



ENRICHING OUR UNDERSTANDING OF ARCHITECTURE THROUGH DISABILITY EXPERIENCE

Ann Heylighen, Caroline Van Doren & Peter-Willem Vermeersch

Abstract

The relationship between the built environment and the human body is rarely considered explicitly in contemporary architecture. In case architects do take the body into account, they tend to derive mathematical proportions or functional dimensions from it, without explicit attention for the bodily experience of a building. In this article, we analyse the built environment in a way less common in architecture, by attending to how a particular person experiences it. Instead of relating the human body to architecture in a mathematical way, we establish a new relationship between architecture and the body—or a body—by demonstrating that our bodies are more involved in the experience of the built environment than we presume. The article focuses on persons with a sensory or physical impairment as they are able to detect building qualities architects may not be attuned to. By accompanying them during a visit to a museum building, we examine how their experiences relate to the architect's intentions. In attending to the bodily experiences of these disabled persons, we provide evidence that architecture is not only seen, but experienced by all senses, and that aesthetics may acquire a broader meaning. Senses can be disconnected or reinforced by nature. Sensory experiences can be consciously or unconsciously eliminated or emphasized by the museum design and use. Architects can have specific intentions in mind, but users (with an impairment) may not experience them. Attending to the experiences of disabled persons, and combining these with the architect's objectives, provides an interesting view of a building. Our analysis does not intend to criticize the one using the other; rather the combination of both views, each present in the building, makes for a richer understanding of what architecture is.

Keywords: Architecture, Experience, Disability, Museum, Inclusive Design.

1. Architecture and (disabled) bodies

The relationship between the built environment and the human body is rarely considered explicitly in contemporary architecture. In case architects do take the body into account, they often adopt a mathematical or dimensional approach. The human body has been taken as source of proportion and measurement in architecture throughout history: from classicist anthropomorphism deriving divine proportions, over modernist organicism deriving mathematical-physical laws, to contemporary ergonomics deriving functional dimensions (Van Herck & De Caeter 2004). Today the human body is still mainly applied by architects to derive mathematical proportions or functional dimensions, while the bodily experience of a building is not considered explicitly. By using books like the *Metric Handbook* (Adler 1999) or *Architects' Data* (Neufert & Neufert 2000), designers introduce alleged ideal measurements in architecture (Imrie 2003).

Interestingly, this mathematical approach can also be found in architecture's relationship to disability. Across the board, conceptions of disability tend to be dominated by a medical discourse, which considers disability as an individual, physiological, disorder to be treated or cured. The disorder is situated in the person and the solution to the problem caused by the disorder lies in treatment or cure to restore the body's function. In this view, disability is defined by means of measurable criteria and arbitrary thresholds. For instance, the World Health Organization (WHO 1993) defines when a person is disabled based on measurable aspects of the human body. Once measured, a threshold can be chosen when this specific aspect contributes to the person being disabled. Visual impairment, for instance, is defined as having a visual acuity of less than 3/10, and blindness as having a visual acuity of less than 1/20 and/or a field of vision of less than 10°. Accordingly, accessibility is defined in terms of measurable aspects of the built environment, as exemplified by accessibility norms or

guidelines. The latter seem to consider accessibility as a *matter of fact* (Latour 2005), i.e. as something we are detached from, taken care of by state officials or experts, instead of something to which we, as a public, are exposed or attached (Simons & Masschelein 2009). They translate accessibility into facts (or indicators and averages) by fixing maximum heights of thresholds and minimum widths of doors, which in turn can be objectively measured by professional accessibility advisors. Rendering accessibility to the realm of matters of fact, in which accuracy becomes the closing argument of professional experts, leaves those affected by it—disabled people themselves—as seemingly incapable of joining the dialogue because they are supposedly no experts in the field (Heylighen & Nijs 2011).

