking and communication in graphic design (e.g. Crilly, Blackwell & Clarkson, 2006; Drucker & McVarish, 2009). Others see graphic designers' reliance on creative intuition in the design process as removing the need to explain and evidence graphic design practice (e.g. Nini, 1996; Cross, 2006; Nini, 2006; Frascara, 2007; Forlizzi, Zimmerman & Evenson, 2008; Fulton Suri, 2008). Yet others still attribute such unwillingness to graphic designers' capitulation to the dictates of the client (e.g. Heller, 2004). This situation is seen as a problem for the field with the rise of the culture of co-creation (Sanders & Stappers, 2008), which has challenged designers' authority and knowledge, the principles of user-centered design holding that the specific situation and interests of users should be established and accounted for within the design process. Segments of the graphic design field have long claimed to work on behalf of audiences. Modernist graphic design strove to optimize communication through a commitment to aesthetic simplicity (e.g. Dexel, 1927; Kepes, 1949). Postmodern graphic design sought to deliver heightened sensory, emotional, and intellectual experience to audiences through the play of forms and meanings while recognizing audience members' varied identities and subjectivities (e.g. Poyner, 1991; Unger, 1992). Who benefits from graphic design, however, is contested due to the fact that graphic design studios are businesses, the impetus for concept and content creation entangled in the designer-client-end-user relationship while being focused on deliverables (Forlizzi & Lebbon 2002, p. 3). Highlighting another tension within the graphic design enterprise, the leading US designer Paul Rand (1985) has described graphic design as a "twofold" enterprise requiring designers to satisfy their own aesthetic objectives while anticipating an audience response.

From the late 1990s, the graphic design field began to experience criticism from within for prioritizing aesthetic and client objectives over audience needs and wants (Frascara, 1997; Frascara, 2004; Cross, 2006; Nini, 2006; Forlizzi, Zimmerman & Evenson, 2008; Fulton Suri, 2008). Reflecting the focus of this article, the rise of web design contributed to calls for a change of perspectives and practices to include knowledge of the audience, newly referred to as "users", especially in respect to how their capacities and objectives influenced use (Buchanan, 2000; Buchanan, 2001; Davis,

2008). Crawford (2005), for example, argued that interactive media required changed thinking around user experience due to the temporal unfolding of communication. Drucker and McVarish (2009) contended that the greater number of elements influencing communication and experience in web design required designers to better understand how users might engage with media content when planning websites. Graphic designers did not significantly contribute to broad academic or practitioner debate on user needs and behaviour in web design. Veen (2001) argues that initially the sheer extent of work available from clients wanting to stake a claim in the web saw designers overwhelmed with learning the technical aspects of web design while adapting their creative strategies to the new platform. Despite web design requiring graphic designers to make decisions about the behaviour, organization, and tone of a website, their absence from debates about user-centered approaches in web design enabled the depiction of graphic design as restricted to the visual appearance of a website to the neglect of issues of use and the user to propagate and persist (e.g. Blevis, Lim & Stolterman, 2006; Forlizzi, Zimmerman & Evenson, 2008).

The evidence provided in this article demonstrates that the user is present in graphic designers' thinking. The article grows out of a study into whether the practice of graphic design has changed since the emergence of web design, having a focus on how graphic designers approach the design of the interactive components of websites. It reports on data gathered from nine graphic designers working across web and print. On analysis, the data revealed frequent unsolicited and intriguing comments on the user as a consideration in website design, including the interviewees' sense that they had good knowledge of the needs and preferences of the audience they designed for. In thinking about designing for interactivity, the designers discussed the complexity of web-based communication and the consequent need to project how people would engage with the form and content of their work. The interviewees spoke of engaging specific audiences through their designs and discussed motivating them to respond in particular ways as a main aim in designing for interactivity. At the same time, their comments revealed they worked with little or no direct knowledge of their audience, consulting or undertaking user research being revealed as a rare element of their design practice.

The article has three main sections. The first section examines the graphic design literature to establish its main positions on knowledge of the user in the design process, including the criticism that a lack of attention to this indicates graphic design's outdated perspectives and reluctance to adapt to change. This section also briefly discusses literature from Human Computer Interaction (HCI) and communication theory, which introduced concepts of the user to the graphic design field. The second section presents the research results to show how the designers in the study posit seemingly contradictory positions on their concern for and knowledge of the user. The third section discusses the significance of the designers' stance on user-

centered design and graphic design practice to consider whether speaking differently about the place of the user in the design process is a precursor to graphic designers acting differently in practice, counter to common representations of the communication design field as resistant to renewal in this respect.

Literature Review

Perspectives on the user in the graphic design literature

The appearance of the term "the user" in the graphic design literature derives from the expansion of graphic design practice to interactive and networked media, the terms audience, spectator or target market preceding it and still being widely used. The designer-client-audience triumvirate is well-established, but often problematic in the discourse of graphic design. Typically, the graphic designer is framed as working to fulfil a client-defined purpose in creating visual communications (e.g. Hollis, 2001; Meggs & Purvis, 2006; Drucker & McVarish, 2009), with the additional objective being added in some instances that design outcomes should resonate with people to motivate a response (e.g. Frascara, 1995, 2004). However, priority is unevenly distributed across this continuum. Resnick (2003, p. 17) highlights graphic designers' close relationship with clients, who provide the content and impetus for communication, by commenting that "listening to the client articulate" their intentions for a project is fundamental to design.

Building on graphic design's role as a service to clients, its literature positions designers as the arbiters of the audience to the extent that they are agents of clients (e.g. Bennett, 2002). In discussing this relationship, however, Forty (1986) argues that designers lack autonomy over the designed outcome. Yet there is also discussion in the literature of graphic designers' disdain for the influence of clients. When graphic design is perceived as too client-centric and profit-driven, sections of the graphic design literature seek to reorient its values towards higher aesthetic and conceptual aims: this sometimes includes audience needs and interests. Meggs [1983, p. ix], for example, describes graphic design as creating "a cultural legacy of beautiful form and effective communication", which if ignored risks its practice "becoming buried in a mindless morass of commercialism whose mole-like vision ignores human values and needs as it burrows forward into darkness" (Meggs & Purvis, 2006, p. x).

The graphic design literature recognises modernist graphic design as striving for truth to form and clarity of communication (McDermott, 2007; Gomez-Palacio & Vit, 2009; Davis, 2012). Bennett (2002), for instance,

emphasizes the achievements of modernist graphic designers in creating designs "intrinsically, culturally appropriate for the prospective audience". The linking of aesthetic clarity and effective communication for the benefit of audiences continues as a theme in recent writing on graphic design (e.g. Hollis, 2006; Meggs & Purvis, 2006). In the 1990s and early 2000s, however, some commentators challenged the scope for graphic designers to originate or control meaning in their work. Wide citing of Roland Barthes's 1967 essay "The Death of the Author" depicted audiences as active interpreters of the complex, culturally and socially-determined meanings inhabiting works of culture (e.g. Poynor, 1991; Lupton, 1994; Rock, 1996; Helfand; 2001; Lupton 2006). These ideas were also debated though discussion of contemporary graphic design practice. Poynor (1991), for example, took the multi-layered elements in new wave typography as acknowledging the audience as more than passive recipients of design. By contrast, Drucker and McVarish (2009) discuss new wave typography as emphasizing design authorship to the exclusion of audiences.

There is some discussion in the graphic design literature of audiences as active contributors to the production of meaning and experience (e.g. McCoy, 1995; Myerson & Vickers, 2002; Lupton, 2006; Davis, 2008). Davis (2008, p. 28), for example, describes "networked communication" as demanding "new skills in building and managing systems that have less to do with inventive form than with understanding users and technology". Discussion of design for interactive media contributed to arguments that graphic designers should design with specific knowledge of their audience. This knowledge included people's varying cognitive abilities and behaviours (Helfand, 2001; Shedroff, 2001; Frascara, 2004; Lupton, 2006; Drucker & McVarish, 2009), social diversity and differing cultural literacy (Bennett, 2002; Forlizzi & Lebbon, 2002; Davis, 2008), specific emotional, physical and social needs (Forlizzi & Lebbon, 2002; Shedroff, 2007), and shifting expectations (Forlizzi & Lebbon, 2002; Lupton, 2006; Barnum, 2010).

The call for an evidence-based approach to graphic design has initiated diverse, interwoven discussions about how this should happen. This includes discussion about the source of relevant knowledge from fields such as marketing, psychology, and social research (Buchanan, 2000; Helfand, 2001; Forlizzi & Lebbon, 2002; Hanington, 2003; Heller, 2006b; Frascara, 2004; Nini, 2006). Here, Frascara (1995) and Young (2005) acknowledge the established use of research from marketing and psychology by graphic designers to enhance the commercial impact of their work, particularly those working in advertising. By contrast, recent debate on graphic designers' need to work from knowledge of the user focuses on delivering benefits to audiences. Frascara (2007) represents the analysis and synthesis of research data as a way to ensure that design is "effective and sensitive to users, contents, and contexts" (p. 67). Discussion proposes that graphic designers make research an integral part of the design process. Hanington (2003) discusses the adoption and adaptation of varied research methods from outside design to

ultimately argue for the development of innovative methods oriented to the nature of design. Poggenpohl (2009) calls for designer-conducted research to be in-depth and systematic, extending beyond basic visual research, creative exploration and peer feedback. The literature of co-design discusses shared creativity between designers and users in the design development process. Nini (2006) contends that effective designed communications depend on the inclusion of audience members in a user-centered design process. Sanders and Stappers (2008) frame co-design as a solution to the complexity of contemporary design projects in informing designers of the cultural characteristics and diversity of audiences within the design process.

