

## Chapter 1

# Blind Body Language: Haptics in the Homes of Congenitally Blind

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### 1.1 Introduction

Inclusive designing is a design process aiming at creating better design of objects and environments which are desirable to own and satisfying to use for as many people as possible (Clarkson et al. 2007). Obtaining this ideal requires involving users in the design process. Regarding architecture we argue that as architects are trained to know, think, and work in a visual way, visual qualities are dominating the built environment. As a consequence perceptual accessibility is often lacking and spaces with multisensory qualities are scarce. As the built environment is experienced with all our senses, we chose to learn from people who are congenitally blind (born blind): they are much more aware of non visual experiences and are consequently the ideal users/experts to investigate multisensory spatial qualities and constraints. This paper reports on part of our research into haptic qualities of the built environment, using a qualitative visual research methodology: video ethnography. Twenty-two blind people agree that we visit them at their home. The visit consists of an open in-depth interview on the living environment, followed by a video walk through their home with the participant as our guide. In this article we zoom in on the guiding tours. Although the majority of the participants state in advance that they do not rely on touch, they all notice their haptic habits and tools while guiding us through their living space. The conducted tours are videotaped and analysed regarding haptic movements.

We start by explaining the background and methodology of our study, after which we present our findings. We conclude with a discussion on the haptic experience of the body in architecture compared to our daily visual impression and the implications for designing inclusive environments.

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## 1.2 Background

In making the built environment more inclusive, we need to guarantee that people can rely on as many sources of information about the environment as possible. An environment with multisensory qualities will contribute to usable environmental information. Unfortunately, today multisensory qualities are lacking in the major part of the contemporary buildings. Due to the fact that the design process in architecture is visually biased, multisensory qualities are often forgotten. Looking for multisensory qualities we rely on people who are congenitally blind as they are said to be more aware of the non visual environment (Warren, 1978; Hollins, 1989). Hubert Froyen (2002) suggests that blind people can help us to retrace multisensoriality: “[w]ho can better clarify for us what the non-visual perceptible multisensory qualities and shortcomings of a city space or of a building are than a blind person?”

Indeed, the perspective and experience of blind people strongly differs from that of architects. However, being officially blind at birth does not necessarily mean you have total vision loss since birth. For the World Health Organization (WHO) a person is officially blind when having a visual field of maximum 10 degrees or a visual acuity of less than 1/20 in the better eye with the best possible correction (to see with the same details as a seeing person can perceive from a distance of 20 meters, a blind person must stand at a distance of no more than one meter). In our research, we rely on people who are born blind or who have lost their eyesight from the age of five because they do not have a visual reference system (Fjeldsenden 2000).

We decided to concentrate on the sense of touch, or the haptic system as it refers to touchable experiences and evidently contributes to spatial experience (Herssens & Heylighen 2008). “Haptic” is derived from the Greek verb “*haptos* (adj.) or *haptēin* (verb)”, to lay hold of, and means pertaining to the sense of touch. We agree with Marie Eithne O’Neill (2001) and Mark Paterson (2007) that haptic relates to the sense of touch in all its forms. In 1935 Geza Révész already states that spatial experience relates to visual, tactile and kinesthetic functions. When vision is absent, the haptic sense remains. Bloomer and Moore (1977) agree upon this: for them we know and feel the most from our physical environment thanks to our haptic and basic orienting system. This suggestion is substantiated by Pallasmaa’s (2005) statement that “*all the senses, including vision, can be regarded as extensions of the sense of touch – as specialisations of the skin. They define the interface between the skin and the environment – between opaque interiority of the body and the exteriority of the world.*” Architecture has an added value as it can be lived through, Graafland and Hauptman state (2006). They point out that architecture is different from other art forms in that it has the particular possibility of an ever-varying viewpoint for observation. Moreover they call it “a tactical art form” because you can entirely feel and touch it, experience it as a whole. Nevertheless haptic perception is seldom taken into account while designing the built environment and therefore we decided to look for haptic qualities in the home environment.

When talking about touch, Morton Heller (2000) distinguishes three ways of touching traced back to the body movement. We speak of active, passive and—referring to Carello and Turvey's (1996)—dynamic touch. We touch in an active way when we use our body directly to perceive tactile stimuli, for example, when we follow a handrail with the palm of our hand, or when we are looking for interior objects as landmarks. Passive touch takes place indirectly as movement does not emanate from our own body but as a result of external sources. We feel for example the heat of the sun, the atmospheric humidity, or the height of a balcony. Dynamic touching occurs when we use a tool to touch with; for example a white cane used by people with a visual impairment or a bicycle on which we feel the road when cycling.

