DRS2016
Design + Research + Society
Future-Focused Thinking

2016 Design Research Society
50th Anniversary Conference
27-30 June 2016, Brighton, UK

Introduction: Effective Information Design

Alison Black and Sue Walker*

University of Reading
* s.f.walker@reading.ac.uk
DOI: 10.21606/drs.2016.603

Abstract: Information design seeks to make complex information clear. It embraces approaches and methods that go beyond purely visual design. Successful information design means people can understand and respond quickly to information they receive (sometimes in critical situations), select options that are right for them, follow instructions in complex tasks, fill out forms appropriately and so on. It underpins people's engagement and participation in civic society and, although it sounds simple it's surprising how often it goes wrong, with consequences and costs, both for the public and for organisations. Information design as a specialist academic discipline has been developing since the 1960s and 1970s, with a growing research literature and critical tradition. This introduction draws attention to some of the literature that creates a context for the papers in our Information Design Matters theme.

Keywords: information design; user-centred design; design history; typography and language

What is information design?

> "The info designer structures and arranges information elements and provides orientation aids to enable the user to find a way through the maze of information. In this situation the graphic designer becomes an information manager. This shift presupposes cognitive and organisational competence that is generally neglected in design education today." (Bonsiepe 1999, p. 59)

Information design is an academic discipline that began to have a university presence in the UK in the 1960s and 1970s. Nevertheless, despite having a history and track-record, information design tends not to be recognized and understood as a category within design research, nor externally by decision-makers who might improve information presentation by drawing on research findings.

Information design makes complex information clear with the needs of users in mind. It may use words or pictures, on paper, digital devices or public information displays, such as directional signs. Information designers consider the selection and presentation of the information provider's message in relation to the purposes, skills, experience, preferences and circumstances of the intended users. Ideally, design solutions are tested and modified repeatedly to take account of users' responses and, in some cases, suggestions for modification. Sometimes testing is local and informal; sometimes, where safety or efficiency are implied, a project justifies formal and extensive usability testing and evaluation.

Organisations stand to benefit from good information design that communicates messages clearly to their members or consumers. Failures in information design may incur costs due, for example, to forms that are completed incorrectly or are laborious to process; instructions that cause frustration, even danger, and that may damage the reputation of the provider; or websites or smartphone apps that are difficult to navigate, miscue interactions and lead their users to seek phone or face-to-face interactions to get the service they need. The classic cases of the poorly designed 'butterfly' ballot paper in Florida in the 2000 presidential elections (Bederson et al. 2003), the miscuing of the decision to launch the space shuttle, Challenger, in 1986 due to poor data presentation (Tufte 1997) and the public (and public services') misinterpretation of the US National Weather Service's forecast of the path of Hurricane Katrina in 2005 (Cox, House and Lindell 2013), all testify to the need for research and expertise in information design and the organizational and societal consequences of sub-optimal information presentation.

A cross-disciplinary field

Information design is cross-disciplinary, and includes typography and graphic design, applied linguistics, applied psychology, ergonomics, systems engineering, design methods. Its interdisciplinarity was recognised in an academic context in 1979 when Rob Waller and Bryan Smith launched *Information Design Journal* (*IDJ*), which aimed to 'reach beyond traditional boundaries for an appreciation of a wider range of approaches to communication.' They aimed for dialogue 'between the researcher and the designer, the technologies and the social scientist, the psychologist and the educationalist, the specialist and the layman.' *IDJ*, now edited by Carla Spinillo, continues to be the leading international journal in the field.

As well as a recognized peer-reviewed journal, information design research has been reinforced by what might be called classic collections in the field, emanating from a series of NATO conferences. The earliest collections, Paul Kolers, Merald Wrolstad and Herman Bouma's conference proceedings *The processing of visible language* Volumes 1 (1979) and 2 (1980) reflected the interdisciplinary contributions at conferences in Eindhoven, The Netherlands (1978) and Niagara-on-the-Lake (1979). Ronald Easterby and Harm Zwaga's *Information design* (1984) followed, arising from papers presented at the NATO conference

on Visual Presentation of Information, Het Vennenbos, 1978. This collection clearly articulated the benefits of cross-disciplinarity for those involved in working with information;