Writers propose various benefits of user research from its scope to enhance both decision-making and outcomes in graphic design (e.g. Chu, Paul, & Ruel, 2009; Cooke, 2006) and to boost designer's creativity (Storkerson, 2006) to validating design decisions in the minds of clients and end-users (Bolton & Green, 2007), thus raising graphic design's credibility as a discipline (Bennett, 2006). Davis (2008) discusses growing business recognition of design's strategic role in differentiating products and services but argues this will only endure if designers can evidence their expertise. McKerlie (2011, p.36) argues that business increasingly recognizes the importance of understanding user behaviour, appreciating that if a web experience, for example, is not "immediately relevant and meaningful, then the moment passes [and] the end user has moved on".

A section of the graphic design literature discusses why user research is rarely incorporated into projects. Oudshoorn, Rommes, and Stienstra (2004) blame commercial constraints of time and budget. Roth (1999) links communication designers' neglect of user research to the ephemeral nature of many graphic design projects. Sanders and Stappers (2008) note that despite participatory design being a major approach to the practice of user-centereddesign, it is seen as having little relevance to commercial projects, being restricted to academic research, with Cross (2004) adding that participatory design is commonly conducted with students in the designer role. Nini (2006), Forlizzi, Zimmerman, and Evenson (2008), Fulton Suri (2008), and Gothelf (2011) suggest that the strongest influence on graphic designers' work is their faith in their abilities and experience as creative thinkers and problem-solvers. Taking this further, Raisanen (2012a, 2012b) depicts research as a constraint on creativity. For Frascara (2007), however, the words "intuition" and "creativity" do a disservice to the graphic design field, portraying the designer as an "illuminated magician" (p. 62). Frascara argues that graphic designers' sense that they design intuitively is a misapprehension, intuition being a "combination of knowledge, skill, sensitivity, [and] experience that involve significant work" (ibid., p. 63).

Given the significant epistemological and methodological difficulties in investigating and conceptualizing audiences, it is understandable that the model of graphic design as an intuitive creative practice takes priority over evidence-based designing. The reception of graphic design by

audiences is little researched in practice and academia, neglecting contemporary cultural and social diversity and their associated politics of recognition (Taylor, 1994). The graphic design literature remains polarized around the issue of the need for concrete knowledge of the user; Jeon *et al.*, (2012, p. 98) claim that graphic designers are by nature "sensitive to the unique cultural and environmental aspects" of different user groups, where Frascara and Noël (2012, p. 40) argue for the need for graphic design "to be user-centered, evidence-based and results-oriented".

Perspectives on the user linked to web design

The expansion of graphic design in the 1990s to include design for screen-based media and the web exposed graphic designers to the literature of HCI and communication theory. Widely read books and articles by Norman and Draper (1986), Winograd and Flores (1986), Nielson and Rolf (1990), Laurel (1993), and Moggridge (1999) introduced the concept of the end-user and the principles of user-centered design (UCD). Communication theory proposed the idea of two-way communication in electronic media and associated concepts of meaning, message, and narrative, prominent publications here include Jensen (1996), Rafaeli and Sudweeks (1997) and Rafaeli (1988), Ha and James (1998), Downes and McMillan (2000), McMillan and Hwang (2002) and Stromer-Galley (2004).

Following Donald Norman's introduction of the term user-centered design in 1986, parts of the HCI literature discuss understanding the user as fundamental to approaching interactivity, albeit with a focus on basic functionality to reduce user frustration, words such as usable, effective, efficient, satisfying, and easy-to-learn become the main concepts in HCI's discussion of computational design. Other writers give shape to the nature of the user research in arguing that HCI's mission is to ally psychology, sociology, and computing to create digital artifacts and systems with a human focus (e.g. Winograd & Flores, 1986; Sutcliffe, 2002; Carroll, 2002; Hewett *et al.*, 2009). The emergence of web design saw the graphic design community following the discussion of the user through the HCI literature and related forums on usability and interface design. Jacob Nielson's *Designing Web Usability* (2000) and website (useit.com) were influential in positioning usability and the user at the forefront of web design. This included discussion of the role of graphic design in the context of the web. Nielsen (1999) represented graphic designers as wholly concerned with aesthetic appearance and lacking the expertise to design for usability. Although significant reduction of the early web's technical constraints has enabled design considerations to come to the fore in web design, the literature related to web design contin-

ues to question graphic designers' capacity and commitment to prioritizing the user (e.g. McGovern, 2007, 2009; Naughton, 2012).

The literatures on interaction and user experience design that emerged out of HCI in the 1990s has served as mediators between HCI and graphic design in discussing the nature and scale of people's interaction with digital environments (e.g. Shedroff, 1994; Bonsiepe, 1999; Grefé, 2000; McCarthy & Wright, 2004; Buxton, 2007; Moggrigde, 2007; Saffer, 2010). Crampton Smith, for example, describes interaction design as inherently experiential and increasingly ubiquitous, writing that it "shape[s] our every-day life through digital artefacts – for work, for play, and for entertainment" (Quoted in Moggridge, 2007, p. xi). The interaction design literature stresses that staging interaction is not simply concerned with functional outcomes, but also encompasses symbolic function (Crampton Smith quoted in Moggridge, 2007), the identification of appropriate forms of expression (Moggridge, 1999) and the meaning of digital artefacts (Rettig quoted in Saffer, 2010). A range of writers center the enterprise of interaction design on people, their goals, and the systems developed to facilitate these (Norman, 2002; Forlizzi, Zimmerman & Evenson, 2008; Saffer, 2010). Fallman (2008, p. 4), for example, defines interaction design as "an orientation towards shaping digital artifacts … with particular attention paid to the qualities of the user experience … including physical, sensual, cognitive, physical, emotional, and aesthetical issues; the relationship between form, function and content; as well as fuzzy concepts such as fun and playability." Although often focused on games development, discussion of user experience in the interaction design literature extends to visual language, linking arguments on the user in HCI to graphic design.

The scope of communication theory is broad, but at its core is the impact of technology on communication and hence audiences. The figure of the user is common in discussion of the transmission and reception of messages through digital media, where, much like HCI, notions of the user and interactivity are seen as synonymous. Steuer (1992, p. 84), for example, describes interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in realtime". Ha and James (1998, p. 461) identify five characteristics of interactivity directly related to the user, listing these as "playfulness, choice, connectedness, information collection, and reciprocal communication". Manovich (2001) relates new media to cinematic paradigms where the user is actively engaged in the interpretation and layering of meaning. McMillan and Hwang (2002) propose a typology of interactivity pertaining to the processes, features, and perceptions that invest the users of digital media, including websites, with agency through active involvement in the production of meaning, this last point being a feature of graphic designers' discussion of web design.

The addition of web design to graphic design practice through the advent of digital and networked technologies in the 1990s is a major topic in the graphic design literature. Most early writing on web design is technical in focus, comprising books and blogs describing how to build

successful websites (e.g. Siegel 1996; DiNucci, Guidice & Stiles, 1998). Written by graphic designers, and multimedia designers and developers, it discusses the aesthetic value graphic design brings to websites, design principles for web design (e.g. Seigel, 1996; DiNucci, Guidice & Stiles, 1998) and the application of the new platform to commercial projects (e.g. Veen, 2001) to the exclusion of discussion of user needs and experience. A broad graphic design literature discusses the impact of the web and screen media on graphic design (e. g. Helfand, 2001; Julier, 2000; many articles in *Emigre* magazine c.1995-2005). A mix of graphic designers and design commentators consider the future web, challenging graphic designers to discover new ways of designing for the screen (e.g. Julier, 2000; Helfand, 2001).

Such discussions have diminished over time as web design has become routine for graphic designers, the graphic design literature being more explicit in stating graphic design's contribution of the nature of digital applications. Engholm (2002), for example, discusses the important role of graphic design in forging the aesthetics of the web. Wroblewski describes graphic design as "the voice of interaction design and information architecture … communicat[ing] the importance of (and actions between) the content and actions within an application" (Quoted in Saffer 2010, p. 172). Elsewhere, however, criticism continues of graphic design's approach to design for digital applications. Locher, Overbeeke and Wensveen (2010), for example, argue that interactive experience has an aesthetic quality, but that this is a product of the texture of dynamic interactions between a user and a digital artefact in addition to the visual design of an interface. The sense of graphic designers intuitively developing the aesthetic characteristics of digital artefact or focusing remains an issue. For writers such as Blevis, Lim and Stolterman (2006) and Forlizzi, Zimmerman and Evenson (2008), graphic design in a digital context without recourse to robust user research is inherently self-limiting.

