

Title:

Promoting Information Accessibility through Visual Communication Design:
Some implications for current practitioners.

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Abstract:

In Australia, it is reported that one in five people have a disability. On a global scale people living with a disability may account for anywhere between 20 and 60 per cent of the population. Whilst there are many different forms of disability it can be difficult to obtain accurate statistical data as the term is complex, dynamic, relative and often linked uniquely to culture. In contemporary society, disability is considered part of 'human diversity' and persons living with a disability are represented in almost every section of our community: they purchase goods, work, travel and require access to information. When people have access to information they are equipped to make informed decisions about their life. These decisions may be simple or more difficult in nature however, to date, people with specialised needs have been underrepresented and given little regard in relation to their information accessibility requirements.

Although no two people experience their disability in the same way there is still great social and economic value in the continuous exploration of inclusive design for persons with and without cognitive impairments. This paper focuses on visual communication design; examining print-based materials in society and how they might be made efficient for all.

Whilst there have been many calls to apply design thinking to the specific needs of people living with a cognitive impairment, there has been little rigor in the application of theories in the field. This research examines an identified gap in the disability sector which can be addressed by the consideration and delivery of better visual communication design.

Examination will focus on the role a designer can play in improving information accessibility and discusses a range of issues which may inhibit inclusive design led practice. Some of these issues include, but are not necessarily limited to a designer's understanding of: the notion of the user's 'disability', visual literacy and how the characteristics of a font might enhance information accessibility for people categorised at or below level 1 literacy.

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Introduction

Globally, people living with a disability may account for anywhere between 20 and 60 per cent of the population. In Australia, it is reported that one in five people have a disability (AND 2017) and historically, 'up until the late 1970's, their views were mainly filtered through the voices of disability service providers and professionals' (PWDA 2010-17). Although the notion of disability has been widely contested (Wasserman et al. 2016), contemporary views now place the onus of impairment not on an individual but instead, on the exclusive nature of the environment of which they are a part (Watson J 2017). This 'social-interactional' model now underpins strategies to change society to better accommodate people living with impairment.

Every individual has a human right and need to participate equally in society with all others (PWDA 2017) and providing equitable access to information, whether it be visual or other, is crucial in facilitating full inclusivity in 'mainstream life', (Freyhoff et al. 1998). Despite the fact, that equal access to information is both a human right and required by the law, this study makes a case for the concerns of the disability research field to be integrated into everyday graphic design practice. Whilst there have been many calls to apply design thinking to the specific needs of the disabled there has been little rigour in the application of disability research to design. Even some existing structures, that concern themselves with accessibility design like the W3C's Web Content Accessibility Guidelines, have been described as 'vague, under researched and speculative' in their recommendations for people with cognitive impairment (WebAIM¹ 2017).

However, what is also unknown, through a lack of supporting evidence, is whether the selection and arrangement of basic page design elements has any real impact on improving efficiencies in information design for this cohort. As visual accessibility is often considered

¹ WebAIM is a non-profit, web accessibility solutions organisation based at Utah State University.

to be of higher importance in the field of graphic design compared to other disciplines (Bitterman 2015), my study aims to examine my role as a graphic artist observing - listening and empathising with the experts through their research to consider a range of issues which may inhibit equal access to print based information. These issues include but are not limited to a designer's understanding of: user ability, visual literacy and what effect their design choices will have in response to the needs and expectations of a person living with a cognitive disability.

Understanding the concept of disability:

Historically, the concept of disability has been widely argued and contested (Wasserman et al. 2016). Whilst some theorists suggest 'disability' is a term which is difficult to define (Bitterman 2015) others propose that it is 'a cultural construct' built on an 'ideal, or social norm made up from assumptions of authority in society' (Stark 2009). The World Health Organisation (WHO) suggest that disability is 'complex, dynamic, multidimensional, and contested' (2011, p. 3). The International Classification of Functioning, Disability and Health (ICF) 'understands functioning and disability as a dynamic interaction between health conditions and contextual factors, both personal and environmental' (WHO 2011, p.4). And, in the 'preamble to the CRPD², disability was acknowledged as an evolving concept which could be directly affected by a range of various interactions between 'persons with impairments, attitudes and environment' (WHO 2011, p.4).

