

**Challenging the visual: Learning from the mobility narratives of visually impaired persons**

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## **Challenging the visual: Learning from the mobility narratives of visually impaired persons**

Urban designers and place-makers must question their understanding of universal design and its role in supporting UK citizens living with sight loss. The mobility narratives of visually impaired (VI) adults are used to unpack their strategies for navigating the urban realm, from recognition of shared issues and confidence to familiarity with routes and services. In conclusion place-makers can adopt three practices: being more willing and reflexive practitioners - gaining from first-hand experiences; understanding the role of planning and design education; and considering the interface between the mobility needs of VI people and new city strategies promoting green travel.

Keywords: urban realm, visual impairment, inclusive design, mobility.

### **Introduction**

Since its inception as a distinct activity urban design, as both product and process, is dominated by the visual. Indeed as Jarvis points out urban design is the coming together of two strands of understanding of urban environments, the ‘visual-artistic’ with ‘social usage’ (1980). That ‘visual artistic’ tradition, is perhaps most typified by Cullen’s Townscape (1971) and concept of ‘serial vision’, that places are typically experienced by the individual through a series of views, which reveal themselves and create a sense of place. However rather than accepting this as a way of knowing we may suggest that it can be “regarded as a form of not knowing” or disregarding the manifold bodily experiences of the built environment (Heylighen and Herssens, 2014: 330).

### ***Everyday life and sight loss***

The urban mobility experiences of visually impaired users who need to rely on a broader range of sensory information to navigate through the places of their everyday life, challenges the dominance of the visual as a mode of knowing. This challenge to

place makers is opportune: or indeed overdue. There are over 2 million people in the UK with some degree of sight loss, a figure that is predicted to rise to nearly 3 million by 2030 (RNIB, 2016). Two trends increase the prevalence of sight loss. The first is the rising numbers of people living with diabetes with more than 4 million people affected in the UK. Of these slightly more than 1 in 4 is at risk or living with some degree of diabetic retinopathy.

The second is the demographic shift to an ageing population such that currently 18% of people in the UK is aged 65 or more and 2.4% are 85 (+) with this oldest old group increasing rapidly (ONS, 2017). The likelihood of sight loss increases with age evidenced by with those aged 65 and older making up 79% of those with sight impairment and age related macular degeneration being the most significant cause. In spite of this statistical evidence and the numerous strategies and initiatives promoting an age friendly city (See Steels, 2015 for a review of these) there is no marked increase in awareness among place makers about the likely impact of sensory deterioration (See Handler, 2014 for an honourable exception). Too often designing for accessibility is interpreted as meaning ensuring wheelchair access. Vision 2020, in response to a government enquiry, asserted,

very little consideration appears currently to be given locally to the needs of visually impaired people. A few years ago we were invited to provide awareness training to the local planning department, following which we were consulted on a number of issues, however this has now almost ceased (VISION2020, 2016).

The House of Commons enquiry reported that specialist advisers such as Access Officers were often being shed as part of local authority cut backs with the belief that inclusive design and equality were well entrenched in the practices of planning officers (House of Commons, 2017). Challenging this complacency requires an understanding of sight loss.

The plethora of conditions that erode sight create a range of visual experiences for individuals. Figure 1 provides a series of visual images that show the degree to which sight loss affects the vision of individuals living with specific eye conditions. Macular degeneration creates a blurred central area that makes closely viewed activities such as driving, reading and sewing increasingly difficult; glaucoma produces a reverse effect in that the central core of vision is clear but peripheries are progressively diminished. With cataract there is a general clouding of the whole field of vision while diabetic retinopathy produces black spots and floating shapes that may increase till all sight is lost. Less commonly known conditions such as Charles Bonnet syndrome that can affect any person with a sight loss condition produces hallucinations. Research suggests that the brain of a vision impaired person doesn't receive as much information and "fills in these gaps by releasing new fantasy pictures, patterns or old pictures that it has stored" (RNIB & RCOphth, 2016). It takes little imagination to understand how frightening and disorientating this may be and how this is likely to be interpreted by sufferers and others as mental illness or, in an older person, dementia. In the context of an ageing population the rise of dementia has become a major health and welfare issue. While dementia is usually understood as memory problems and loss of learning capacity, for the 10% or so diagnosed with Dementia with Lewy Bodies, there are also hallucinations.