Critiques of such medical conceptions of disability, however, place the body in a socio-material context by recognizing the complex interplay between features of a person's body and features of the sociomaterial context of his/her actions. Referring to the definition of blindness, for instance, Ruth Butler and Sophia Bowlby (1997) argue the threshold at which a person considers oneself visually disabled varies across individuals and may also differ from how others perceive them. This move to embrace disability as a social issue can be traced in the WHO's (2001) International Classification of Functioning, Disability and Health. The latter recognizes disability as a complex phenomenon reflecting an interplay between features of a person's body and features of the environment s/he lives in. It distinguishes between an "impairment": a problem in a body function or structure; an "activity limitation": a difficulty encountered in executing a task; and a "participation restriction": a problem experienced in involvement in life situations. In the WHO's (2001) words: *"Disability is not something that only happens to a minority of humanity. The ICF thus 'mainstreams' the experience of disability and recognizes it as a universal human experience."*

In the context of architecture (and other design domains), this recognition of the two-way relationship between disabled person and his/her environment, has led to the development of design approaches like Universal Design (Mace 1985), Inclusive Design (Clarkson *et al.* 2003), and Design for All. These approaches are focused on issues of social inclusion in that they aim at *"designing environments that facilitate people's emancipation from artefacts that restrict or prevent their ease of mobility and access"* (Imrie 2011). Despite their appearance, however, these design approaches also have

"vestiges of a medical model underpinning its value-based, and clinical and physiological rather than cultural (social) criteria appear to be defining and shaping its design mentalities and approaches" (*ibid.*). In line with Newton D'Souza (2004) and Jim Tobias (2003), Rob Imrie (2011) points at the positivist predisposal of these approaches towards the propagation of universal principles, their normative prescription of rules defining what good design is or ought to be, and their instrumental and pragmatic character in seeking to influence the usefulness or utility of designed artefacts. As such, they seem to fit into a "problem-solving paradigm", whereby the design problem is posited as an objective entity that, through the development of applications and standards, will result in the correct outcomes (*ibid.*).

In reality, design outcomes are interpreted and experienced by people in ways that may considerably differ from the designers' intentions (Crilly *et al.* 2008). This holds in particular for the experience of disabled people: through their bodily interaction with the designed environment, they can detect obstacles or appreciate qualities that designers may not be attuned to (Heylighen 2008). To some extent, their perspective may thus be considered as *connoisseurship* (Gibson 2000), a form of expertise that develops through perceptual learning, i.e. discovering distinctive features and invariant properties of things and events. As a result of this perceptual learning, experts are able to differentiate, in their body or surrounding world, variables that are meaningless to novices. Considering disabled people's perspective as a form of expertise resonates with a cultural model of disability, which acknowledges disability's potential to question normative practices and prevailing frames of reference in society (Devlieger *et al.* 2003). Ray McDermott and Harvé Varenne (1995) describe this potential of disability as follows: *"In cultural terms, the difficulties people in wheelchairs face with curbs and stairs tell us little about the physical conditions requiring wheelchairs or cart, but a great deal about the rigid institutionalization of particular ways of handling gravity and boundaries between street and sidewalk as different zones of social interaction."*

In this article we apply a cultural model of disability to the analysis of a contemporary building. We start from how the architect and his team conceived the building, and compare this to the experiences of a physically impaired and visually impaired person. We opted for a public building because such environment implies a wide range of visitors. By consulting the experiences of persons

with an impairment, we want to gain nuanced insights in how the original intentions of the architect are experienced by the (disabled) visitors, and demonstrate how such insights may expand and enrich our understanding of architecture.

2. Methods and Material

In 2004 the city of Louvain (Belgium) launched a competition for the development of a new museum site to replace the municipal museum *Vander Kelen-Mertens*. The competition was won by Stéphane Beel Architects, a Belgian architecture firm based in Ghent. The new museum site opened in 2009 and was baptised 'M'.

Museum M was selected for our analysis for two reasons. The first reason is the fact that M is a well-known piece of contemporary architecture. Since its opening, M has been praised as an important work of architecture by the professional press, and attracts a large volume of visitors. The second important reason for this selection is that the architect and his team paid explicit attention to persons with an impairment from the early design decisions on. This might relate to the fact that Stéphane Beel himself has been diagnosed with a neurological

disease, which he feels has made him particularly sensitive (N 2011, Plets 2011).