Summary and research question

The literature review has shown some contributors to the graphic design literature calling for the inclusion of user-centered design practices to better accommodate the interests, needs, situation, and wants of users in their diversity, including as a result of the emergence of web design. In examining the influences on graphic designers' thinking in approaching web design, the literature review has discussed the focus on user experience and user research in the HCI literature and the communication theory literature's framing of communication in a digital context as an active, two-way process in which users construct meaning and experience for themselves. Despite the passage of time since the emergence of the web and the focus on user needs and experience in its academic discussion, there has been little scholarly interest in how working graphic designers perceive their relationship to the user. This study is timely in showing that the user and user-centered

design are present in the thoughts of graphic designers. It is compelling in that the interviewees' comments about their sense and knowledge of the user were not directly solicited. At the same time, in investigating the interviewees' perspectives on how the web might have changed graphic design, the study found little evidence that awareness of user-centered design has changed processes in graphic design appreciably, hence the focus in the following discussion on whether graphic designers' discussion of user-centered design is evidence of change in established practice models.

Research Design and Methods

The study from which the article derives sought to understand if the experience of designing for the web and interactivity had changed designers' perspectives on graphic design. In seeing designers as discursively creating their practice, it preceded from a constructionist perspective, employing an exploratory, qualitative research design. In developing the research design, Schön's (1983) concept of 'the reflective practitioner' was to the fore. Schön places reflection at the core of design practice to argue that practitioners break from codified professional knowledge to develop tacit understanding of their professional enterprise through their daily practice. Usher (1997, p. 143), teases this out by arguing that the role of reflection on practice is "to resolve the dilemma of rigour versus relevance confronting professionals". In the study, distinguishing between theory and theory-in-action was a critical to understanding the difference between what designers say and do.

The data gathering had two components, an interview and a visualisation exercise. Each designer was firstly interviewed about their understanding of web design, interactivity, and its relationship to the graphic design enterprise. The interviews followed Kvale's (1996) schema for conversational, qualitative interviewing, which stresses that the main themes of the interview should relate to the everyday experience of the interviewee; the interview should seek rich, nuanced qualitative information; interviewees should be encouraged to provide descriptions of specific situations and action sequences of relevance to the research question; and although the interview should focus on particular themes, its character should be open to unexpected directions.

The interviews were organized into three sections: 1) examining the designers background; 2) discussing their industry experience and practice; and 3) exploring the designers' perception of designing for the web and interactivity. Some of the questions included:

How do you design for different media?
Would you describe the web as a more interactive medium than print?

Is considering interaction important in the web design process?
Do you design interactions?
Do you think web design is its own design discipline?

Designers spend a majority of their professional lives using visual forms to express ideas (Harper, 2002), the production of visual images being central to their communicative activities (Crilly, Blackwell & Clarkson, 2006). At the end of each interview, the interviewer asked each designer to visualise their idea of interactivity. There is much debate over the validity and methods of visual research. Fyfe and Law (1988), discussing the field of sociology, argue there is no agreed "methods for identifying, discriminating and counting" visual research, reasoning visual research thus lacks rigour and credibility. Hewson (1991), however, contends that despite its complexity, much can be gained from the interpretation of visual material. Indeed, Knowles and Sweetman (2004, p. 7) argue that visual materials generated by research participants can "reveal what is hidden in the inner mechanisms of the ordinary and the taken for granted."

Nevertheless, Crilly, Blackwell and Clarkson (2006) and Shedroff (2007) recommend careful planning when including visualisation in the interview process. Where the aim is to produce data of social scientific value, Newbury (2011) specifies systematic analysis to avoid researchers being seduced by images and misinterpreting their meaning. Alexander (1994) argues that analyzing visual material requires the researcher to possess an understanding of visual language, the culture in which it is generated, and the conventions of the material they are researching to identify and decode meanings. Following Crilly, Blackwell and Clarkson (2006), the visualization exercise in this research sought to enable participants to clarify their perspectives on the interview topic through a medium in which they felt comfortable. The visualizations provide an index to the analysis of the interview data while the interviews provide a context for the analysis of the visual material.

The data gathering was conducted at the designers' offices and lasted approximately 45 minutes, with the final five minutes being devoted to the visualization exercise. The first author conducted the interviews. The study was carried out with the approval of Curtin University of Technology, with due consideration of the requirement for informed consent and confidentiality.

Participants

Nine graphic designers, seven male and two female, from design consultancies in Victoria, New South Wales, Queensland, and Tasmania, volunteered to take part in the study for no financial reward. Their average age was 32 years. The participants were chosen for their active involvement in graphic design

for print media and design for the web. Effort was made to recruit designers of varied experience to gather a range of attitudes and participants practicing across advertising and graphic design, while all having worked on projects related to the web. To reflect a broad range of professional situations, effort was made to recruit designers working in their own businesses, those employed in other's design businesses, and freelance designers. A balance of female and male designers was sought, but the majority of the female designers approached declined to participate with the reason being given as a lack of time. Table 1 sets out the background of the interviewees, their education, current work, years working as graphic designers, and years of working in web design or with multimedia applications before that.

DESIGNER	AGE	EDUCATION	Area of Graphic design	BACKGROUND
Designer A Alan	35	Graphic Design	Creative Director/Owner: Graphic design Strategy – Print and Web.	15 years Graphic Design 3 years Web Design
Designer B Brian	37	Graphic design and Multimedia Design	Creative Director: Advertising and Strategy – Web and Digital Design	13 years Multimedia and Web Design
Designer C Charles	42	Graphic Design	Creative Director/Owner: Advertising and Strategy – Web and Print.	20 years Graphic Design 11 years Web Design
Designer D Dean	36	Graphic Design	Creative Director/Owner: Graphic design Strategy – Web and Print.	14 years Graphic Design 11 years Web Design
Designer E Ewan	40	Fine Art	Freelancer/Design Educator: Strategy and Design – Web and Digital Design.	17 years Graphic Design 14 years Multimedia and Web Design
Designer F Felicity	25	Graphic design	Senior Designer: Strategy and Design – Web and Digital Design	4 years Web Design
Designer G Gary	32	Industrial Design, Multimedia Design	Creative Director/Design Educator: Strategy and Design – Web and Game Design	12 years Industrial and Multimedia Design 10 years Web Design
Designer H Harry	35	Graphic Design	Creative Director/Owner: Advertising and Strategy – Web and Digital Design	14 years Multimedia and Web Design
Designer I Irene	37	Studio Art	Creative Director/Owner/Design Educator: Advertising and Strategy – Web and Digital Design	20 years Graphic Design 15 years Multimedia and Web Design

T a b l e   1

Details of participants

D a t a   a n a l y s i s

Data analysis proceeded from the perspective that how people represent things matters. This follows the position of Critical Discourse Analysis (CDA), which Vaara and Tienari (2010, p. 245) describe as "a theoretical and methodological framework that allows one to examine the constitutive role that discourses play in contemporary society." A list of high-frequency words and phrases was created from the interview data. Next, key visual concepts from the diagrams were identified and compared to the interview results, consolidating insights and enabling causal inference (Strauss & Corbin, 1998). As themes emerged, including the unanticipated thread of visual concepts

and discussion across both sets of data around the designers' sense and knowledge of the user, new sets of questions were asked of the data in an iterative approach that moved between the data and existing discussion of user-centered design from relevant literature, initiating concept formation (Ragin, 2013), which suggested evidence of a discourse on the place of the user in graphic design framed from the practice of web design.

Research Findings

The literature review identified both acceptance and criticism in the graphic design literature of graphics designers' recourse to intuition in the design process, with critics of this approach arguing that effective, responsible graphic design is audience-focused and incorporates specific knowledge of its audience. The literature includes little evidence of where most graphic designers stand on this issue or what happens in practice. Taking the interviews first, an unsolicited theme was the designers' discussion of their sense and knowledge of the user in the implementation of web design, exemplifying the value of exploratory, qualitative studies in discovering the expression of actions and ideas in practice contexts.

The majority of designers spoke at length about users' centrality to their design decisions, from concept development that considers choice of aesthetics, language, and tone to the functional behaviour and operation of websites. They ascribed themselves the role of arbiters of the user in providing users with an effective, efficient, and pleasurable experience when engaging with the websites they design, stressing their decisions are made with the best interests of end-users in mind. As set out in Table 2, the designers used various terms to refer to the user, including "audience" and "target market", the greater frequency of user suggesting knowledge of the discussion of user-centered design in relation to web design.

WORD	USER	AUDIENCE	TARGET MARKET
Frequency	83	39	9

Table 2

Frequency of use of the terms user, audience and target market

Table 3 shows the eight different contexts in which the words user, audience, and target market appeared, the main categories being "user experience" and "user testing", then "user behaviour", "user perception" and "cognition". The term audience was used less frequently. The data suggests that the designers saw themselves and their work as having a relationship to an audience, which needed to be understood in order to engage with users to produce desired outcomes. The term target market was the least used term, although the data shows its use still linked the graphic design enterprise to engaging with people.

CONTEXT	FREQUENCY		
	User	Audience	Target market
Experience	31	8	
User testing	15		
User behaviour	11		
Perception/cognition	6	2	
User profiling	5		
Communicating/connecting	4	12	8
Design innovation	4	4	
Empowerment	3	1	
Understanding the user, audience,		10	
Evaluation		2	1

Table 3

Context for the use of the
word user, audience and
target market.