Accepting that the concept of disability holds many different meanings for different people (Madden 1997, p. 1), research also suggests that 'definitions and use of common terms' in relation to impairment have 'historically been used either as a synonym for inability or as a reference to legally imposed limitations on rights and powers' (Wasserman et al. 2016). Furthermore, although it can be argued that definitions help to ensure that an individual's needs are met through a better understanding of their requirements, others suggest that this can also be problematic (Madden 1997, p. 1). Particularly, as 'definitions attempt to summarise the significance, experience and complexity of a person's disability down to just one or two descriptors' (Madden 1997, p. 1).

² The Convention on the Rights of Persons with Disabilities (CRPD) is an international disability treaty recognising the rights of people with disabilities. (Definition source: CRPD - USICD).

Current 'social-interactional' models of disability promote greater inclusivity for all individuals to participate fully in everyday life. People with Disability Australia (PWDA) explains that this 'more viable' perspective does not disregard the existence or effect of an individual's disability. It does, however, challenge the environment and culture to accommodate 'impairment as an expected incident of human diversity' (PWDA 2010-2017). Indeed, badly designed environments can disable individuals. Knight, a digital accessibility expert, argues that if this thinking was applied in design practice, and 'things were made easier for the diverse', hypothetically, the rest of society would also eventually benefit (2017).

In view of the challenges discussed around the concept of disability, I was curious to learn if the needs of people who may be deemed disabled are being considered or factored into the current methods of audience analysis for design. My investigation currently indicates that research 'specifically focussing on visual accessibility in graphic design is lacking' (Cornish et al. 2015, p. 178). And, whilst designers need to ensure that their 'products address the needs of all users regardless of age or ability' (Cornish et al. 2015, p. 178), my aim is to understand how I can apply my skills and experience to make print-based materials work efficiently for all users. My research thus seeks to explore this further by gaining a greater understanding of the barriers which currently inhibit the adoption of inclusive design.

Applying accessibility to visual communication design

Although it is now understood that efforts must be made to 'accommodate people living with a disability', and since the law states that all persons have the right to be fully participating citizens on an equal basis with all others' (PWDA 2017), it is important that information about society including its culture, laws, services, policies, etc. is actually accessible to all. Henceforth, within the context of this research, access to information, whether it be visual or other, is necessary to facilitate equitable participation in 'mainstream life' (Freyhoff et al. 1998, p. 5).

Geert Freyhoff, author and Director of Inclusion Europe³ argues that 'present day structures often impede information accessibility for a wide range of people including those with limited skills in reading, writing or understanding' (1998, p. 5). Some theorists suggest that current practitioners of graphic design do not adequately consider visual accessibility during the development of commercial projects and believe there is a lack of awareness regarding the inclusive design resources available within their industry (Cornish et al. 2015). Additionally, the resources typically available for print-based graphic artists are mostly provided in the

³ Inclusion Europe was founded in 1988 and is an association of people with intellectual disabilities and their families in Europe.

'form of guidelines and legislation' (Cornish et al. 2015, p. 178). As a result, designers often find these difficult to comprehend and implement, instead relying on their own 'instincts' to make choices which usually 'lead to inaccessible designs' (Cornish et al. 2015, p. 178).

Bitterman, a researcher within the disability sector, advises that designers need to 'consider the specific cognitive and physical needs of all users to mitigate obstacles that inhibit accessibility' (2015, p. 93). However, the research I have undertaken has failed to identify any definitive recommendations around designing for people with cognitive impairment. Although there are some existing resources that discuss accessibility design, these are predominantly structured for web application where there are tools and devices available to adjust information design on screen. In contrast, the static nature of print-based communication involves its own unique constraints around how users might access, interact with, and respond to its design. These materials cannot be modified when printed, thus forcing the end user to 'rely heavily on their visual capabilities' (Cornish et al. 2015, p. 177).