In line with the ambition of our analysis, we rely on multiple methods and sources. In order to fully grasp the architects' conceptions of the museum, we inventoried and analysed publications about M, and conducted interviews with the project architect. In addition, we interviewed M's architecture guide, who is confronted with the building and its visitors on a daily basis. In order to gain access to (disabled) visitors' experiences, the second author visited the museum accompanied by Charlotte, a person using a wheelchair, and Philip, a person with a visual impairment. During these visits a particular dialogue was expected to develop: a dialogue that is embodied in nature, unfolds in situ, and involves a particular knowledge transfer. Through such a dialogue experience is being framed: both the disabled person and the researcher find themselves in a reflexive stance—reflexive about their experience of the building for the former, reflexive about design practice for the latter (Heylighen & Nijs 2011).

After briefly outlining the general concept of M, the next section will analyse how (disabled) visitors experience this museum building, and how this experience relates to the architect's intentions.

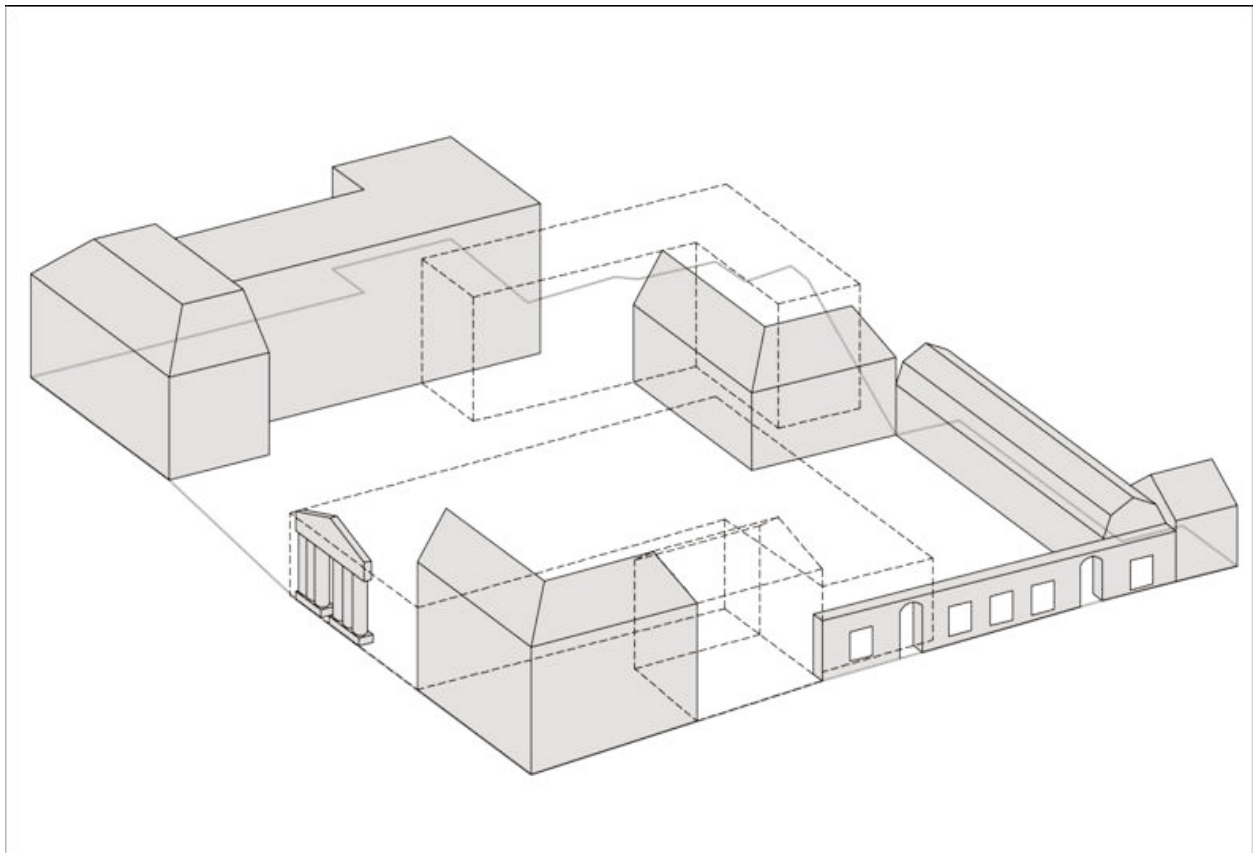


Figure 1.

