Making an Entrance: Colour, contrast and the design of entrances to homes of people with sight loss

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This research on the design of home doorways and entrances was carried out for Thomas Pocklington Trust by Professor Hilary Dalke and Research Fellow Alessio Corso, Kingston University London.

The research findings offer ideas, advice and guidance on action which may be taken to improve accessibility in the design of entrances and support the independence of people with sight loss.

Summary findings

- When asked to suggest design improvements, 84% of visually impaired respondents wanted greater contrast to see the keyhole and lock and 33% wanted a stronger door colour. A recommended standard layout for handles and locks, better external lighting and handrails was also mentioned.
- 74% of survey participants had difficulty adjusting to lighting changes between the exterior and interior of the entrance, while 41% found most door furniture difficult to see and 25% identified trip hazards around their home doorways.
- The research team met with companies from each product sector (e.g. flooring). Some companies have subsequently developed products which offer new or improved solutions e.g. step nosing, door signs.
- The study identified numerous low cost, effective solutions that can be easily installed as minor adaptations to existing homes or included in the design of refurbished or new build schemes.
- The fifteen items included in the checklist requiring special attention were: front door, door handle, keyhole and lock, walls, lighting, door number, landmark, steps, handrail, ramp, flooring, paving, glass doors, navigation lights and lift buttons.

Research aim

The aim of the study was to identify easy, practical solutions to the most common problems that people with sight loss have when entering or leaving their home. The guide is for:

- People with sight loss and their families and/or carers
- Architects and developers
- Local authority funders and housing providers
- Occupational therapists and rehabilitation workers
- Home improvement agencies

Research method

The research team carried out an extensive questionnaire survey and gathered the views and experiences of 91 people with sight loss and information from eighteen local authorities. A database of manufacturers was created and meetings held to share knowledge with seventeen interested companies that design, make and supply different products (stair nosing, flooring, doors and frames, signage, lighting, locks etc). The researchers also held an Advisory Panel workshop to elicit a wide range of opinion and expert views from professionals and people with sight loss.

Background

Many people with sight loss find it easier to understand and confidently navigate the environment around them when good use is made of contrast, colour and lighting. Simple, low-cost and effective solutions based on knowledge of contrast application, coupled with correct use of colour and lighting can greatly improve accessibility to the home.

Some critical interventions in promoting safe orientation are:

- Improvements to flooring, doors and door furniture, windows and walls.
- Improved lighting levels inside and outside the home that enable the eye to adapt to changes in lighting.
- Ensuring attention is paid to seasonal variations which will affect lighting in transition spaces, e.g. hallways, doorways.
- High levels of lighting can dramatically enhance visibility but can also cause difficulties for some visually impaired people by increasing glare.

Views and experiences of people with sight loss

The majority of the survey participants (71%) were aged between 36 and 75. Just over half (54%) were registered blind, 37% were registered partially sighted and 11% were not registered. Half reported that they had colour vision problems and 7% had no perception of light. With regard to their homes, three quarters (74%) had a personal entrance/exit from the outdoors and 28% had a shared home entrance.

When asked what would make it easier when entering or leaving their home:

- 84% of respondents said they would benefit from greater contrast to help them see the key lock on the door
- 43% would like a contrast between the door edge/frame and the door
- 33% would prefer a stronger colour on their front door

Almost three quarters of participants (74%) identified problems adjusting to lighting changes between the exterior and interior of the entrance. There were significant issues with lighting outside front doors at night, 41% found all door furniture difficult to see, 31% had steps without contrasting nosing and 25% reported trip hazards around the home entrance.

The survey asked respondents to comment on what features or design elements made it easier for them to come in and go out. They were also encouraged to suggest ways of making entrances more accessible.

'I like a brightly coloured door against a contrasting background wall colour'

'Never use glass doors which are see-through. I find it hard to tell if the door is closed or open'

'I think a standard layout would be useful for locks and door handles - all in approximately the same place and height'

'External lighting outside the front door, and lights illuminating the boundaries of the path leading to the door would be very helpful'

'I like handrails and tactile markings on the floor'

'Ban revolving doors and replace them with automated doors'

'Obstacle and clutter in communal entrances make it difficult for me to walk through confidently'

'All doors are difficult to figure out. Where's the door handle, which way does the door open?'

'I like lighting that looks like daylight, not too bright but bright enough so I could see stuff like contrasting bands on steps and door handles'

'It would help me to have a strong feature or sign to identify where the entrance to my home is. There are fenceless front gardens along my street.'

Collaborating companies and product development

The research team identified and met with companies from each product sector. The discussions and evidence from the project have led some collaborating companies to pursue product development in order to offer new or improved solutions.