**Figure 1:** Seasonal market in Newcastle city centre illustrating the range of eye conditions that can affect sight loss

The experiences of visually impaired people cannot simply be reduced to a medical explanation. The ability of an individual to negotiate the spaces and places of their life-world is mediated by a plethora of intertwining biographical factors. As Hendricks (2008: 113) powerfully states "human beings do not live life two variables at

a time”. Age, particularly the length of time a person has experienced sight loss is significant. Those who have been sighted at some time may rely to an extent on their visual memory of a place though all places are subject to change. Income is clearly another factor, someone who can afford taxis or whose social support system includes many willing driving friends and family members may be insulated to an extent from the way finding problems experienced by those dependent on foot and public transport. The capacity to learn routes and retain information makes a difference to levels of confidence<sup>1</sup>. The navigation aids employed from symbol, short or long cane and guide dog to digital navigation tools may all differentiate the experience of mobility. The extent to which visual impairment is compounded by other physical impairments, health concerns (dementia or mental health) or learning needs is also critical. Finally, the extent to which the everyday space of a visually impaired person’s lifeworld has been shaped by social justice and a deep concern for an unassailable right to the city, or by a care-less application of regulation may promote or inhibit human flourishing.

### ***The urban realm and design***

Urban environments should be designed from the perspective of visual stimulation as a ‘sequence of exposures’ (Cullen, 1961: 12). Lynch, another contributor of urban design theory, divided the urban environment into five largely visually defined elements, ‘paths, edges, districts, nodes and landmarks’ (1972), through which he suggests people create ‘mental maps’ in order to orientate themselves through space – maps which he famously asked people to recreate as visual devices. Even Jane Jacobs (1993) whose work is accredited with establishing the need for consideration of social usage is often encapsulated in her phrase ‘eye on the street’ (ibid :45); advocating that

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<sup>1</sup> See methodology for a more detailed discussion of confidence.

‘seeing’ and ‘being seen’ are essential precursors of feeling comfortable in public spaces.

‘Serial vision’, ‘mental mapping’, the need for ‘natural surveillance’ are essentials in the urban designer’s toolkit along with many other visual interpretations and understanding of place – figure ground analysis; concepts of proportion and massing; aesthetics; sense of enclosure; to name just a few. Yet normative modes of communication are often designed ‘in to’ the urban realm. For example, Clark, Pinch and Reimer (2017) show that the visual is privileged in work commissioned by the urban designers of Legible London – who adapt Lynch’s work. A series of wayfinding boards enable users, who are able to first, locate themselves in the urban realm, and second, to plan journeys that encourage walking rather than the use of public transport. The lith boards use ‘graphic information [that] has to be designed for normal environmental perception, which consists of the scanning and glancing process. People tend to ignore information displays that are not designed appropriately, or to walk away from such displays after spending a minimum of time in futile search’ (AIG, 2008: 28, cited in Clark et al., 2017: 42).

Taken up in cities across the globe, it is the *scale* of production that is praised by Fendley<sup>2</sup> (2015) for achieving what he calls, ‘a global standard. A great British export’ (cited in Clark et al., 2017). However, global or universal standards may leave some citizens feeling ‘out of place’ or ‘designed out’ of the urban realm (Kitchin, 1998). There is, therefore, a tension between meeting acceptable standards of access, comfort and safety and yet at the same time retaining a range of distinctive qualities that all users, regardless of their specific needs may respond to. Public places, should

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<sup>2</sup> The founder and chief designer of Applied Wayfinding, formerly Applied Information Group (AIG)

communicate clearly to the user where they are; what opportunities are on offer; and how they get from one place to any another. An attempt to do this has been labelled ‘inclusive design’ though it might be argued that this has focused too much on physical impairment and mobility (Greed, 2003). A constant criticism of ‘inclusive design’ is that it creates ‘one size fits all’ solutions, meaning that inevitably some users will be disadvantaged. Benktzon (1993) addresses this issue, proposing a design pyramid and designing for<sup>3</sup> wheelchair users with ‘very limited strength in hands and arms’ (p19) (who are defined by their impairments), which suggests that non-disabled persons’ needs are more readily considered than others. This logic is graphically translated into the sphere of the built environment by Goldsmith (2000) in Figure 2. Here a user with a guide dog appears in row 5, but the emphasis is clearly on physical impairments and mobility.

**Figure 2:** Goldsmith's (2000) Design Pyramid

Wheelchair users represent a minority of those deemed less mobile and not all commentators would agree with a hierarchy that prioritises wheelchair users above others. Imrie and Hall, for example, suggest that such a focus has the potential to orientate designers towards design solutions that “fail to cater for the multiplicity of physical and mental impairments which are not wheelchair dependant” (2001: 96). More broadly, commentators have latched on to the concept of ‘universal design’, as a possibility of catering for *all* types of ability and impairment and suggest when designed environments are sensitised to diverse capabilities, they can be liberating for all (See Sanford, 2012). Other commentators have expressed doubts about the theoretical and

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<sup>3</sup> Designing for and/or on behalf others is an issue that disability rights campaigners have worked to challenge.

conceptual content of universal design, for example Gibson (2014) has suggested that the very concept of ‘universal’ runs the risk of the attenuation of difference and diversity. Similarly Winance (2014) criticises the way in which universality forces a variety of users into a single materiality, arguing instead for plurality in environments.