Approaches to User Research

The interviews contained 74 references to methods actually or potentially used to provide knowledge of the users of a website. These references fall into three categories as shown in Table 4. The highest frequency references were to the designer intuitively projecting a sense of the audience, their needs and interests. This including office polls, the experience of practice and empathetic role-playing where the designer projected assumed characteristics of the user. This category was followed closely by references to user testing of live websites to identify any issues of use for remedial adjustment. The lowest frequency of comments referred to gathering actual data about end users. Table 4 provides counts of the references to different approaches to researching the user, with methods for collecting or applying data including focus groups, surveys, webinars, analytics, user modelling, channel planning, and prototype evaluation.

APPROACH	FREQUENCY
Designer projection: Empathy, intuition, experience of practice	34
User testing or evaluation of live websites	30
Data gathering: focus group, survey, webinars, analytics, user modelling, channel planning, prototype testing	10

Table 4

Approaches to
understanding the user.

The research revealed a disparity between the designers' sense that they knew and understood their target audience and both their knowledge and implementation of user research. Only four designers, Brian, Charles, Harry, and Irene, who each practiced web design within the context of advertising — a seeming influence over their familiarity with user research — named specific data gathering methods, making frequent reference to market research approaches. Brian, Charles, and Harry mentioned channel planning and the creation of user profiles within the design process. Harry commented:

> "One of the steps that we go through is a thing called user modeling where we think about who are the different audiences coming to the website, what do they want to achieve from a visit, and then we think about content and functionality in the context of what that user wants to achieve first and foremost."

They specified the use of factors including the age, gender, location, patterns of activity and technical acumen of predicted users in the development of hypothetical user profiles and scenarios of use in establishing key aspects of a website. It transpired, however, that the use of these design tools and research methods was not grounded in concrete research data, but rather based on assumed characteristics. Charles, for example, explained, *"What I've always done is I've considered the person I am designing for, so if I'm designing for an 80-year-old woman … [who] might want to feel secure and she may need bigger fonts. And she may not want to be frightened by the language."*

Only Irene discussed the application of user research within an actual project. Describing a complex web project with varied expected users, she explained how during its development the design team conducted "*surveys, asking 'What do you want?' Then we brought two people in from each of the four target audiences after we had built the interface. We gave them a series of tasks that we wanted the target audiences to achieve to test that they were getting what they needed."* Brian, Charles, Dean, Ewan, Felicity, Harry, and Irene all spoke positively about the value of user testing in improving overall user experience during the development of a website. Dean, for instance, remarked that *"as a methodology, we provide a decent amount of testing and are always encouraging a greater level of diligence in doing so."* However, further scrutiny of comments from Brian, Charles, Dean, Felicity, and Harry revealed such testing to be in-house evaluation in which members of the design team or other colleagues in the studio took the role of site users.

Interactivity driving a new user focus

When asked in which design field they practiced, no interviewee described themselves as graphic designers or web designers. They referred to them-

selves as thinkers, problem identifiers, and problem solvers through the combination of design and technology. Unprompted, a majority discussed how working in the context of web design had changed their awareness of the audience for their work, the dimension of interactivity introducing a focus on users' needs and preferences into their designing. Here, Brian, Charles, Dean, and Harry reasoned designing for the web had transformed the perspective on designed communications due to the awareness that people were now actively engaging with media content. Harry, for example, described the web as a lean, progressive medium with users visiting websites to accomplish a task, noting, *"It's got to be about the end user on the web. The second it's not about them is the second they'll go somewhere else … on TV, you're getting free content in return for watching ads. If the web's not about the user, it's like watching ads without getting your favourite TV show."*

A number of interviewees argued that their perspectives on knowledge of user needs, preferences, and behaviours differentiated them from designers working with print, the dimension of interactivity making them more accountable to an audience for their design. Ewan nominated the web as the catalyst that had elevated graphic design to that of communication design, an expanded field of practice with more complex expectations. Harry believed that graphic designers working with print *"don't have that empathy for usability; they're thinking about the aesthetics rather than communicating through design and functionality."* Charles saw that when working in the fluid environment of the web, his focus on the user was integral to building brand loyalty in ways not previously explored in graphic design for print or traditional broadcast media, commenting that *"the worst thing you can do is to motivate someone to act, but you don't give them an outlet to act … What we do in [web] design is to help the user to take the next step and continue the relationship."*

User-centered design driving innovation

All nine designers saw themselves as forward thinkers who delivered innovative designs. Their remarks on innovation suggest how the discourse of the user has changed perspectives in graphic design. Mention of the user made them the beneficiary of innovation, where if the designer linked innovation to their own creativity and ingenuity, no benefits for the user were stated, the focus rather being on creative invention and problem-solving for clients, often spurred by working within project constraints. Table 6 sets out the designer's perceptions of the sources and effects of innovation in their work.

DRIVERS OF INNOVATION	DESIGNERS' COMMENTS	VALUE FOR THE USER
The user	Does the client trust you to come up with concepts that are innovative and shape the relationship with the user? (Brian)	Engaging
The user	… innovation comes from considering the user, what they need. Innovation comes from that. (Charles)	Enabling
The user	… you don't want to have innovation for its own sake. Like, innovation is only useful if it brings you [the user] closer to your goal. (Harry)	Enabling
The user	Sometimes innovation means doing things in a completely new way and takes us out of our comfort zone … or if you can come up with some innovative way of improving navigation that still utilizes people's familiarity. (Harry)	Enabling
Designer invention	I think that innovation and creativity is important and should be part of every design process and I really like to start every process with a blank page questioning what can we really do. (Dean)	Not specified
Designer creativity	Something we hope to do at this place is do some research and innovative thinking without any client in mind. Sometimes I feel that I draw on previous things and mash them up in a new form … if you combine existing things that's when innovation starts. (Brian)	Not specified
Designer creativity	From a technology point of view, I'd say we are very innovative … it's business communications that is essentially our business and we reserve a portion of our resources to do exploratory stuff [that] filters into our commercial jobs. (Dean)	Not specified
Designer creativity	The generation of ideas comes from us and we are the innovators. You can't always ask the audience what they want because they can't always see what's coming, where we can. (Harry)	Heightened outcomes
Ingenuity around project constraints	Some [projects] can be quite innovative, some of the ones with lower budgets. (Ewan)	Not specified

Table 5

Drivers of innovation

Visualizing interactivity and the user within web design

Eight of the nine designers represented the user in some way in their diagrams, echoing discussion of the user in the interviews. In focusing on nature and process of web design, the diagrams suggest some level of awareness of concepts from HCI on the priority of the user in interaction and from communication theory on how the interactive aspect of digital communications has changed the agency and experience of audiences. The two-way arrow in Alan's diagram (Figure 1) suggests the ideas of reciprocal communication and information flow in interactivity as well as the con-nectivity between media platform, media content, and the user. Suggesting the discussion of interactivity in the HCI and Interaction design literatures,

Brian's diagram (Figure 2) represents the intermingling of user's individual goals, expectations, and experience during engagement with a website.
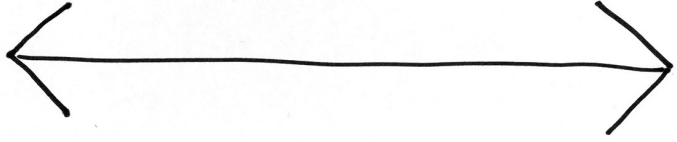
excitement

interactivity

anticipation

reward
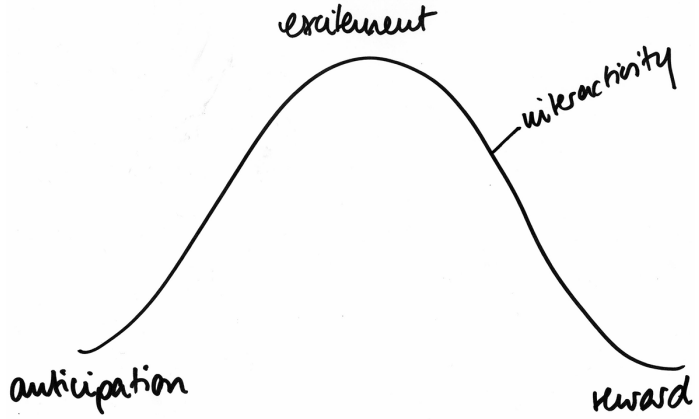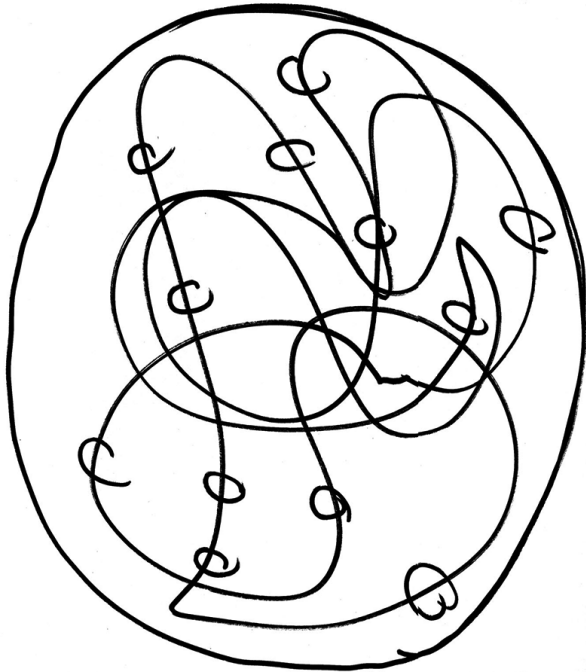
Charles's diagram (Figure 3) suggests the agency of people interacting with technology by visualizing the number of encounters that can potentially take place within a digital environment and the diffuse relations between these. Dean's diagram (Figure 4) represents how an interactive experience can connect and engage the user in the act of communication.