Examples of product development

- AATi produces step nosing (strips on the top and front edges of the step) and treads (the flat top of the step). Nosing is made of solid metals with polymer resin infills, which achieve any colour/contrast requirement. The company is considering a range of contrasting grey resins with differing light reflectance values. An aluminium nosing with a dark resin tread, and a treated (rust inhibitor) cast iron nosing with a mid-grey tread are combinations that were designed together with the project team.
- Following discussion with the research team about landmark requirements, SignWorks is interested in producing a new 'door number' sign for people with low vision. The company is developing one version with a number and single colour background and a second version with contrasting edge colour and backlighting by LEDs (requiring mains power supply).

Financial support from local authorities

The research team contacted a number of local authorities to find out how they publicise and use the Disabled Facilities Grant (DFG) to finance adaptations and improvements to the homes of people with visual impairment. While DFG funding with respect to sight loss was revealed to be surprisingly uncommon for some of these authorities, handrails, steps, ramps and lighting were the most likely checklist items to be funded by the 18 who collaborated. Work to flooring, doors/frames and landmarks were the least likely checklist items to be funded, although they are usually inexpensive but effective interventions that may be covered by small repairs services.

Ideas on new and assistive technology

In comments from the survey of visually impaired people and access experts, it was clear that people were often expected to make their own individual adaptations to their home. At one end, some people now have the opportunity to invest in high-tech and personalised systems, while others lack the resources and/or information on what is available. New levels of sophistication in entry systems are difficult to negotiate, especially for people coping with several disabilities, such as sight, touch and hearing loss.

> *"People find alarm systems impossible because they have touch screens now"*
>
> *"The best thing is a swipe card"*

People with sight loss would like more control over their own home and new technology offers new types of solutions, especially for younger age groups. However, touch screen technology without tactile display buttons can be very difficult to use. An entrance intercom has to be tactile, visually highlighted, at the right height and with defined edges to access panels.

> *"I don't have enough vision to see numbers so I have to memorise the keypad. If the system talked to you, it would all work well if there was no background noise."*
>
> *"I live in a block of flats with an intercom. One of the things is that it doesn't work all the time".*

Visual or audible cues are important. Sensors are often used in new design approaches, but one size does not fit all. A large fob or pocket device that vibrates or buzzes when a front door or a front gate is reached would be useful.

Consistency is important; for example, having the same height and location for all keyholes or swipe card entry points in a building.

A system has to be secure and to let you know who the callers are with both visual and audible information. Audible and sensory confirmation of a doorbell ringing, with a feedback loop, is vital.

Some participants expressed the view that mechanical things are less likely to break, are cheaper and require less maintenance than technological devices. Finding an emergency button in a lift that may have broken down, or approaching automatic doors without knowing if they are open or closed, can cause stress and panic.

> *"One may lose a key but a failed electronic system is beyond my control."*
>
> *"Simple technology with sensors and lights coming on when entering your home really helps".*

Assistive technology needs to be simple and easy, so that visually impaired people can be involved in fitting or assisting with installation. More detailed information and greater awareness of what is available would assist in individual adaptations, new build developments and large scale property refurbishment schemes.

Conclusions - development of the checklist

The checklist of problems and practical solutions was constructed from the survey results and discussions with product suppliers, local authorities and experts who came to the Advisory Panel workshop. The checklist was then tested in practice by an audit, specification and refurbishment of the entrance to a visually impaired person's basement flat.

The checklist is designed to be used by people who need to know how to improve the accessibility of their home entrances and where to get funding, and by landlords and local authorities, advisors and contractors, who can assist and support them.

"In one home there is a phone next to the door with only three buttons. Really simple; the top button opens the door and the next two set privacy and security, turning the phone off if you do not wish to be disturbed".

Example from checklist

Keyhole and lock

'It's difficult to locate the keyhole and lock on my door'

Hints and tips:

- A keyhole and lock in a strong contrasting colour or metal finish to the door; on a pale door a darker metal coated keyhole and lock is best
- A metal satin, chrome or brass lock that contrasts with a darker coloured door
- A keyhole or lock with an edge or lip that is easier to identify by touch
- Existing keyhole and lock highlighted with a hard tactile marking outline
- A security lock that accepts a key entry in any direction

The fifteen key items on the checklist are: front door, door handle, keyhole and lock, walls, lighting, door number, signage and landmarks, steps, handrail, ramp, flooring, paving, glass doors, navigation lights and lift buttons.

Further information

The research publications include a checklist leaflet with hints and tips to highlight specific issues and solutions. The full research report is available from Thomas Pocklington Trust on request.

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