A willingness to tune into the life-worlds of different urban realm users is needed to design more appropriate places, a topic that Bates, Imrie and Kullman (2016) turn to using the concept of care. The authors tease out the role of care in the design of cities, stepping back from debates that focus on the standardisation of design practices and recognising care in the ability to develop ‘receptivity to the changing and open-ended character of the world’ (2016: 11). A number of scholars address a set of political and ethical responsibilities that respond to the diverse range of bodies that are encountered in, and encounter the urban realm, including older people and ageing (Handler, 2016, Peace, 2016), and autism friendly spaces (Davidson and Henderson, 2016). Moreover care must be embedded in urban design as *process* as well as product, since too often partly completed schemes can prove all too disruptive to users and potentially dangerous to those with impairment, Figure 3.

**Figure 3** Near St Mary’s Place, Newcastle, a partly completed road improvement scheme that has left random hazards directly in the path of blister paving – which is also now incorrectly aligned to the pavement.

Design shapes feelings associated with passing and moving through the urban realm, calling for a closer examination of visually impaired people’s everyday experiences of urban mobility and sight loss. In the methodology, careful attention is paid to personalised, local-level scale of engagements adopted during participatory research in North East England. The next section explores the role of the senses in urban design show that hearing, smell and touch have not been overlooked entirely by the discipline.

### *The senses and urban design*

Urban designers use creative practices to engage in the process of design, often thinking through a range of possible scenarios to consider the potential users of designed objects, the function of a designed space; or by considering possible ‘episodic contrasts’ (Lynch, 1972). Urban designers delight in the possibility of providing for active and passive engagement, but all too often the term “people watching” is used as synonym for the latter. The significance of the visual has already been identified in this process, yet *multiple* senses produce enlivened spaces. In Gehl’s seminal work ‘Life Between Buildings’ (1987) he argues that on arriving at Venice and standing on the staircase outside the railway station, it is not the canals one notices first but the ‘sound of people’ (1987: 167). In the urban realm, different objects and places come to life in the streetscape through the everyday movement of people. Streetscapes can change (even if temporarily) almost overnight due to the ongoing management and maintenance of public places – footpaths are closed, diversions set up, new paving is laid or a regeneration scheme is underway. Yet mobility as a multi-sensory experience is an important issue for planners when enlivenment and change become problematic for urban users.

Historically, strong smells were part of the everyday urban experience. Edinburgh was famously known as ‘Auld Reekie’, a name originating from the distinctive stench of raw sewage and smog in the Old Town area. Breweries, tanning works, rendering/glue factories and pickle manufacturers produced ‘smellscapes’ unique to cities. At a more micro level, wet fish mongers, bakers, hardware stores and other small, specialised shops emanated specific odours along any High Street. These have largely disappeared from our city streets over the past few decades. Factories and other works have closed; shopping has become shrink wrapped in ubiquitous plastic packaging; and the only smell is that of the global coffee emporium. Towns and cities

have become effectively ‘deodorised’ (Henshaw, 2014); and moreover what smell there is has lost all distinctiveness.

Soundscapes have received recent attention (Cerwén, 2016, Bild et al., 2016), yet noise itself has been defined as a ‘pollutant’ with more emphasis on abatement than incorporating sound into our everyday understandings of place. At the same time the interior spaces of everyday life from malls to coffee shops and supermarkets have continuous music or muzak creating a relentless and undifferentiated soundtrack to even the most mundane of daily activities. The widespread regulation of space and the cleansing of the city are evident across history, from industrialisation to modernity, including the disappearing of distinct sounds (chiming clocks and buskers in the street) that have become ubiquitous in the city, creating glocal places and clone cities (Simms et al., 2005) that are often labelled blandscapes (Edensor, 2016).

The environment in which the senses all come together may be staged (See Jensen, 2014) – embodied responses and experiences may be learned through cultures, or shaped by social interaction - producing enabling or disabling environments (Chouinard et al., 2010). The ability to hear, smell, see, taste, touch and feel are qualities of sensescapes, which are produced through human interaction, yet sensescapes have received little attention in the world of planning and urban policy (Adams and Guy, 2007, House of Commons, 2017). Focusing on human interaction in the urban realm, a case study is discussed using multi-sensory experience to examine mobility in the lives of blind and visually impaired persons.

Visual qualities, such as aesthetics, colour and sight take on new meanings in Davidson and Henderson’s (2016) work, when they explore autobiographical accounts of autism spectrum disorders (ASDs). Addressing sight, hearing, touch, smell and taste they reveal that lighting, sound, tactile sensitivities, chemical sensitivities and texture

can evoke unwelcoming and unpleasant experiences. The authors' suggest 'recommendations for making environments less sensorially toxic' (ibid, p.85) and for accommodating neuro-affective diversity has resonance with Bell's (2016) work on the fluctuating soundscapes of living with Meniere's disease. Bell's discussion of auditory sensitivity highlights the role of unwelcome sounds, which may create unpleasant social experiences for those with Meniere's. For example, the ringing of a bicycle bell can induce panic in some, while for those with sight loss, the noise of a bell can be a welcome sound, notifying other users of a cyclist's presence. Bell calls for more conscious design decisions, including 'sheltered spaces that maximise acoustic comfort' (Bell, 2016: 847) and campaigns to encourage cycling groups to call out the side of the road or path they are approaching from, creating a more user-friendly public realm that is respectful of a range of sensitivities.