Dynamic touch is a conscious action while active touch can be subconsciously as well as consciously perceived. Passive touch on the other hand relies on reflection and memories. Although some researchers interpret “haptic” only as active touch, we define every tactile act related to the built environment as haptic.

Haptic perception requires movement and according to Sarah Pink (2007) movement is indispensable for the creation of architecture. As Moore and Yudell (1977) state: *“The interplay between the world of our bodies and the world of our dwelling places is always in flux. We make places that are an expression of our haptic experiences even as these experiences are generated by the places we have already created. Whether we are aware or unaware of this process our bodies and our movements are in constant dialogue with our buildings.”*

The idea to visit the congenitally blind at their homes stemmed from an empirical as well as a theoretical argument. On the more theoretical side, we considered the building typology and recognized the different connotations of “home”. Most researchers understand “home” as a multidimensional concept (Bowlby *et al.*, 1997; Wardaugh, 1999; Somerville, 1992; Mallett, 2004). Furthermore we prefer to work on the home location because, when moving to or through an unknown place, people with a visual impairment always need to overcome the fear to face with physical obstacles. We presumed that inviting participants to an unfamiliar location would result in listing physical barriers without talking about spatial experience.

### 1.3 Research set-up

In October 2005 we started building up a circle of acquaintances in the world of the blind. Thanks to voluntary work during weekends and participation in activities for the blind, we have had the opportunity to meet people with whom we were able to build a relationship based on mutual trust. It is common knowledge that people who are blind protect themselves and are protected against abuse. This is completely understandable but not convenient for a researcher looking for participants. Moreover this research is impossible without mutual trust as it seeks to study personal experience. Therefore it is very important to maintain relationships. Although the quest for participants can appear a time consuming task for a researcher, its importance must not be underestimated. Besides our personal

contacts, we also work with different other channels: we publish a call on a well known forum created by Kim Bols who is born blind herself, we send an e-mail to all the users/experts trained by the regional association for the blind, we publish an article in the bimonthly journal of the association of persons with a visual impairment, we advertise in schools for the blind and finally we gather information about possible candidates with the help of friends and acquaintances of people who are blind. Twenty-two people answer positively and invite us to their home place. The majority (15) are men. During the first contact they all confirm being born blind.

However some congenitally blind participants have been able to see longer than 5 years which means that they have built up a visual reference system. Four of them even have residual vision. Only nine out of twenty-two participants did not have visual experience at all during life, which gives them a privileged position to talk about their haptic experiences. Most of them (15 participants) can still recognize light. Before we start our visits at the homes of the blind, we conduct eight test interviews with friends and family. This teaches us not to use technical language or terminologies. Furthermore the importance of using good video material is underlined, as only one person conducts the interviews.

The home visit starts with an open in-depth interview followed by a video walk/guiding tour. The interview is based on a list of open questions, grouped around different themes: circulation (approach, entrance, configuration of the path, path-space relationship and staircase) light and materials. This list of questions zooms in on the experience of the home environment with a focus on the haptic sense. All interviews are transcribed and analysed using qualitative data analysis software (ATLAS.TI). Although we realize that these questions may influence the guiding tour that follows, these interviews are not the focus of this paper as we want to discuss the body movements through space.

All guiding tours occur in the participant's home and, if present, the adjacent garden. During the tour a minimum of questions is asked as we want the participant to speak as relaxed and spontaneously as possible. The video length varies depending on the size of the home unit, the fact that participants can be more or less voluble, and their wish for privacy (some people guide us through the whole house and others show only parts). We film a total of 313 minutes and 49 seconds and an average video tour takes about 15:38 minutes. The duration varies from 02:10 minutes to 42:36 minutes. Two participants do not give us permission to film and two others do not show us the whole house for privacy reasons. Due to the fact that in two home units the area is restricted, these videos take less than five minutes. Video recordings were taken with a Panasonic NV-GS230 and are converted into .avi-files with KINO conversion software. Analysis starts with a profound look at all twenty video's. Memo's are written down into a notebook. A second examination starts focussing on the body movement of the participants. This time all actions supporting the haptic sense are written down. Finally we go through the video's taking stills of the different movements. Caution is needed if we want to observe body language related to the haptic sense: we need to keep in mind that video only shows the movements categorized as active and dynamic touch, and that we probably miss part of the passive touch as this is invisible and is only noticed when participants explicitly refer to it. Furthermore people who are