Other theories hindering inclusive design practice allege that there is generally poor understanding amongst graphic artists around: user (dis)ability (Knight 2017), visual literacy (Gribbons 1991, p. 42) and what effect their various design choices will have in response to user expectations and needs. Gribbons' concept of 'visual grammar', described as 'an interaction of the perceptual attributes possessed by the form, the prevailing design, cultural conventions, and the cognitive and perceptual systems of the reader' (1991, p. 42), highlights the importance of making informed design decisions to achieve accessible outcomes. Gribbons identifies how visual communication design was historically undertaken by professionals highly 'trained in the skills, principles, and conventions of the graphic arts' (p. 42). This hypothesis asserts that people who do not have this type of training lack the skill and ability to make informed decisions 'inherent in information design'. Specifically, they have poor understanding in relation to:

problem and audience analysis, design and cultural conventions, ergonomic issues⁴ and other limitations which may be imposed by the reader's cognitive and perceptual processing systems. (Gribbons 1991, p. 42)

We must also acknowledge that not everyone can read fluently and it is important to carefully consider how information is written and presented to better accommodate all people, particularly those with literacy or comprehension problems. Individuals who are

⁴ Ergonomic issues 'aim to consider the user environment and behavior while using a specific design of a product', definition sourced from, <http://www.designorate.com/principles-of-ergonomics-design/>.

cognitively impaired or intellectually disabled need information which is both easy to read and understand (Freyhoff et al. 1998, p. 7). As the key concept of inclusive design is about providing equitable access to information, 'making design choices which actively aid understanding through legibility and readability is particularly important for people with learning difficulties who may find some typefaces hinder their reading experience' (Peters 2012). Gribbons believes that 'no one combination of visual elements yields absolute legibility, aesthetic appeal, or usability'. Instead, these elements should be acknowledged in producing the following effects: 'a legibility effect, an ergonomic effect, and an aesthetic effect' (1991, p. 47).

Type and legibility

The Cambridge Dictionary defines legibility as 'the degree to which writing or text can be read easily because the letters are clear, the text is printed well, etc.' (Cambridge Dictionary 2017). Lupton, a designer, researcher, and author well-renowned for her studies in typography, talks about measuring legibility and readability in terms of typographic efficiency (2003). Lupton defines legibility as 'the ease in which a letter or word can be recognised' and readability as being 'the ease with which text can be understood' or processed cognitively (Lupton 2003). Whilst the scope of this research does not encompass a thorough review of the reading and cognitive sciences, it is worth considering how character and word recognition stack up in support of typeface selection to facilitate greater visual accessibility.

Although there have been a multitude of typefaces created to improve legibility, it is important to consider the design characteristics of each font relative to user ability or impairment. Bohm, a typesetter, designer and author describes legible typefaces as having the following characteristics:

well defined easily recognisable letters/symbols, which can be decoded easily and quickly, which are not overly stylistic in letterform design, typically used in the context of continuous reading and not script typefaces. (Bohm 2015)

Fontsmith's research during the FS Me accessible type project⁵ (2008) supports the popular theory that sans serif typefaces are easier to read. Yet Frutiger, a Swiss typeface designer, contends that 'the absence of serifs can actually inhibit type legibility'. Frutiger's theory argued that 'the serifs within a typeface generally provide for the main points of similarity between the various letterforms, thus serving as an important recognition aid' (Frutiger n.d).

⁵ FS Me is a bespoke typeface created by Fontsmith design as part of an identity rebrand project for Mencap, a leading charitable U.K based group which provides support for persons with learning disabilities (LD).

Lupton's thorough review of scientific literature from various fields including 'psychology, ergonomics, human computer interaction (HCI), and design' failed to provide any important conclusions in relation to testing for typographic efficiency or human response to text in either digital or print format. Lupton concluded that 'this field of study remains ruled, largely, by convention and intuition'. And Johnson, an interaction designer for the NHS⁶, proffers that whilst there is little evidence to correlate type selection with enhanced readability this is somehow 'reassuring'. Johnson also argues that 'distinctive character forms might aid letter and word legibility' (2016).

Whilst literacy skills differ widely amongst the general population, persons with a cognitive impairment 'have a reduced intellectual capacity that typically affects their understanding and ability to read, write and interpret information' (Freyhoff 1998, p. 9). Nevertheless, there are widely varying degrees of intellectual disability which can range from mild to severe. QAELLN's research indicates that 'learning impairment ranges are wide and varied' for people with intellectual disability, and typically, 'these individuals have even more varied capabilities in comparison to the normal population' (2003). Furthermore, Munger referencing Katims (2000) in the book, *Steps to Success: Crossing the Bridge Between Literacy Research and Practice*, suggests that persons with 'intellectual and developmental disabilities have generally been taught literacy using a curriculum 'focusing on functional life-skills'. Therefore, any prior education may have centred around learning and recognising words that relate to safety or work purposes rather than learning to read and write efficiently (Munger 2016).