The significance of shared space schemes (Hammond and Musselwhite, 2013) and placing blind and visually impaired users in a controlled laboratory environment to test surface types and variations in lighting (although sound was not used) (Parkin and Smithies, 2012), highlights the importance of designed places and spaces. Yet, it may be argued that touch has been the most overlooked sense of all in our cities. We experience the touch of the city through our feet as we move through it (See Macpherson, 2009 for a discussion of VI walking groups in the countryside), the tactile interface between mobile artefacts, carried by visually impaired persons or encountered during interactions in the urban realm (Jeffries and Wright, 2017), and our buttocks when we stop to rest, rather than our hands (Porteous, 1996). The sense of touch, as Sennett (1998) points out, involves the dialectics of resistance – contact and resistance are 'expressively inseparable' (p.19) - and yet society seeks to design out resistance under the auspices of user-friendliness. In this sense the provision of comfortable, formalised

sitting is something of a misnomer for Handler (2017), who asserts the limiting ‘potential for the creative, impromptu (mis)use of urban space’ (p.272) in her discussion of resistant sitting and ageing. In public spaces, meaningful diversity of touch – the carriageway, the curb, the paving – can be replaced by meaningless visual decorations, which feel the same, but may confuse those with some sight. Moreover, surfaces designed to guide, are easily disrupted and may serve to confound visually impaired persons, Figure 4.

**Figure 4.** Newcastle Central Library – meaningless patterns in the paving provide enough contrast to confuse someone with visual impairment; in the same location a key section of blister paving has been missing for many months.

## **Methodology**

Case study material is taken from a three-year multi-case study research project, *My Place: Mobility and Place for the Age Friendly City*, which worked with different user groups to explore the issues affecting mobility and ageing in Newcastle upon Tyne. One of these case studies was with users of *Henshaws: Beyond Expectations*, an established third sector organisation that provides guidance, advice, education, training and support to anyone with sight loss. It operates from three regional resource centres<sup>4</sup> in northern England – Manchester, Liverpool and Newcastle-upon-Tyne.

The aim of this case study was to draw on the little heard mobility experiences of visually impaired adults through Participatory Research (PR). At its heart is the blurring of traditional researcher-researched hierarchies, building knowledge through education and mutual respect for the skills and experiences that *all* participants bring to

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<sup>4</sup> At the time of writing this paper all of the Resource Centres faced closure and staff were made redundant.

the research process (Pain, 2004), as well as gaining trust by listening to views and opinions of those involved (Kitchin, 2000). It was therefore both ethically and methodologically appropriate for working with people whose daily lives are affected by sight loss and for tackling both historical and contemporary practices that assume prior knowledge of users lived experiences by designing on their behalf, rather than designing with them. Building on from a personal and long-standing working relationship with the Community Services Team, participants were recruited face-to-face at the organisation's Resource Centre.

In February 2015, the research was introduced to participants during two separate visits. The first relied on informal conversation to outline the project and make initial contact with potential participants. The second involved a short presentation setting this exploration of sight loss and mobility in the context of the bigger project. This was delivered using the classroom-style teaching format that users were familiar with in their educational classes at the Centre. Using ipads to view the presentation provided important opportunities to read the content together, to explore the challenges and benefits of changing the font size on the screen and to discussion questions raised by the service users. A total of nine users – 5 men and 4 women - all in the 20-50s age range agreed to take part in the research. Two were blind and seven were visually impaired.

One analytical strategy was to understand experiences by being immersed in users' daily lives and moving with them through the urban realm. Therefore, there was less of a reliance on pre-determined questions and finalised timetables prior to meeting participants, instead blind and visually impaired users adopted a more central role in the decision-making process. Using collaborative working practices to decide the research focus, the methods of data collection and the analysis – adopting grounded theory (See

Charmaz, 2014). Ethics approval was received by the University Ethics Board and informed consent granted at the start of the first workshop and when new methods were introduced.

There were two periods of fieldwork. In March – November 2015 nine service users attended a series of weekly workshops using a range of qualitative methods ‘in place’ at the Resource Centre, and ‘on the move’ in the urban realm (Jeffries and Wright, 2017) . Four methods, (i) personalised user profiles –paper-based templates (including a polaroid photograph) were completed by users to share with one another; (ii) body mapping, an arts-in-health method; (iii) walking and talking during user-led visits around the city; and (iv) returning to the Centre for reflective group discussion based on activities ‘on the move’ - were chosen with users. During a second period of fieldwork in February – April 2017, a number of (v) individual interviews were conducted with service users, a mobility officer, third sector staff and volunteers.