blind are so used to rely on the haptic sense that for them, touching becomes a routine that subconsciously takes place in familiar environments. One participant explicitly remarks: *“Oh yes, now I’m paying attention to it, I do use my hands (...) yes, I use my hands a lot, I wasn’t aware of this.”*

## 1.3 Findings

Although visual perception is not the focus of our research, video appears to be a useful methodology because it literally reveals body language and architectural elements supporting haptic experiences and qualities.

The participants feel that we approach them as real experts when they are guiding us through their homes. They talk about the rich and poor qualities in the built environment, but most importantly we learn from their movements. Compared to other people, they are less aware of the camera when being filmed and as a result they are unrestrained in their movement.

Besides the fact that people who are congenitally blind turn out to be the ideal users/experts for our research, the camera emerges as an excellent tool in search for environmental experiences. Sarah Pink (2007) points out that “walking with video” supports a phenomenological approach as it attends to sensory elements of human experience and placemaking. According to Pink, walking with another person allows researchers to learn empathically about the experiences of participants. She motivates her basic assumption using Steven Feld’s anthropological phrase: “as place is sensed, senses are placed; as places make sense, senses make place” (Feld 1996).

### 1.3.1 Haptic body language

Through video walk we understand the created space in a phenomenological way. By means of video ethnography we get insight into the manner in which places are made through body movement. According to Maurice Merleau-Ponty (1945), our bodies are the place in which subject and object come together.

Movement acts as a messenger between the body and its surroundings, which means that movement is our body’s language. It is indispensable for the haptic sense and contributes to giving meaning to a place. While we are able to see the space, participants walk the entire space sequentially by touching or being touched. The space is literally made through movement, which John Gray (2003) calls “walking as place making”.

During the video walk, we experience active touch as participants literally point to an object or a place with hands and feet as they follow the routes and paths that are set out. Palms of the hand are used to stroke along an “element sticking out” or as “a control touch” for the environment. For example almost all participants touch the doorcases with the palm of their hand (see Fig. 1.1 & 1.2). The back of the hand is mostly used in conveniently arranged environments, when they can slide their hands following the edges or paths. In unstructured or open spaces, most

participants start to reach out their arms to avoid unexpected environmental elements. Furthermore participants show us architectural elements using direct touch of hands and feet, which seems to confirm that they are more aware of the direct contact with their environment. Cupboards, showers, seats...are all shown with a short touch.

Passive touch can be observed when explicitly referred to. For example one participant explains that she goes to her terrace every morning, to feel whether the sun is shining. She performs an action with an eye to haptic perception. When talking about the width of a passage way, some participants refer to their body. One of the people who are born blind shows us literally the ideal width, raising her arms into an angle of approximately  $120^\circ$  width. Two participants associate ceilings with inclined walls - or walls which are not placed right-angled. As a result of the sloping roof, the interior ceilings are inclined. Surprisingly people who are blind define ceilings as walls, which could suggest that they are experiencing the boundary of space more as a whole. The ceilings are also taken into account when talking about atmosphere. For example one participant explains her favourite place in the house which is the toilet room. This room is situated beneath the sloping roof and, according to her, it has a cosy feeling. Dynamic touch is hardly observed during the video walks. This is not surprising, since tools are mostly used in an unsafe environment or for specific tasks rather than in familiar environments such as home.



Figure 1.1. view participant 1 touching the doorcase with his handpalm  
(video still: © Jasmien Herssens)



Figure 1.2. view participant 2 touching the doorcase with his handpalm  
(video still: © Jasmien Herssens)

### 1.3.2 Haptic architectural elements

Judging from the feedback of the participants, architecture can play a role in supporting haptic experiences. As a result we consider “haptic architectural elements” as useable components supporting an inclusive environment. Yvette Hatwell (2003) states that if we use the sense of touch we can put in spatial characteristics (form, place, orientation, length) and/or material characteristics (temperature, texture, density).