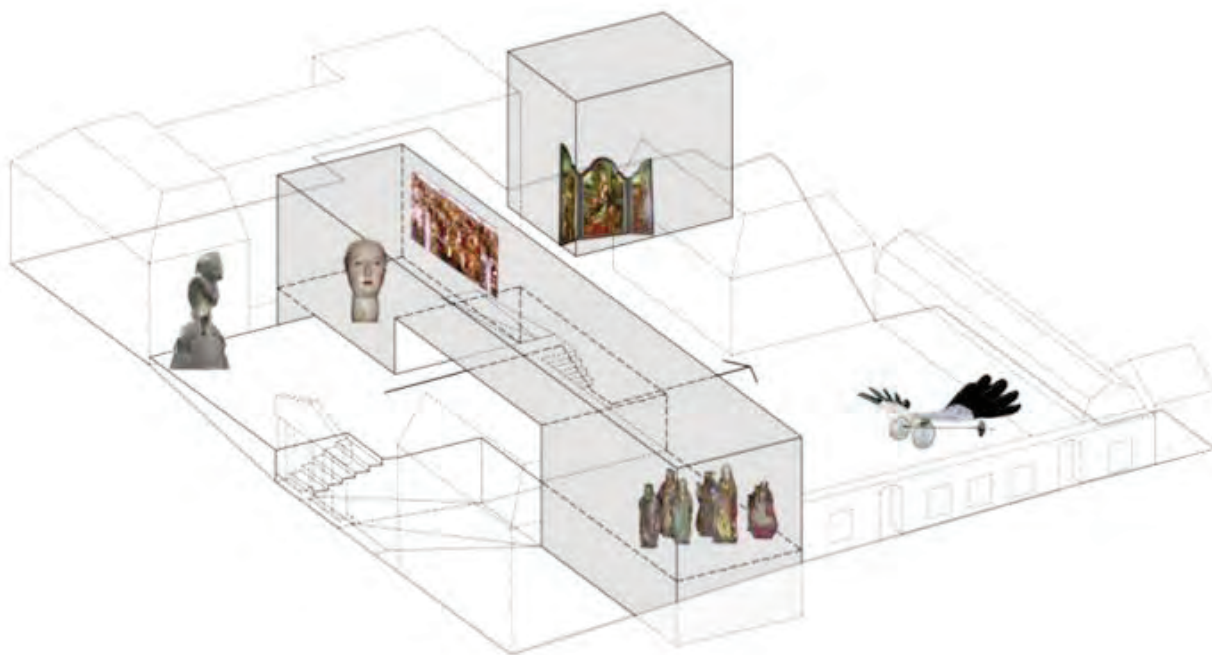


Figure 2.

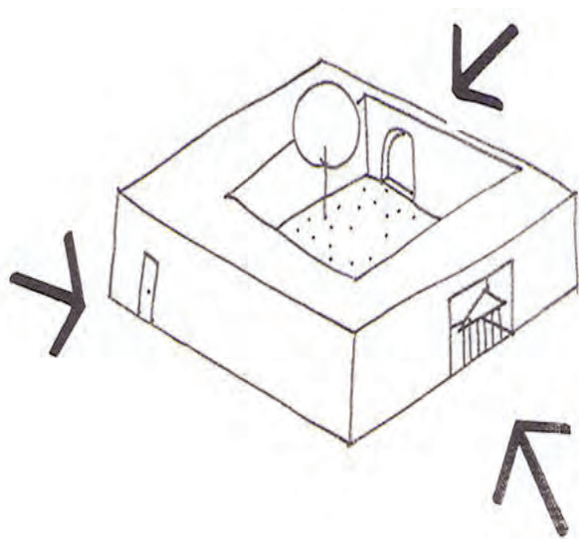


Figure 3.