The data, from which the findings emerged, was collected and recorded with participants using marker pens and large sheets of paper, a Dictaphone to audio record conversations ‘in place’ and one researcher’s fieldwork diaries. Diaries were used to document findings learned through mobile ethnography, a mobile method that ‘prioritise[s] the researcher being there, in motion, engaged in active knowledge production, seeking to understand mobile phenomenon first hand’ (DeLyser and Sui, 2013: 4-5). In the MyPlace case study it was designed to capture the granular detail of individual circumstances and the specificities of sight loss that make users experiences of mobility varied and unique. For example, during the summer of 2015 a series of activities at an outdoor centre pre-organised by staff at Henshaws, and a number of trips to the coast organised with service users; and involved periods of time standing, sitting,

walking and talking together. Conversations and interviews were then transcribed and analysed alongside themes identified during methods (i – iv).

The findings were presented back to the participants to check for validity and rigour - using a printed feedback booklet and accompanying slide show, for easy viewing on the Centre's large plasma screen. The two headings used in the findings section unfolded during data collection and analysis. First, *Navigating the urban realm: Sensing and being seen*, is illustrative of discussions 'in place' when completing user profiles and interviewing individuals; witnessed first-hand by one of the researchers, and described by users, during and following activities 'on the move'. Second, *Peer to peer support and training*, and the role of others was learned during mobile ethnography. All of the users mentioned the role of mobility officer in their understanding of the urban realm, suggesting an interview.

## **Findings**

A major recurrent theme in users' accounts was the challenge that individuals had in picking up clues in a vision oriented cityscape.

I can't see the number on buses so I go by the colour and if a bus comes and I think it is the one I just get it (Natalie, diabetic retinopathy, User Profile, March 2015).

I can't see bus/metro numbers or timetables (Gary, VI, User Profile, March 2015)

[I]f it's bad weather, it's hard to see if there's a bus coming, but they're pretty good. They usually stop, so that's not a problem (...) If I get the bus to the Metro Centre - I mean, they used a white, new bus yesterday and I would never have seen it. Never in a million years. Luckily, there was somebody else at the bus stop, so I hope that they would have stopped.

(Karen, blind, Qualitative Interview, March 2017: 26)

Natalie, who was born with diabetic retinopathy, describes ‘go[ing] by the colour’ to identify and board the correct service, while Karen, congenitally blind, notes how the poor weather reduces visibility to the degree that the white bus fails to register with her. Karen, however, uses a guide dog, a visible marker of her sight loss and a sign to bus drivers to stop and check if she is waiting to board their service. Such signalling is not an automatic guarantee of being noticed by other public realm users. Gary, in his late 40s and congenitally blind in one eye uses crutches for his arthritic leg which double as a symbol cane, as he explains ‘that’s why I tape up half of [my] cane`. (Qualitative Interview, October 2015: 43). The white tape added following the advice of his mobility officer is a visible marker of his visual impairment; while his crutches are a visible marker of his physical impairment. As he recounts this did not give him protection from other road users.

I was knocked down. I stepped out in front of a bike, a pedal bike (...) trying to get across the West Road (...) because there are no crossings up there (...) I was looking like that, and because I looked like that, I didn’t see him coming. I just stepped out (...) I didn’t hear him (...) I was bruised all across here where his handlebars hit me (Gary, VI, Qualitative Interview, October 2015).

Gary is crossing a road, without pedestrianised crossings to visit the job centre. Gary’s reduced capacity to see the traffic flowing towards him because of impaired right side peripheral vision is compounded by him being unable to discern any sound from the oncoming cyclist. This raises the importance of listening and the relationship between seeing and hearing. Hazel, a blind participant, describes how important sounds are to her when travelling on the Metro<sup>5</sup>:

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<sup>5</sup> The Metro is a light rapid transit system operating through underground and overground rail network in Tyne and Wear, UK.

I've got no vision at all (...) I tend to rely on the beeps

(Hazel, blind, Group Discussion, October 2015).

This refers to the directional guidance that audible beeps provide Hazel when she is boarding or alighting the Metro car though currently there is no audio information about which side (left or right) the doors will open when arriving at station platforms. Listening to sensory cues, such as the sound that a symbol cane (or crutches in Gary's circumstances) makes when connecting with objects in the urban realm were important in situating the self. For example, Hazel and Gary refer to the specific utility of their canes:

One thing that frustrates me: pavement furniture such as cafes (...) They stick their tables outside (...) The bottom rail isn't fixed, so you're walking along with your cane. Your cane catches it, but because it's not fixed, it moves. The next thing you know, smack. (...) They're quite often permanent fixtures now

(Hazel, blind, Group Discussion, October 2015);

I use it if I'm walking around and I hit something and I know there is something in front of me. Even if the curb is raised a bit. Like it hits it and I know that something is there

(Gary, VI, Qualitative Interview, October 2015).