Dean's diagram of interactivity within web design
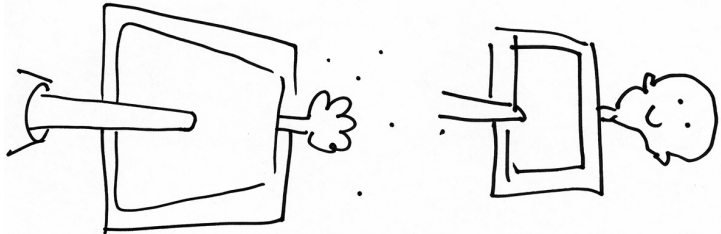
Ewan's diagram of interactivity within web design
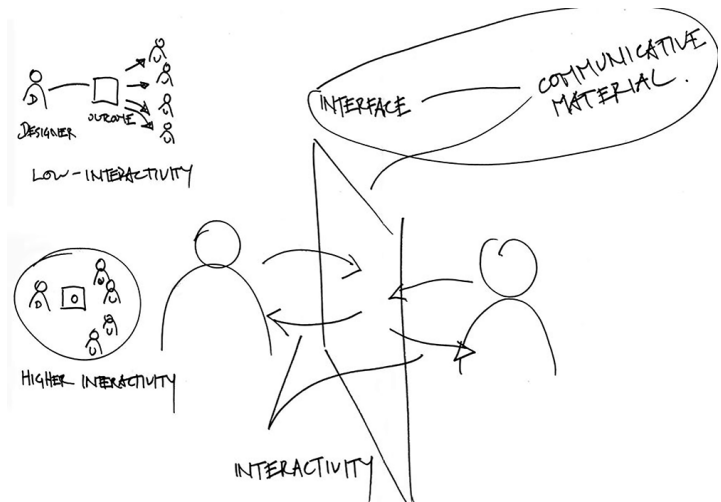
Ewan's diagram (Figure 5) depicts three models of interactivity within web design in which the user is a clear presence in the process of design for interaction. The main diagram represents interactivity as a backwards and forwards process of interaction via a screen interface, similar to definitions found in communication theory. The two additional diagrams compare high and low levels of interactivity, with clear differentiation between the role of the designer and the user, who are labelled "D" and "U". Felicity's diagram (Figure 6) evokes concepts of interactivity from communication theory, such as Stromer-Galley's (2004) representation of interactivity as a distinct phenomenon that transpires between people and technology and between people facilitated by technology. Gary's diagram (Figure 7) represents interactivity as a user-centered process shaped by human factors.

Figure 6

Ewan's diagram of
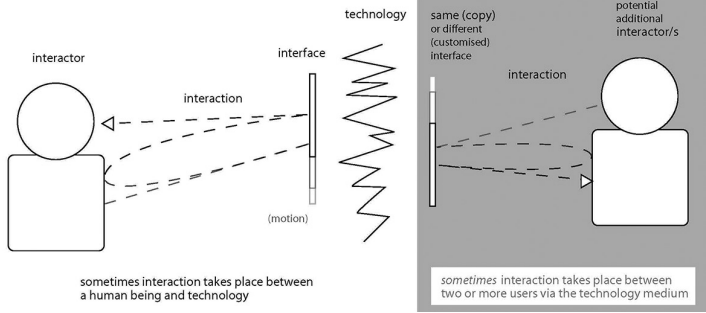interactivity within web
design

Figure 7

Gary's diagram of
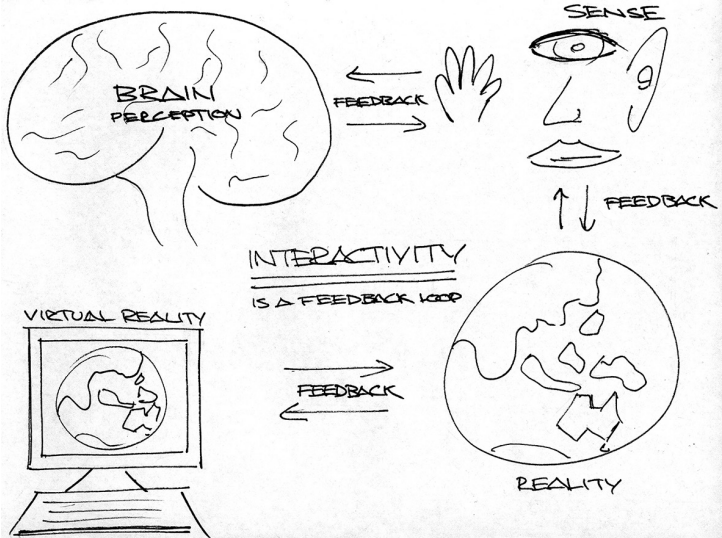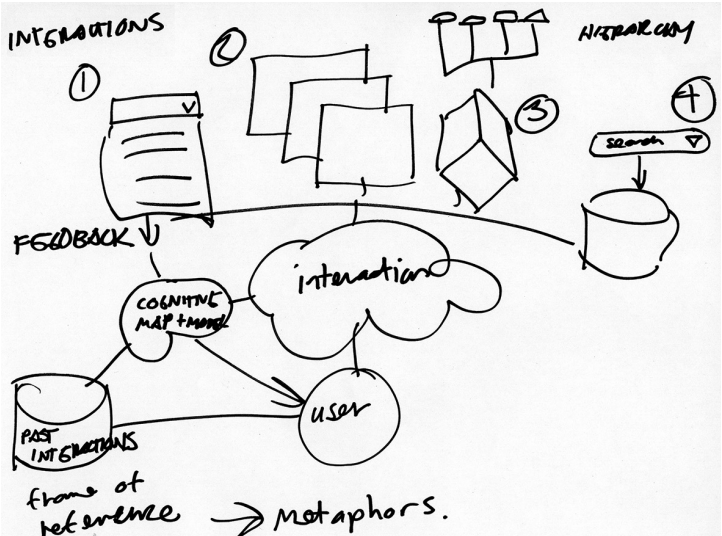interactivity within web
design

Figure 8

Harry's diagram of
interactivity within web
design

Harry's diagram (Figure 8) includes a depiction of a sitemap — a visualisation tool born of website development — to represent the elements that constitute interactivity; his drawing including the user, their cognition and previous experience as well as the role of user feedback in website development. Irene's diagram (Figure 9) depicts the multiple contributions from different stakeholders that inform the design process, highlighting the complex network of constraints, interests, objectives, and processes that comprise website design. Reflecting Irene's detailed discussion of user research in her interview, her diagram is the only one to include specific reference to user research as a component of the process of website design although both Gary (Figure 7) and Harry (Figure 8) allude to its place in the design process. Harry and Irene's drawing (Figures 8 & 9) depict the complexity of web design projects and the range of design tools needed to accommodate the characteristics, needs, and preferences of a target audience. Ewan's drawing (Figure 5) suggests knowledge exchange and possibly co-creation between designers and users.
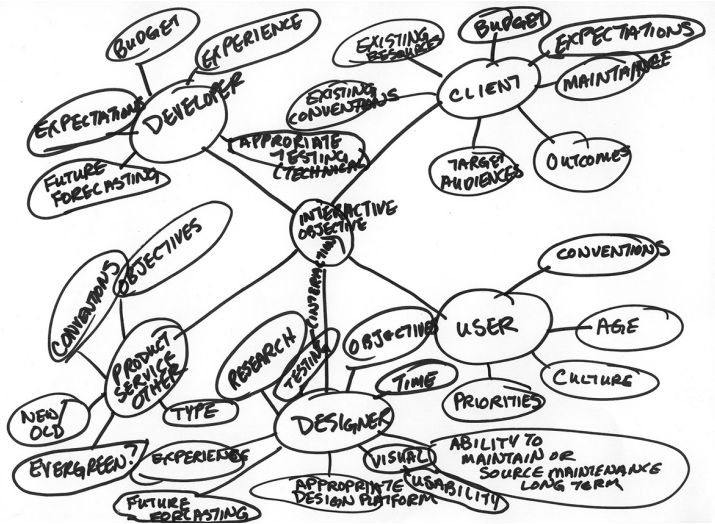
Some of the designers who give physical form to the user give a level of detail in their drawing that includes varied characteristics of the user and the different dimensions of user experience. Brian recognises users' emotions (Figure 2). Gary gives the user identifiable features that make reference to cognition and the senses (Figure 7). Dean's diagram (Figure 4) depicts users' agency and presence within interaction, suggesting these have a measure of power. Ewan and Felicity use featureless, generic figures to represent the user (Figures 5 & 6), but the user remains a dominating presence in the design process in their drawings, suggesting awareness of the requirement to give consideration to user needs in web design.

Discussion

The field of critical discourse analysis holds that dominant discourses drive how people think, talk, and act (e.g. Fairclough, 2003; Wodak, 2004; Blommaert, 2005). In recent times, the discourse of user-centered design and its key concepts of the user and user research have achieved broad currency in design debate, although our review of relevant literature shows that this is to a limited extent in graphic design. Discussion of the user in our data does not indicate comprehensive adoption of research-driven, user-focused designing in graphic design. Moreover, our findings show that the linked ideas of intuitive creativity and problem-solving are also present in the interviewee's comments, these being enduring concepts having been constituted in and through countless instances, commentary, and contexts over time to be normalized in graphic design. As such, the research findings show competing discourses to be acting on graphic designers' thinking, the discourse of user-centered becoming more relevant to graphic designers through the expanded context for graphic design practice, web design providing a strong sense of interaction between media content and the audience for design in generating different practical challenges and discursive positions from designers.