One concept which I have considered, specifically pertains to a user's ability to learn and recognise basic letter shapes within a selected typeface. Johnson argues that the act of reading requires an ability to recognise letters and words, therefore 'facilitating greater accessibility through type legibility requires us, as visual communicators, to have the knowledge and skill to make letter recognition as easy as possible' (2016).

In addition to my own personal observations involving students undertaking CIALN⁷ classes that suggest sans serif fonts are easier to comprehend and utilise, research conducted by the University of Reading produced some notable observations. Walker and Reynolds' study around typography and its effect on motivating children to read (1999-2005) proposed that 'teacher opinion, generally, favoured sans serif typefaces because of the simplicity of the letter shapes'. I believe this is a critical point and one highly worthy of further research to

⁶ The English NHS is controlled by the UK government through the Department of Health (DH).

⁷ (CIALN) Initial Adult Literacy and Numeracy.

quantify how a student's recognition of familiar shapes which are first taught and scribed hinges on simplicity of form. Thus, it could be argued that fonts such as *Century Gothic* and *ITC Avant Garde (Gothic)*, which contain letterforms resembling hand drawn shapes, could provide for improved type legibility for a wide range of users. Whilst my theory to date, remains untested and unproven, it is very encouraging that my own observational practice is paralleled by Walker and Reynold's studies, which suggests that further applied research could pay real dividends for both the end-user and the designer/suppliers of typefaces intended for mass usage.

Underlining the need for further well-designed studies are the questions raised by Fontsmith's collaboration with Mencap, a U.K based disability services organisation. The FS Me typeface is reportedly one of the first fonts to have been developed in direct consultation with a group of people with learning disabilities (Fontsmith 2003-2017). Exploring key user preferences in relation to typographic style, Fontsmith identified an inclination amongst the sampled audience for letterforms and line weights that were distinct and sophisticated in appearance. Some of the typefaces tested which contained geometric design properties such as: *Schoolbook* and *VAG Rounded*, were deemed by the participants to be too 'childlike and patronising' (Gavin 2008).

Despite the expertise and testing that went into the FS Me type project I was unable to source any independent evidence to confirm that this font actually does provide a 'benchmark' in accessible type design and legibility. Waller concurs, writing in a paper titled '*Choosing a typeface for reading*' (University of Reading 2011) that:

there is no data to substantiate that the FS Me typeface, is the only one that people with a learning disability might find acceptable' (Waller 2011).

Problematically, the subjectivism of "sophistication" is reflected in the absence of data on the objective metrics for readers such as comprehension, time to read, perceived word or meaning ambiguity, and content reproducibility. It is a step forward that Fontsmith has conducted this research; what is needed now is a thorough-going analysis of typefaces as facilitators of, or impediments to, comprehension based on these objective metrics. We will then have a solid platform on which we can design for real-world applications and outcomes.

Conclusion

In addition to the lack of scientific research around designing for people with a cognitive disability, different people have different levels of impairment and hence, widely varying capacity to access and process information. Henceforth, making informed design decisions

around the 'specific cognitive and physical needs of all users to mitigate obstacles that inhibit accessibility' (Bitterman 2015, p. 93) is difficult and problematic.

Whilst it is acknowledged that further study and testing is required this research argues the case for the concerns of the disability research field to be integrated further into everyday graphic design practice. Designers can play a key role in this process by learning more about user needs and advising their clients to incorporate visual accessibility standards into print-based design projects. In addition to gaining an understanding around the barriers that hinder inclusive design, this can also help 'to inform the development of more appropriate tools within the field' (Cornish et al. 2015, p. 179). Furthermore, the Australian Government serves to remind us that 'the cost of not incorporating universal design can be significant' given that:

inaccessible environments limit economic, education, health, social and other opportunities for people with disability, and make them more dependent on others. (AusAID 2013).

Finally, whilst the notion of 'inclusive design' evolved initially to support people with a disability, it is fair to assume that in practice, the application of this concept can support many others with their assistance needs. As Jamie Knight, Senior Web Developer at the BBC explains 'everyone will experience cognitive impairment at some point in their lives, therefore, eventually everyone will benefit' (Knight 2017).

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