Feeling and touch are identified by Philippa, a visually impaired user who describes using her cane to feel her way when crossing the road:

[F]eel what the road is like [for] obstacles and uneven surfaces (Philippa, VI, Qualitative Interview Notes, October 2015).

Philippa's sensory skills play a significant role in both her experience of, and training in, the urban realm. For example, she describes being able to '[s]ee [at the] sides of [her] eyes, enough to familiarise [herself]', which highlights the direct influence that her visual capacities have on her interactions with other urban realm users. Philippa also discusses her use of 'tactile cones', particularly 'at times when she

is alone', stating that she 'trust[s] other people crossing the road', when she 'can't see the green man' (Taken verbatim during an unrecorded one-to-one session). Figure 5, shows a Pedestrian Demand Unit (PDU), a commonly seen small black and yellow box, fitted to pedestrian controlled crossing points and used by pedestrians and cyclists to stop the flow of vehicles on the road by pressing a button. During the fieldwork Gary, Philippa and Adrian initiated a user-led guided walk to locate the tactile cones fitted on the underside of PDUs that rotate when it is safe to cross the road. The walk identified the uneven distribution of cones, as well as the repeated reporting of one specific broken PDU by Gary, who states:

Now they're putting them little tiny ones on, like that [Gary illustrates the size of be smaller PDU with his hands] (...) You get the cone underneath. They're just like a little box (Gary, VI, Qualitative Interview, October 2015).

**Figure 5.** Visually impaired persons often learn about the location and purpose of tactile cones fitted to the underside of controlled crossing points. Yet these are unevenly distributed and are faults are frequently reported to the local authority.

Lighting plays an important role in users' experiences of sight loss, as Karen, a guide dog user explains:

I've been using taxis. To be honest, I probably don't need to in the mornings now, however, I did fall last week so that's why I'm still using them. I need to make sure that it's light. Not when I get home, because it's 5 o'clock when I get home, but it would probably be round about 5:20, 5:30 when I get home if I was using public transport. So, I need to make sure that it's light (...) I don't really see the floor very well (...) I'm that tired when I finish (...) When it's light, I can just let him (my dog) guide and it's fine. But when it's dark, you're still a little bit unsure (Karen, blind, Qualitative Interview, March 2017).

### ***Peer-to-peer support and training***

Reliance on local knowledge and information sharing played a significant role in accounts of navigating the urban realm, including (i) learning from experience; (ii) peer-to-peer support; and (iii) mobility training.

Learning takes place through repetition of experiences. The preference for well-known bus services and routes is a theme discussed by many of the users throughout the research.

The number 1 from here is fine because it's a bus that I know. It's the only bus that goes to that bus stop, so that's not too bad (...) I tend to avoid the 30 because there's that much up the top anyway, different things come, different buses and all that kind of thing, so I tend to avoid that (Karen, blind, Qualitative Interview, March 2017);

I am comfortable on familiar routes [and] using buses, [including] travelling alone to Henshaws (Philippa, Qualitative Interview Notes, October 2015);

Rush hour. That is really, really bad...That's why I make myself back before a certain time (...) It just seems like the last couple of weeks it's been busy with that Fair, that one at the Monument... It's the run up to Christmas. I bypass it...that corner and you come out into the train station (...) I just cut through the little back streets (...) Philippa said to me when I first went through there, she didn't know that route (Gary, VI, Qualitative Interview, October 2015).

All three experiences point to familiarity with the urban realm and its services through the years lived in the region. It is this longevity that shapes blind and visually impaired users' mobility.

Peer-to-peer support is important for all of the users. Gary refers to the descriptions his partner uses to explain changes in elevation when helping him to complete longer journeys using rail travel:

One or two of the platforms, when we do travel down, are a lot further off, so [my partner] who I go down with, she needs to tell me, “big step when you’re getting off” (Gary, VI, Qualitative Interview, October 2015).

Peer-to-peer support was evident in fieldwork activities. Figure 6 shows a selection of service users, family members and friends taking part in a day trip during the summer research period. Henshaws’ service users attended an activity centre for 12-weeks arranging to meet at a chosen location in the city centre in order to travel together as a group. For many, this was their first time attending the centre and facing the challenge of completing a new route. Philippa explains:

I wouldn’t have found [the activity centre] on my own yesterday. I don’t know where I would have ended up (...) I like someone with me on my first journey if I don’t know where I’m going. I can link in and I can walk with them and they tell me if there are kerbs and whatever. Do you know what I mean? Like yesterday. Particularly when I was walking, in case I missed a kerb or I fell or tripped or something (Philippa, VI, Group Discussion, October 2015).

**Figure 6.** The image illustrates the importance of peer-to-peer support, showing service users, family members and friends during a visit to an open-air museum. There are no visible indicators of sight loss, yet the group represents those living with arthritis, hearing impairments and four different eye conditions.