The question to ask of the research findings is whether this duality, born of the rhetorical practice of consciousness-raising within the broad design literature, represents an uncritical construction of user-centeredness and lip service to the need for and actuality of its practice or whether it is evidence of an important shift away from the paradigm of designer-led, client-focused intuitive designing. Here it is important to stress the workings of discourse. The research findings could suggest that normality has been open to a measure of change given the evidence of these designers discussing the user and the imperative to establish knowledge of their needs and preferences. Or perhaps nothing has changed. As much as the interviewees discuss the user, they also use appeals to common sense in respect of the challenges of working within everyday practice constraints to restore priority to the model of the designer as the arbiter of the user guided by intuitive creativity.

A main argument for researching users' capacities, needs, and situation is to prompt empathy in designers to achieve relevant, sensitive, and inspired design (Fulton Suri 2003; McDonagh 2008). Yet Banks and Deuze (2006) equally stress designer's sense of ownership over creativity. Of the nine designers, Dean, Harry, and Irene discussed market research in the web design process but simultaneously stressed the importance of measuring this in design through tacit understanding informed by personal experience. Here, Dean observed that *"we have to rely on our own experiences and be confident that we're making certain decisions that are going to be*

right … sometimes you have to run with a hunch." Brian, Charles, Dean, Ewan, Harry, and Irene all reported that if there were time in a project to conduct research, they tried to do so, but they qualified this in asserting that research can only guide the design process to an extent, with creativity and intuition also being important contributors to design.

In exercising a degree of intellectual legerdemain, some interviewees merge knowledge of the needs, preferences, interests, and situation of the user with the exercise of designer intuition. Harry, for example, linked user-centered design to:

> *"being able to look at something and imagining that I'm my mother or my father or somebody else and thinking 'Well what am I looking at? What are my options here? Does it make any sense? Is there anything I can compare this to in the real world that I've used before that is going to help me use it? What would I do next?'"*

Dean exaggerates the burden of user-centered design in commenting *"If you stopped and tested every single aspect of the site, you would never get anywhere."* He restores authority to the designer when he then states that designers need to exercise intuition to develop designs that do not just satisfy users' needs and preferences but rather push beyond these limits to advance user knowledge and behaviour. These comments suggest Schön's (1983) concept of a reflective approach to practice. For Schön (Ibid., pp. 68-9), where the practitioner "reflects-in-action, they immediately become a researcher in the practice context" to construct new knowledge. Yet it is arguable whether intuitive designing of the type described in the interviews creates added value for the user or more represents a public-private dialogue within graphic design practice based on self-persuasion.

Fairclough (2000, p. 28) argues that discourse has three roles within text and speech; it represents ideologies, enables identification, and authorizes action. Each of these effects is present in our data. The designers instantiate the ideology of user-centered designing by discussing it, grafting it onto their professional identity, showing it to motivate changed practices in some cases and a measure of reflection on the nature of graphic design, its principles and methods, in others. However, equally inscribed in the research findings is evidence of competition for authority and legitimacy between the new discourse of user-centered design and the established one of the role of intuitive creativity in design. The value of designer creativity has given added impetus from sources such as Richard Florida's book *The Rise of the Creative Class* (2002), which champions the importance of creative and knowledgeable workers who generate "economic value through their creativity" (p. 68). Competing with the discourse of user-centered is the influence of the experience of practice which the designers' comments show to revolve around many small, individual problem-solving acts that affirm the professional experience and identity of the designer.

The future of user-centered design in graphic design depends

on its success in moving from the discursive level to the sphere of practice. Fairclough (2003, p. 41) argues that 'dialogicality' in speech and text — the presence of opposing views and qualifying terms — indicates a lack of commitment to any one idea. Counterposed against the 65 explicit comments in the interviews discussing the importance of identifying and fulfilling users' requirements, the designers also discuss incompatibilities between user-centered approaches and established graphic practice. The idea of more inclusive designing, which includes user research and the brokering of alternative perspectives, sees the interviewees discursively balancing the value and ethics of admitting more stakeholders into the design process against the prospect of a loss of creative authority and control.

This dilemma is not restricted to graphic design. It also occurs in other design fields such as industrial design and architecture where Stolterman (2008) notes a discrepancy between practice and theory about the inclusion of user research. Brian, Charles, Dean, Gary, and Harry endorse the omission of the user from the design process on the basis that fulfillment of the user's immediate requirements could limit a designer's creativity and constrain design outcomes. Hosing down arguments for user-centered design, Harry comments *"You can gain insights from … research and feedback around usability issues and communication issues, but I don't believe you should use that sort of work to generate ideas."* Brian also represents the user as a barrier to innovation in the design process stating, *"It's hard when you … put the users at the center … it's very hard to innovate because the average person replicates their knowledge and applies what they already know and things that are common … if you want to change things you can't test everything and put the ordinary user at the center."* Ultimately, the designers interweaving of the discourses of user-centered and intuitive, expert designing constructs a paradoxical rhetorical position that puts graphic designers above audience members, obviating the need for research into actual users. "User testing", for example, is described as often involving colleagues, some of the interviewees arguing that designer's inherent empathy for people's physical, cognitive, and emotional needs allows them to perceive a website from a user's perspective.

For Brian, design evaluation that checks whether a website matches user needs and responses is done within the studio because designers are *"the best users"*. Such inverted identification with the discourse of user-centered design also sees some of the interviewees describe designers as better disposed towards understanding peoples' physical, cognitive, and emotional needs than other stakeholders in the design process, notably clients and marketers. Irene, for example, comments, *"you have to really understand the audience and you can't always rely on the client – it's amazing how many clients don't know their own audience".* Charles similarly states, *"I am still amazed at how some marketing people don't really understand their audience. They're more concerned about their budget, their boss, the share price and how much work they've got to do."* Such comments expose a set of professional

power relations that underlie graphic design practice, seeing the graphic designers seeking to discursively legitimate their authority and value, even if this does not always equate with the expression of power and authority in reality.

Conclusion

Principles of user-centered design reflect changing community attitudes to inclusion, participation, and consultation in diverse aspects of life. However, the references to the user and user research in the comments and drawings provided by the nine designers in this study show that its uptake in graphic design is limited at best. Yet the research also suggests the ambivalent self-persuasion of graphic designers today as they navigate between established ideas of graphic design and the significant changes brought to graphic design practice through the emergence of web design. The research findings indicate that the main priority for graphic designers remains meeting client needs through the application of their creative intuition, a faculty based on the experience of practice. It was not foreseen that the interviews and visualisation exercises would elicit a significant body of comments on the topic of user-centered design, the unsolicited nature of these references suggesting that the discourse of user-centered design has genuinely filtered down to the practice level of graphic design even if the matter of the user is mostly acknowledged in the abstract.

In the graphic design literature, criticism of a lack of attention to the needs and preferences of the user comes from design scholars who contest the efficacy and ethics of how graphic designers practice. Criticism is important to changing intellectual frameworks and practices, but the findings reported here suggest that discussion surrounding user-centered design has had an impact, and the principles governing graphic design practice have been opened up to reconsideration. Criticism can have negative as well as positive effects, its discursive features being shaped by the motivating crisis it seeks to identify and address. It may be that in discussing the place of the user in web design in relation to interactivity, the interviewees were consciously-unconsciously deflecting the need for changes in practice and discursively re-inscribing the authority of the status quo. In advocating for the end-user, the critique of intuitive designing requires a more complex, nuanced, and balanced account of the forces shaping graphic designers' practice.

Given our findings, specific research is needed into the application of user-centered design in various design genres within graphic design practice and its relationship to the identity and actions of graphic designers. Future studies should directly address the duality of thought represented by designers interviewed for this study, exploring whether they perceive the

user-centered design trend as a useful marketing tool or a specific and valuable addition to practice. A future study would include a larger sample of designers, specifically female designers. In addition to specific research into the application of user-centered design in graphic design practice, our findings indicate the need for case studies on the practical benefits and challenges in applying user-centered processes in industry practice. Case studies involving systematic observation and documentation of practice might have more scope to influence practice in facilitating knowledge transfer. In the age of the "prosumer" and user-generated content, the matter of user-centered design will be an ongoing battleground for authority and legitimacy in graphic design. Our article reveals the trace of this new cultural politics as an evident tension in the thinking of the contemporary graphic designer.

References

Alexander, V. (1994). The Image of Children in Magazine Advertisements from 1905 to 1990. *Communication Research*. 21(6), 742–765.

Banks, J. Deuze, M. (2009). Co-Creative Labour. *International Journal of Cultural Studies*. 12(5), 419–31.

Barnum, A. (2010). These are the days. In G. Grant (Ed.), *BBetween*. Sydney, Australia: Billy Blue College of Design, 3, 79–80.

Barthes, R. (1977). *Image, music, text*. London: Fontana.

Bennett, A. (2002) Interactive aesthetics. *Design Issues*, 18(3), 62–69.