Figure 1-3: Original site layout with former academy (left) and house Vander Kelen-Mertens (center). New site layout with two new volumes. Three entrances (© Stéphane Beel Architects).

3. Another Perspective on Museum M

The concept developed by Stéphane Beel Architects is grandiose and extremely simple at the same time. The design unravelled the former chaos on the site by carefully combining three elements: the conservation and restoration of valuable buildings, c.q. the house *Vander Kelen-Mertens* and the former academy (Fig.1); the demolition of miserable constructions, c.q. the old municipal library; and the addition of two new volumes—a long volume par-

allel to the *Vanderkelenstraat* and a tall volume close to the *Hanengang* (Fig.2). The newly introduced volumes create various entrances to and passages through the site (Fig.3). The main urban entrance, in the *Vanderkelenstraat*, can be distinguished by a historically listed portico—the international symbol for museums. A second, more cosy entrance in the *Savoyestraat* gives on to the museum's public garden. The third, informal entrance is located in the *Hanengang*. It is more private, and only accessible to artists and people attending a workshop. The passages from the three entrances cross in the public garden, where an old oak tree dating from 1930 forms the central element.

Stéphane Beel had a clear concept for the exterior, but also for the inside of the museum complex. The program is spread over different layers. Two underground depot levels are feeding the three layers on top. The latter accommodate several exhibitions. Each level displays a different type of exhibition—preserving, unlocking, and creating—but actually all three are conceived to accommodate every type of art. Walking through the museum, one experiences a succession of different atmospheres. Sometimes volumes are consciously built against each other, most of the time they do not touch. To let visitors consider this transition between old and new, small bridges are made between the volumes. The bridges draw visitors' attention to the fact that they are going from an old to a new volume or vice versa.

In what follows we zoom in on the architect's intentions about the arrival and the lighting and compare these to how (disabled) visitors experience the building.

3.1 ARRIVAL – *“The main entrance to the museum is deliberately very easily accessible”* (Pelgrims & Winnen 2006)

The main entrance of M is accentuated by the his-

torically listed portico (Fig.4). At first Stéphane Beel was very critical of the protected fronton and pillars (Stad Leuven 2009b), but treating them as the entrance seemed to be a stroke of genius. Both Philip and Charlotte easily found this urban entrance. Charlotte never visited Louvain before, but when she and her companion entered the street it was clear for them the museum was here. The portico will not help people who are totally blind, Philip mentions; they are not conscious about the fact that it is an international symbol of a museum either. Nonetheless, the main entrance still is an interesting tactile element of the building.

Striking about the main entrance is the fact that visitors have to descend to enter the museum. At the time when museums were a privilege for the bourgeoisie, the architecture guide points out, visitors had to ascend to enter; think about the British Museum in London for instance. The descent before entering Museum M is supposed to symbolise its accessibility and openness to all people. When we mention this openness to Philip, he understands the idea, but for him it does not make the museum more accessible.

Stéphane Beel found it important that different groups of visitors do not have to separate; a wheelchair user and an able-bodied person can enter together by this entrance. There are rules for



Figure 4.



Figure 5.

guaranteeing accessibility, the project architect tells us, yet these were dealt with in an innovative way by crossing the ramp through the stairs (Fig.5). At first the city council raised objections against the idea to combine the stairs and the ramp but later on they accepted it. According to the project architect, wheelchair users will have no problems with the ramp. He is unfamiliar with the experience of visually impaired visitors but believes it will be appropriate. He does criticize the long going and low rise of the stairs at the entrance though; the typical formula for stairs ($2 \times \text{rise} + \text{going} = 58 \text{ to } 63 \text{ cm}$) does not apply here. The architecture guide is unaware of potential problems regarding the entrance, she never heard complaints about it.