> ". . . information presentation involves a wide range of professional interest groups concerned with its development and use; graphic designers, industrial designers and typographers are primarily concerned with design but will acknowledge the importance of evaluation; psychologists and ergonomists have an interest in evaluating the effectiveness of displayed information and some, but not all, will acknowledge the importance of graphic design; architects, planners and engineers have a professional interest in using information as a component in the artefacts they create for society – buildings, roads, industrial machinery and consumer products – but may not be prepared to acknowledge the importance of design and evaluation of such information." (Easterby and Zwaga 1984, p. xxi)

The papers included research by specialists in human factors, psychology and design. They covered wayfinding and signs, instructional text, forms design, legibility, safety information, symbols and design process, setting the scene for topics that continue to interest information design researchers today. Charles Duffy and Rob Waller's *Designing usable texts* (1985) subsequently focused particularly on the design of documents, and also took an interdisciplinary approach, as did Karen Schriver's widely acclaimed *Dynamics in document design* (Wiley 1997).

While the information presentation challenges of document design are acknowledged, many people associate information design (especially its history) with the visual presentation of particular kinds of information. Arthur Lockwood's *Diagrams* (1969) introduced a compelling range of statistical and explanatory diagrams and maps, and Edward Tufte's more recent books (1983, 1997), for example, contained beautiful, intriguing and often complex examples of information visualisations across time and place, and earlier. William Playfair and Otto and Marie Neurath have inspired research in various forms, as have visual representations, topics and genres such as time, maps and forms (eg Costigan-Eaves (1990), Burke, Kindel and Walker (2013), Roseberg and Grafton (2010), Boyd Davis (2012), Stiff, Dobraszczyk and Esbester (2010). Paul Stiff's essay about information design history (2005) maps key documents, people and events that have shaped information design, reminding us of the cross-disciplinary nature of the field.

Designing for public good

David Sless (1992, p. 1) summarized the processes involved in the quest to manage the 'relationship between people and information so that the information is accessible and usable by people':

- define the problem
- involve all stakeholders
- observe and measure the current state of things
- develop and text prototype solutions
- iteratively develop and test prototypes until an optimum solution is found

- implement and monitor the solution in use

Sless made a strong connection between information design and public good thereby reinforcing the significance of the information designers' role in making a difference to people in their everyday life. This connection between information design, everyday life and public information has always been compelling for information designers. 'Design for public good' and was promoted by Harm Zwaga, Theo Boersema and Henriëtte Hoonhout's collection of papers, *Visual information for everyday use* (1999), from the Lunteren symposium, 'Public graphics', in 1994:

> ". . . information design, especially the design of public information, has become an area in design that needs a special approach. An increasing number of designers admit that the complexity of current products, facilities and social structures intended to make life for everybody more comfortable can out excessive demands on people's cognitive abilities." (Zwaga et al, p. xxxii)

Zwaga, Boersema and Hoonhout were writing just as the impact of early web browsers, and the access they provided to information and services through the worldwide web, was beginning to be felt. This was before the launch of Web 2.0 with its capacity for user-generated content, and long before access to information on hand-held devices. Each technology shift has brought new modes of access to and interactions with information for users and new challenges, but also new opportunities for solutions, for information designers. However, the methods described by Sless, and evident in the literature cited above, are routine among information designers, working to make considered, research-based design decisions that will create easy access and transparent and efficient use for all, whatever the medium and mode of access.

Information design matters at DRS 2016

The provision of information to support health care represents an area where information designers have much to contribute to the public good and where they have been engaged in research projects ranging across health promotion, through clinical practice, to medicines safety. So it is not surprising that our session includes three health related papers. Myrto Koumoundouro, Panayiotis Koutsabasis and Jenny Darzentas write about their work on patient information leaflets for mobile devices, with reference to Fentanyl patches, affirming that conventions for the organisation of patient information on paper are not directly transferable to mobile devices. A team from the Helen Hamlyn Centre for Design at the Royal College of Art and British Red Cross present their project about a smartphone app that helps to raise the awareness of issues connected with 'balance health' as an aid to prevent falls in people over the age of 65. David Craib and Lorenzo Imbesi discuss approaches to creating and understanding meaning in communication design, working with the Canadian Institutes of Health Research.

The London Underground map is both familiar and intriguing to residents and tourists and exemplifies the systematic visualization of a complex system. It forms the basis of usability study by Maxwell Roberts and Ida Vaeng that compares objective measures of performance

and subjective ratings of design effectiveness in two variants of the map, and finds differences in the two methods of approach. Continuing the visualization theme, Joanna Boehnert presents her Mapping Climate Communication project which introduces discussion around impact and power in data visualisation.