Bennett, A. (2006). The rise of research in graphic design. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 14–23). New York: Princeton Architectural Press.

Blevis, E., Lim, Y. K., & Stolterman, E. (2006). *Regarding software as a material of design*. Paper presented at the Wonderground, Lisbon, Portugal.

Blommaert, J. (2005). *Discourse: A critical introduction*. Cambridge: Cambridge University Press.

Bolton, S. & Green, L. (2007). Getting design off the substitute bench: Reframing and realigning design processes for the business development game. *Emerging Trends in Design Research*. International Association of Societies of Design Research, The Hong Kong Polytechnic University School of Design.

Bonsiepe, G. (1999). *Interface: An approach to design*. The Netherlands: Jan van Eyck Academie.

Buchanan, R. (2000). Good design in the digital age. *AIGA Journal of Design for the Network Economy*, 1(1), 5.

Buchanan, R. (2001). Design research and the new learning. *Design Issues*, 17(4), 3–23.

Buxton, W. (2007). *Sketching user experiences: Getting the design right and the right design.* San Francisco, CA: Morgan Kaufman.

Carroll, J. M. (Ed.). (2002). *Human-Computer Interaction in the New Millennium.* New York: ACM Press.

Chu, S., Paul, N., & Ruel, L. (2009). Using eye tracking technology to examine the effectiveness of design elements on news websites. *Information Design Journal*, 17(1), 31–43.

Cooke, M. (2006). Design methodologies: Toward a systematic approach to design. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 130–146). New York: Princeton Architectural Press.

Crawford, C. (2005). *Chris Crawford on interactive storytelling*. Berkeley, CA: New Riders.

Crilly, N., Blackwell, A.F. and Clarkson, P.J., (2006). Graphic elicitation: using research diagrams as interview stimuli. *Qualitative Research*, 6 (3): 341–366.

Cross, N. (2004). Expertise in Design: An overview. *Design Studies*, 25(5), 427–41.

Cross, N. (2006). *Designerly ways of knowing*. London: Springer.

Davis, M. (2012). *Graphic design theory*. London: Thames and Hudson.

Davis, M. (2008). Toto, I've Got a Feeling We're Not in Kansas Anymore … . *Interactions,* 15(5), 29–34.

De Vries, J. (2010). Stuck for words. In G. Grant (Ed.), *BBetween*. Sydney, Australia: Billy Blue College of Design, 3, 34–35.

Dexel, W. (1999 [1927]). What is new typography? Reprinted in Bierut, M, Helfand, J, Heller, S & Poyner, R (Eds.), *Looking closer 3: Classic writings on graphic design* (pp. 32–34). New York: Allworth Press.

DiNucci, D., Guidice, M., & Stiles, L. (1998). *Elements of web design* (2nd ed.). Berkeley, CA: Peachpit Press.

Downes, E.J., & McMillan, S. (2000). Defining Interactivity: A Qualitative Identification of Key Dimensions. *New Media & Society,* 2(2), 157–179.

Drucker, J., & McVarish, E. (2009). *Graphic design history: A critical guide.* Upper Saddle River, NJ: Pearson Prentice Hall.

Engholm, I. (2002). Digital style history: the development of graphic design on the internet. *Digital Creativity*, 13(4), 193–211.

Fairclough, N. (2000). *New labour, new language?* London: Routledge.

Fairclough, N. (2003). *Analysing Discourse: Textual analysis for social research.* London: Routledge.

Fallman, D. (2008). Triangles of Design Practice, Design Studies, and Design Exploration. *Design Issues*, 24(3), pp.4–18.

Florida, R. (2002). *The rise of the creative class*. New York: Basic Books.

Forlizzi, J., & Lebbon, C. (2002). From formalism to social significance in communication design. *Design Issues*, 18(4), 3–13.

Forlizzi, J., Zimmerman, J., & Evenson, S. (2008). Crafting a place for interaction design research in HCI. *Design Issues*, 24(3), 19–29.

Forty, A. (1986). Design, Designers and the Literature of Design. In A. Forty (Ed.) *Objects of Desire: Design and Society since 1750* (pp.241–245). New York: Thames and Hudson.

Frascara, J. (1995). Graphic design: Fine art or social science? In V. Margolin & R. Buchanan (Eds.), *The idea of design* (pp. 44–55): MIT Press.

Frascara, J. (Ed.). (1997). *User-centeredgraphic design: Mass communications and social change.* London: Taylor & Francis.

Frascara, J. (2004). *Communication design: Principles, methods and practice.* New York: Allworth Press.

Frascara, J. (2007). Hiding lack of knowledge: Bad words in design education. *Design Issues*, 23(4), 62–68.

Frascara, J. & Noël, G. (2012). What's missing in design education today? *Visible Language*, 46:1/2, 37–53.

Fulton Suri, J. (2003). Empathic design: user experience in product design. In I. Koskinen, K. Battarbee, and T. Mattelmäki (Eds.), *Empathic*

design: Informed and inspired by other people's experience (p.52). Helsinki, Finland: IT Press.

Fulton Suri, J. (2008). Informing our intuition design research for radical innovation. *Rotman Magazine*, 52–57.

Fyfe, G., & Law, M. (1988). *Picturing Power: Visual Depiction and Social Relations.* London: Routledge.

Gomez-Palacio, B., & Vit, A. (2009). *Graphic design, referenced: A visual guide to the language, applications, and history of graphic design.* Mass.: Rockport.

Gothelf, J. (2011). *Demystifying design.* A List Apart, 335. Retrieved December 15, 2011, from http://www.alistapart.com/articles/demystifying-design/

Grefé, R. (2000). *(Form + content + context) ÷ time = experience design.* New York: AIGA.

Ha, L., & James, L. (1998). Interactivity reexamined: a baseline analysis of early business web sites. *Journal of Broadcasting & Electronic Media*, 42(4), 457–474.

Hanington, B. (2003). Methods in the making: a perspective on the state of human research in design. *Design Issues*, 19(4), 9–18.

Harper, D. (2002). Talking about Pictures: A Case for Photo Elicitation. *Visual Studies*. 17(1), 13–26.

Helfand, J. (2001). Screen: Essays on graphic design, new media, and visual culture. New York: Princeton Architectural Press.

Heller, S. (2004). *Design Literacy: Understanding graphic design*, (2nd ed), Allworth Press, New York, 2004.

Heller, S. (2006a). Where's the criticism?. In M. Bierut, W. Drenttel & S. Heller (Eds.), *Looking closer five: Critical writings on graphic design* (pp. IX–XI). New York: Allworth Press.

Heller, S. (2006b). Better skills through better research. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 10–13). New York: Princeton Architectural Press.

Hewett, T., Baecker, R., Card, S., Carey, T., Gasen, J., Mantei, M., Verplank, W. (2009). *ACM SIGCHI Curricula for Human-Computer Interaction*. Retrieved 24 October 2011 from http://old.sigchi.org/cdg/

Hewson, R. (1991). Deciding Through Doing: The Role of Sketching in Typographic Design. *ACM SIGCHI Bulletin* 23(4), 39–40.

Hollis, R. (2001). *Graphic design: A concise history*. (2nd ed.). London: Thames and Hudson.

Hollis, R. (2006). *Swiss graphic design: The origins and growth of an international style 1920–1965*. New Haven, CT: Yale University Press.

ICOGRADA. (2008). Leading Creatively. Defining the Profession. Retrieved 21 January 2012, from http://www.icograda.org/about/about.htm

Jensen, J.F. (1996). *Mapping the web: A media typology for information traffic patterns on the internet highway.* Paper presented at the WebNet96, San Francisco.

Jeon, J., White, R., Hunt, R., Cassano-Piché, A. & Easty, A. (2011, March). Optimizing the design of preprinted orders for ambulatory chemotherapy: Combining oncology, human factors, and graphic design. *Journal of Oncology Practice*, 97–103.

Julier, G. (2000). *The culture of design*. London: SAGE Publications.

Kepes, G. (1999 [1949]). Function in modern design. Reprinted in Bierut, M, Helfand, J, Heller, S & Poyner, R (Eds.), *Looking closer 3: Classic writings on graphic design* (pp. 98–103). New York: Allworth Press.

Knowles, C. & Sweetman, P., (2004). Introduction. In Knowles, C. and Sweetman, P. (Eds.), *Picturing the Social Landscape: Visual Methods and the Sociological Imagination* (pp.1–17). London: Routledge.

Kvale, S. (1996). Interviews: *An introduction to qualitative research interviewing.* Thousand Oaks, CA: SAGE.

Laurel, B. (1993). *Computers as theatre.* Reading, Massachusetts: Addison-Wesley.

Locher, P., Overbeeke, K. & Wensveen, S. (2010). Aesthetic interaction: A framework. *Design Issues,* 26(2), pp.70–79

Lupton, E. (1994). Low and high: Design in everyday life. In M. Bierut, W. Drenttel, S. Heller & D.K. Holland, (Eds.), *Looking closer: Critical writings on graphic design* (pp104–108). New York: Allworth Press.

Lupton, E. (2006 [2004]). The Birth of the User. In M. Bierut, W. Drenttel & S. Heller (Eds.), *Looking closer five: Critical writings on graphic design* (pp.23–25). New York: Allworth Press.