Regarding form, it appears that, if participants have freedom of choice, they prefer interior design with smooth haptic shapes and elements supporting the movement through space. Forms with a smooth feeling are for example a round shower cubicle or a round washbowl. Forms supporting movements are for example kitchen bars. At different places the bar as a kitchen element is a welcoming unit in house. Participants cannot explain why but it is one of their favourite elements. We assume that these bars are generally placed on the edge of the kitchen space which makes it helpful to feel space. In some home units we observe original ideas for the interior design. Interior elements are modifying the tactile environment as the places in between get more attention than the entire room itself.

When asked about their favourite doors, most of the participants do not recognize any difference nor any advantage in using doors. They say they are used to adapt themselves but still admit touching door styles when passing by.

However, when they think about it, they prefer sliding doors. Again it seems that support in movement is crucial as sliding doors do not barricade the space.

Orientation, on the other hand, is supported through structure of the housing unit as well. Well structured dwelling places are places in which the walls are supporting the moving space. Therefore passageways are welcome because, when logically built, they show clear structure. For most participants, a staircase gives structure as well and is no problem at all to ascend.

Length, dimension or scale are approached differently compared to visual perception. While visual landmarks are mostly large scaled, haptic landmarks can be untraceable for the eye. For example the structure of a building can induce air displacement at certain places as a breeze may reveal a sense of direction. The same counts for a corner of a building that is invisible for the eye but as a result of its position can support you in walking the right direction.

Material aspects, on the other hand, relate to safety and comfort in the first place. The feeling of wood or smooth tiles in interior design is experienced as pleasant but material can also support the spatial characteristics. For example more than half of the participants have put doormats throughout their housing unit. Mostly these mats mark edges in the built environment. As our feet already touch by walking alone, these mats help them be more attentive. Thanks to the difference in texture larger carpets mark an area in the house, for example from the dining place into the living room. Differences in room temperature help people to orient themselves as well as to locate the places of windows. We first assumed that density would be less traceable, however, some participants can literally show us the difference they feel in densities. For example, one of the participants walks every day into his garden to feed his sheep. Although at one point there is no path for his daily walk, he feels the difference in grass density thanks to the many years of walking exactly the same way. The environment reveals more haptic qualities than expected.

## 1.4 Discussion and future work

Architects are used to evaluate the built environment visually in the first place. However we experience it through all our senses (Rasmussen, 2001; Pallasmaa, 2005). As Robert Campbell (2007) states, we do not socialize with buildings by only looking at them, for a building is encountered, approached, confronted and related. Besides the “ready-made space” of the eye, architectural design can define or challenge identity through the body and here meaning also emerges in the order of our mutual movement with one another (Bronet, 1999). Moving through space with people who are congenitally blind and with a camera in hand makes this perfectly clear and reveals the secret of body language. Body language illustrates the fact that we experience with the help of our senses stimulating our brains (Mark, 1993). Bodily movements are the result of brain stimuli. Related to architecture these stimuli can arise out of sensory experience.

Although most of the participants state that they do not rely on touch while moving through space, video results suggest the opposite. As mentioned before, we



all rely on the haptic perception system. According to Sullivan (2005) touch differs from the other senses in that it always requires the presence, together and separately, of the body or object we touch and the body part we touch with. As a result the effect of space on movement and reciprocally the effect of movement on space are intertwined and inseparable, says Eisenbach (2008). Consequently perception of the haptic system asks usually for movement of the body itself or movement of the surrounded environment and its characteristics. For example, we can experience floor textures by shuffling barefooted through the house and we are touched by the wind which is an environmental displacement of air.

This paper tried to highlight the haptic body language in relation to the built environment. We expect that this can be an impulse for further research into the design of haptic qualities of the built environment, and that these behavioural characteristics will help us to develop haptic design parameters. First results may function as inspiration for architects who want to be more attentive to non visual senses in the design process. We revealed that the design of passage ways becomes extremely important for it is the open space in connection with the interior which will give us haptic experience. These results may contribute to inclusive design.

Furthermore we suggest that the camera could be used not only by researchers, but by architects as well; in particular at the beginning of the design process as a tool to learn more about people's desires and patterns of living. Moreover our insights could stimulate architects to make a virtual tour through their own design before starting the building process. In this way inclusive elements can be more intuitively integrated in the design process as the aspect of movement becomes part of the creation of a design.

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