Mobility training for those with congenital and acquired sight loss is very important. For example, someone lacking confidence due to a fall, accident or other event might call for a new period of re-training; those transitioning to sight loss may require techniques to navigate the urban realm, including training to locate tactile cones, learn a new mobility aid or a new or safer route. As the Henshaws Community Services Team Manager sets out there are decisions to be made about the particular needs of each person.

Do we have to refer on to mobility, or is it just something [we] can do with them?  
So they can actually travel independently; they just don't know the route. If you get somebody who does not travel independently at all, they either need to go for a guide dog or long cane training (Philippa, Henshaws Community Services Team Manager, Interview, October 2015).

‘Mobility’ refers to mobility training provided by a rehabilitation officer, which was previously divided into three separate roles - the mobility officer, the home teacher, and the technical officer – as described by a current rehab officer, when interviewed.

Mobility training for blind and visually impaired users focuses on:

[O]rientation mobility, communication skills [and] daily living skills [that] ... are supported by low vision therapy... [W]e’re looking at how a person functions within their home, within their local ... [and] wider community. We look at local area networks, so have they used public transport before? If they haven’t, making sure that they have the necessary documentation for public transport (...) Can they use public transport safely? Can they travel further afield? So we aim to use their remaining functional vision to the best of their ability, unless they’re born without functional vision (Rehabilitation Officer, Qualitative Interview, March 2017).

In a continued discussion of orientation and mobility, the rehab officer describes ‘mobility aids’, focusing on the varied size and purpose of different canes:

[F]or somebody who is registered as partially sighted, the minimum mobility aid we would request them to use is (...) a 70cm symbol cane.

A symbol cane is used to provide other urban realm users (it is hoped), including drivers, cyclists and pedestrians with information regarding the reduced sensory capacities of the cane holder. The rehab officer also points out the legality and responsibility of different users, stating:

[T]he smallest of the canes is enough for a driver to see that the person has a visual impairment. Our argument for people using a mobility aid is that if they were to

step out onto a road and they caused an emergency stop... but they didn't signal that they had [a visual impairment], they could be charged with the offence. If, on the other hand, they had the symbol cane, then it is the driver's responsibility because they should have been paying due care and attention.

A second type of cane is a mobility aid:

[A] guide cane...comes at various lengths depending on the person's height. The idea of the guide cane is for the person to use as and when they feel it is necessary to check what is at their feet...for steps...for curbs...for checking obstacles in front of them.

As is the long cane:

[T]he one where we have different tips. The most common one is the roller tip, and that cane is designed to check the person's feet as they're walking. So the main way the cane is used is in an arc position, so the shoulders being the widest part of the body, the cane tip passes beyond the shoulder width on floor level.

The officer's detailed description of the three canes is important for identifying the way blind and visually impaired users interact with objects and other people as they move through the urban realm. One aspect of mobility training focuses on the location of steps and curbs, as well as techniques to go up and down stairs, as Karen, explains:

I had an absolute crash course with a brilliant person (...) a rehab worker ... she taught me steps by literally just making me go up and down, and up and down, and up and down. I must have gone up these stairs - it was just an hour of going up and down steps [w]ith the cane. Yes, with a cane, just up and down the steps. Now, because of that, I can go up and down any steps no problem at all (Karen, Guide Dog user, Interview March 2017).

The mobility officer describes the importance of training blind and visually impaired users and teaching them to identify the location of tactile cones:

We would actually use the cone, make sure people knew which pelicans (crossings) had cones, which ones didn't have cones ...where to locate them (...) up on a little step, away from the actual exit or entrance to the road (...) or check a little higher or wider, to pick up on where the pole is (...)

[T]his is where familiarity comes in, because we keep repeating it until they're familiar with it and how to locate their controlled crossing point (Rehabilitation Officer, Interview, April 2017).

Being and becoming familiar with places and objects in the urban realm is an important part of users' sensory worlds. In the discussion overarching themes are drawn together, returning to the literature to consider the implications for urban designers and place makers.

## **Discussion**

Multisensory experience is a key factor in accounts of sight loss and mobility. Sound, in particular, is critical in safe navigation and orientation by listening for `sound information` from the movement of other users, traffic or vehicles when crossing the road or navigating through the urban realm to the sound provided by crutches and canes connecting with other objects, such as pavement furniture, curbs and tapping rails. Sound reliance made users aware of service gaps such as the promised audio announcements that a number of Tyneside buses offer. `Talking buses`, fitted with audio-visual announcements, were originally linked to marketing and tourism in the north east, including the QuayLink buses, which provide a route to the Newcastle Quayside and Gateshead Quays. From this narrow targeted audience there is some widening of the provision but this is far from universal. Even on routes where the service might be anticipated, blind and VI users frequently had to ask the driver to turn it on which for some was an uncomfortable experience that called attention to their sight loss.