Manovich, L. (2001). *The language of new media*. Cambridge, Mass.: MIT Press

McCarthy, J., & Wright, P., (2004). *Technology as experience*. Boston, MA: MIT Press.

McCoy, K. (1995). Graphic Design in a Multicultural Word. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 200–205). New York: Princeton Architectural Press.

McDonagh, D. (2008). Do it until it hurts! Empathic design research. *Design Principles and Practices: An International Journal*, 2 (3), 103–11.

McDermott, C. (2007). *Design: The key concepts*. New York: Routledge.

McGovern, G. (2007, 2009). *Gerry McGovern*. Retrieved 2010–2012, from http://www.gerrymcgovern.com/

McKerlie, D. (2001). Keynote II: User Centered design for the Mobile Web. *Procedia Computer Science,* 5, 36–37

McMillan, S., & Hwang, J.S. (2002). Measures of perceived interactivity: An exploration of the role of direction of communication, user control, and time in shaping perceptions of interactivity. *Journal of Advertising*, 31(3).

Meggs, P., & Purvis, A. (2006). *Megg's history of graphic design* (4th ed.). Hoboken, N.J.: John Wiley & Sons, Inc.

Moggridge, B. (1999). Expressing experiences in design. *Interactions* (July/August), 17–25.

Moggridge, B. (2007). *Designing interactions*. Cambridge, Mass: MIT Press.

Myerson, J. and Vickers, G. (2002). *Rewind 40 years of design and advertising*. London: Phaidon.

Naughton, J. (2012). *Graphic designers are ruining the web*. The Guardian. Retrieved May, 2012 from http://www.theguardian.com/technology/2012/feb/19/john-naughton-webpage-obesity.

Newbury, D. (2011). 34 Making Arguments with Images: Visual Scholarship and Academic Publishing. In Margolis, E. & Pauwels, L. (Eds.), *The SAGE handbook of visual research methods* (pp. 651–677). London: SAGE Publications Ltd.

Nini, P.J. (1996). What graphic designers say they do. *Information Design Journal*, 8, 181–188.

Nini, P.J. (2006). Sharpening one's axe: Making a case for a comprehensive approach to research in the graphic design process. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 117-129). New York: Princeton Architectural Press.

Nielson J., & Rolf, M. (1990). *Heuristic evaluation of user interfaces*. Paper presented at the Proceedings of the SIGCHI conference on Human factors in computing systems: Empowering people, Seattle, Washington, United States. Retrieved April 18, 2009, from http://www.useit.com/papers/heuristic/heuristic_list.html

Nielson, J. (1999). *When Bad Design Elements Become the Standard*. Retrieved 16 September 2011 from http://www.useit.com/alertbox/991114.html

Nielson, J. (2000). *Designing web usability: The practice of simplicity*. Indianapolis: New Riders.

Norman, D., & Draper, S. (Eds.) (1986). *User centered system design: New perspectives on human-computer interaction*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Norman, D.A. (2002). *The Design of Everyday Things.* New York. Basic Books.

Oudshoorn, N., Rommes, E., & Stienstra, M. (2004). Configuring the user as everybody. *Science, Technology, & Human Values*, 29(1), 30–63.

Poggenpohl, S. (2009). Time for change: Building a design discipline. In Poggenpohl, Sharon and Keiichi Sato, *Design Integrations: Research and Collaboration* (pp. 3–22). Bristol, UK: Intellect.

Poyner, R (1991). Type and deconstruction in the digital era. In M. Bierut, W. Drenttel, S. Heller and D.K. Holland (Eds.), *Looking closer: Critical writings on graphic design* (pp. 83–88). New York: Allworth Press.

Rafaeli, S. (Ed.). (1988). *Interactivity: From new media to communication*. Newbury Park, CA: Sage.

Rafaeli, S., & Sudweeks, F. (1997). Networked interactivity. *Journal of Computer Mediated Communications*, 2(4).

Ragin, C. C. (2013). *The comparative method: Moving beyond qualitative and quantitative strategies: with a new introduction*, Oakland, CA: University of California Press.

Raisanen, M. (2012a). To connect with consumers, ditch the focus groups. Try acting instead. *Co.Design Weekly*. Retrieved 19th June, 2012, from http://www.fastcodesign.com/1670049/to-connect-with-consumers-ditch-thefocus-groups-try-acting-instead

Raisanen, M. (2012b). To innovate, you have to stop being a slave to data. *Co.Design* Weekly. Retrieved 19th June, 2012, from http://www.fastcodesign.com/1669090/to-innovate-you-have-to-stop-being-aslave-to-data

Rand, P. (1985). *A designer's art*. New Haven & London: Yale University Press.

Resnick, E. (2003). *Design for Communication: Conceptual graphic design basics.* Hoboken, New Jersey: John Wiley & Sons.

Rock, M. (1996, Spring). The designer as author. *Eye*, 20. Retrieved April, 2012, from http://www.eyemagazine.com/feature/article/the-designer-as-author.

Roth, S. (1999). The State of Design Research. *Design Issues*, 15(2), 18–26.

Saffer, D. (2010). *Designing for interaction: Creating smart applications and clever devices*. Berkeley, CA: New Riders.

Sanders, E. B.N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign* 4(1), 5–18.

Schön, D. A. (1983). The Reflective Practitioner, Basic Books, New York.

Shedroff, N. (1994). *Information interaction design: A unified field theory of design.* Retrieved March 23, 2008, from http://www.nathan.com/thoughts/unified/3.html

Shedroff, N. (2001). *Experience design 1*. Indianapolis, Indiana: New Riders.

Shedroff, N. (2007). *Putting people first*. Core 77. Retrieved August 30, 2010, from http://www.experientia.com/blog/nathan-shedroff-on-making-meaning/

Siegel, D. (1996). *Creating killer websites: The art of third-generation site design.* Indianapolis, Indiana: Hayden Books.

Steuer, J. (1992). Defining virtual reality: dimensions determining telepresence. *Journal of Communication*, 42(4), 73–93.

Stolterman, E. (2008). The Nature of Design Practice and Implications for Interaction Design Research. *International Journal of Design,* 2(1), 55–65.

Storkerson, P. (2006). Communication research: Theory, empirical studies, and results. In A. Bennett (Ed.), *Design studies: Theory and research in graphic design* (pp. 158-178). New York: Princeton Architectural Press.

Strauss, A. & Corbin, J. (1998). *Basics of qualitative research*, (2nd ed.). Thousand Oaks, CA: SAGE.

Stromer-Galley, J. (2004). Where interactivity resides. *The Information Society*, 20, 391–394.

Sutcliffe, A. (2002). On the effective use and reuse of HCI knowledge. In J. M. Carroll (Ed.), *Human-computer interaction in the new millennium* (pp.3–29). New York: ACM Press Books.

Taylor, C. (1994). *Multiculturalism: examining the politics of recognition*. Princeton, NJ: Princeton University Press.

Unger, G. (1992). Legible? In M. Bierut, W. Drenttel, S. Heller and D.K. Holland (Eds.), *Looking closer: Critical writings on graphic design* (pp. 108–114). New York: Allworth Press.

Usher, R. (1997). Textuality and Reflexivity in Educational Research in D. Scott and

R. Usher (eds.), Understanding Educational Research, Routledge, London, p. 33-52.

Vaara, E. & Tienari, J. (2010). Critical discourse analysis. In Mills, A.J., Durepos, G. & Wiebe, E. (Eds.), *Encyclopedia of Case Study Research* (pp. 245–248). Thousand Oaks, CA: SAGE Publications.

Veen, J. (2001). *The art and science of web design*. Indianapolis, Indiana: New Riders.

Winograd, T., & Flores, F. (1986). *Understanding computers and cognition*. Norwood, NJ: Ablex Publishing Corporation.

Wodak, R. (2004). Critical discourse analysis. In C. Seale, G. Gobo, J. F. Gubrium and D. Silverman (Eds.), *Qualitative Research Practice* (pp. 197–213). London: Sage.

Young, A.S. (2005). *A genealogy of graphic design in Victoria.* (PhD), RMIT University, Melbourne.

A u t h o r s

•••••
Dr Nicole Wragg (PhD Curtin 2013) is a Senior Lecturer at Swinburne University of Technology and Program Director of Design, Media and Communication programs at Swinburne Online. At Swinburne University of Technology, Nicole teaches in the final year of the Bachelor of Design (Communication Design) Honours, focusing on the nexus of research and practice through advanced typographic design. Her research examines design practice and network technologies. At Swinburne Online, Nicole has guided the translation of experiential studio-based design curriculum to one that is delivered fully online. Her work in this space combines ongoing relevant design traditions with new technology in a context that mirrors an increasingly digitally connected society.

•••••
Associate Professor Carolyn Barnes (PhD Melb 2004) is Acting Chair of the Department of Communication Design and Digital Media Design and Academic Director of Research Training in the School of Design, Swinburne University of Technology, Melbourne, where she teaches research methods for academic and practice applications at Honours and Masters level. Her research investigates how to harness the knowledge and power bound up in individuals and groups to address their needs and interests. Using social research approaches, Carolyn works in two main areas. The first is participatory design, examining how co-creation methods can mobilise stakeholder knowledge to achieve the best outcomes for people. The second is research into practitioner networks, which investigates the transfer of knowledge and skills within networks of designers and artists. Carolyn is an assistant editor for the International Journal of Design.