Finally, Eden Potter identifies some of skills and personal qualities that information designers need to successfully undertake a project. This reinforces that information design is as much about process as it is about artefact.

As people navigate information as part of their everyday lives, ease of access, usability and confidence in their transactions continue to be critical. The forthcoming *Information design research and practice* (2016), edited by Alison Black, Paul Luna, Ole Lund and Sue Walker joins the other collections mentioned in this brief introduction and shows how complex and multifaceted the history, the methods and the practice of information design are. This collection has continuity with its predecessors, indeed with some of the same authors, but also an encouraging number of contributions from more recent scholars. In his foreword to the book, Erik Spiekermann highlights the relevance of information design to everyday life:

> "Identifying the problem and analysing the context and audience before shaping the message: this used to be what information design was all about. And whatever the medium, substrate or location, this is what we are still called upon to do. Information design can show the way through and perhaps out of the jungle that is our modern world. Applied properly, it can turn data into information and information into effective communication and appropriate action."

This is precisely the agenda we see reflected in the papers of this conference session, which we hope will help establish information design as a stronger presence in the wider field of academic design research.

References

Bederson, B. B., Lee, B., Sherman, R. M., Herrnson, P. S and Niemi, R. G. (2003) Electronic voting system usability issues. In *Proceedings of the SIGCHI conference on Human factors in computing systems*, New York: ACM, 2003, pp. 145–152.

Black, A., Luna, P., Lund, O. and Walker S. eds (2016) *Information design research and practice*. Oxford: Routledge.

Bonsiepe, G. (1999) *Interface: an approach to design*. Maastricht: Jan van Eyck Academie

Boyd Davis, S. (2012) History on the line: time as dimension. *Design Issues*, 28 (4), pp. 4–17

Burke, C., Kindel, E. and Walker, S. eds (2013) *Isotype design and contexts 1925–1971.* London: Hyphen Press.

Costigan-Eaves, P. (1990). Some observations on the design of William Playfair's line graphics. *Information Design Journal.* 6 (1) pp. 27–44.

Cox, J., House, D. and Lindell, M. (2013) 'Visualizing uncertainty in predicted hurricane tracks.' *International Journal for Uncertainty Quantification* 3 (2), pp. 143–156.

Duffy, T.M., and Waller, R. eds. (1985) *Designing usable texts*. Orlando, Florida: Academic Press.

Easterby, R. and Zwaga, H. J. G. eds (1984) *Information design: the design and evaluation of signs and printed material.* Chichester: Wiley.

Kolers, P. A., Wrolstad, M. E. and Bouma, H. (1979) *Processing of visible language*, vol. 1. New York: Plenum.

Kolers, P. A., Wrolstad, M. E. and Bouma, H. (1980) *Processing of visible language*, vol. 2. New York: Plenum.

Rosenberg, D. and Grafton, A. (2010) *Cartographies of time*, New York: Princeton Architectural Press.

Schriver, K. A. (1997) *Dynamics in document design*. New York: Wiley.

Sless, D. (1992) What is information design? In Penman R. and Sless D. eds *Designing information for people*. Canberra: Communication Research Press, pp.1–16.

Stiff, P. (2005) Some documents for a history of information design, *Information Design Journal*, 13 (5) pp. 216–228

Stiff, P., Dobraszczyk, P. and Esbester, M. (2010) Designing and gathering information: perspectives on nineteenth-century forms. In Toni Weller ed *Information history in the modern world; histories of the information age*. London: Palgrave Macmillan.

Tufte, E. R. (1983) *The visual display of quantitative information*. Second edition. Cheshire, Connecticut: Graphics Press.

Tufte, E. R. (1997) *Visual explanations: images and quantities, evidence and narrative.* Cheshire, CT: Graphics Press.

Zwaga, H. J. G., Boersema, T., and Hoonhout, H. C. M. eds (1994) *Public graphics: visual information for everyday use*. London: Taylor and Francis.

About the Authors:

Alison Black is Professor of User-centred Design at the University of Reading's Department of Typography & Graphic Communication and Director of its Centre for Information Design Research. A psychologist by training, Black has worked for almost 30 years in information design, both as a practitioner and a researcher.

Sue Walker is Professor of Typography at the University of Reading and Director of the AHRC-funded Design Star Doctoral Training Centre, administered at Reading, working with colleagues at Brighton, Goldsmiths, Loughborough and the Open University. Her research interests include analysis and description of graphic language, in particular the relationship between prescription and practice in everyday documents, typographic design for children and information design in public service.