While some auditory clues are partially controlled by a sight loss user sweeping their long cane from side-to-side and coming into contact with various objects, listening for sounds made by other users can be more challenging. For example, there appears to be little or no sound made by a road bike as it travels; modern bicycles are often constructed from lightweight carbon or steel frames, with gears that change through the use of subtle clicks and bells that are frequently removed after purchase. The same quietness characterises electric vehicles. Both of these green travel modes are part of city agendas and in the city region pro cycling lobbies and dedicated funds have seen a proliferation of cycle lanes and city bike schemes. The importance of more sustainable and active travel and the interface with other public realm users needs careful management to ensure that the right to safe and accessible movement is not compromised for particular user groups. Figure 7 suggests that more thinking and better implementation is needed.

**Figure 7.** The provision of cycle lanes, running parallel to a well-used bus route, a mixture of controlled and courtesy crossings and poor use of contrast create a confusing environment for visually impaired persons and other public realm users.

In some service provision there is enlightened practices such as from one local bus company (Go North East) that has abandoned corporate liveries for imaginative and bold images that are unique to each route. So, for some users with reduced vision and who cannot read the number or destination board, the easily recognisable face of the Red Kite, Gormley's Angel of the North or a line from the traditional song *The Blaydon Races* provides reassurance that they are flagging down and boarding the correct service (See Fig. 8 and Fig. 9). This approach not only meets the requirements of a range of users but also injects colour and vitality into the street scene.

**Figure 8.** Go North East bus: Antony Gormley's Angel of the North.

**Figure 9.** Go North East bus: The Blaydon Racer.

There is a tension between the experience of users, who become familiar with places, building confidence as their social networks grow versus the fragile and arbitrary nature of regulation in practice as highlighted by Imrie and Street (2009), which questions how new approaches are taken up in practice. Returning to the topic of guidance Biddulph (2012) reminds us that place making through checklists can fail to engage with what is really important.

Ticking off the meeting of standards does not help us understand how different people may be affected by the built results, whilst they also fail to acknowledge the choices about how to live in and with the environments that are created (Biddulph, 2012: 5).

Historically the field of urban design has been defined by guidelines and typologies (see for example Lang, 2006). More guidelines are not the solution to meeting the needs of those currently overlooked in public space, and the discipline needs to move away from concepts such as universal design. It is too tempting to reduce approaches to a series of prescriptive guidelines and rules, and a reliance on formulaic technical solutions. The challenge is to embrace new ways of understanding place, diversity and inclusion. A focus on *plurality* in urban design rather than *universality* may be a good foundation on which to build for the future.

The key issue is ensuring professions are more reflexive and open to different modes of knowing and a broader set of experiences. These rules often encompass the core curriculum for architects and planners, but are not necessarily included in the outcomes of professional bodies such as the Royal Town Planning Institute (RTPI) or Royal Institute of British Architects (RIBA). The training of urban designers would seem an obvious way of addressing this issue, however urban design education is complex, in the UK - as in most countries - there is no regulating body or institute.

Curricula of urban design courses are open to the perspectives of the scholars and practitioners who run them, and much of the day-to-day management and maintenance of public spaces does not involve those trained in urban design.

## **Conclusion**

Cities are complex webs of actors, interests and competing policy agendas and actions, but how do place makers address these conflicts to bring forward a more sophisticated and inclusive place? Three approaches are outlined below.

First, there is a need to challenge the current notion of universal design, which may lead to a solution driven approach - both eroding place distinctiveness and disregarding the diversity of bodily experiences. Fundamentally, universal design may promise more than is technologically possible by proposing a model that is able to cater 'for all', particularly within the complexity of the urban realm. As outlined here, there are many and varied forms of sight loss which can lead to extremely contrasting experiences in public places. 'Guidance' in whatever form does not necessarily translate into practice; rather, design briefs often seek to provide solutions through product and service design. A shift towards thinking and practice that focuses on the process rather than the end product may ensure more plural environments in the urban realm. These plural environments can then adapt and respond to a diversity of needs, instead of reproducing a single materiality for marginalised citizens (See Boys, 2016 for an alternative approach to teaching on issues of disability).

Second, there is a need to confront the inherent complexity, perhaps even the wicked problem of addressing societal issues through urban design (Winance, 2014). The lack of safe interface between competing agendas that address the mobility needs of a diversity of citizens and the promotion of sustainable travel, may question whether these diverse aims can be successfully integrated, or if the politics of urban design

reproduces decisions that favour some groups over others. The challenge is to create awareness and to work towards addressing the value of lay knowledge in promoting a more flexible mind set among professionals who are willing to be more reflexive and open to different modes of knowing and a broader set of experiences that go beyond traditional practices of thinking and understanding.

Finally, more inclusionary practices can be embedded in the co-production of knowledge, ensuring that those involved in the design, management and maintenance of the urban realm can continually stay engaged with the changing needs of a diverse set of users. Future work may consider the relationship between designers and city place-makers by providing opportunities for learning and behavioural change. For example, further participatory research is taking place with service users and voluntary organisations mentioned in the case study as part of an ESRC Impact Accelerator Account Coproduction Award (2017-18).

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