When consulting Charlotte and Philip about this innovative entrance, we hear a different story. They both mention the continuation of the ramp and stairs. When Philip sees a banister he tends to grab it immediately, to avoid falling in case he stumbles. In descending this staircase he is also led by the banister, which stops when the ramp crosses the stairs (Fig.6-8). This is necessary for the continuation of the ramp, but the fact that he has troubles finding the next banister annoys Philip. A feature he really appreciates, however, is that the banister begins at the first step and ends at the last one. This may seem obvious, but in reality he is confronted with many cases where the staircase scares him by having two more stairs after the banister has stopped.

Next to the continuation of the ramp and stairs, the colour of the entrance seems to cause obstacles as well. Both Charlotte and Philip notice that the white colour of the stairs and ramp is not ideal when it is very sunny, as was the case when

Figure 4-5: Main entrance with portico. Ramp and stairs. (© CVD).

they visited the museum site. In Philip's experience the flight of stairs is one white inclined plane. He is unable to distinguish the different stairs and the combination with the ramp makes it even more difficult and confusing (Fig.9). In situations like this he definitively has to use his white cane. At street level the different steps and the ramp cannot be distinguished. From downstairs, the distinction between the steps is more clear (Fig.7). It is always easier to perceive the different steps from downstairs, Philip points out; so apparently this is not unique to this staircase. Charlotte, on the other hand, has perfect eyesight but standing in front of the entrance does not make her comfortable about entering either. The ramp is not very visible for wheelchair users. Charlotte's companion finally notices that you have to follow the dots in the middle of the large stones of the ramp (Fig.10). The suggestion is made to introduce a difference in colour to mark the ramp.

For a long time, Stéphane Beel Architects were undecided about the material of the stairs. They were thinking about a rough finish, the project architect tells us, but finally chose the smooth surface of the concrete tiles. The first reason for this choice is that the architects wanted the same kind of concrete tiles across the entire Museum site. Secondly, the entrance is situated underneath the cantilevered (new) volume, so the stairs cannot get wet when it rains. As it was a sunny day when Charlotte and Philip visited the building, they are not able to judge about this aspect. Philip is pleased with the material, he thinks it fits the travertine façades of the new volumes well. He heard that the stones can be slippery but did not experience it himself.



Figure 6.



Figure 7.

The architecture guide stresses that, during her guided tours, she wants to let visitors feel that the entrance is going down deliberately. Interesting is Philip's observation about the entrance: in this space you can still hear the city, he says, but you leave it behind you. The old portico is behind your back, the new volumes are in front of you and above you. You have the impression that you entered the museum, but actually you are still outside. By describing the movement of entering in this way he admits that the sense of space and the concept are excellent.

3.2 LIGHTING – “The visitor is guided through the exhibition from one spot of light to another.” (Beel 2009)

“I am not in the first instance concerned with the outside of the things, but the outside is certainly important in the sense that it speaks a particular language” (Marquez & Levene 2005). This quote by Stéphane Beel does not refer to Museum M in par-



Figure 8.

Figure 6-8: Philip grasping the banister, which stops when the ramp crosses the stairs. (© CVD).

ticular, yet it seems to apply to it. During the interview, the project architect confides to us that Stéphane Beel Architects usually design a building from the inside. For this project they added two new volumes on the site. At certain points they decided to extend the volumes, e.g. to the portico. These extensions were made with great views in mind: views on the Central Library of the university, the Saint Peter's Church, the Town Hall (Fig.11-12).

The concept of routing is important for Stéphane Beel. Windows are conceived on well-considered places: “Along the exhibition track you can perceive the city and perfectly framed views of the other parts of the buildings” (Stad Leuven 2009a). Sometimes a window provides a view over the city, at other times one can catch a glimpse of the garden: “These large urban ‘paintings’ provide a view on the University Library, the towers of the Town Hall but also on the banal back of the urban buildings. These views are not only esthetical sights of the monuments of the city, but also uninteresting sights are present” (Dubois 2009). Moreover, “(...)



Figure 9.

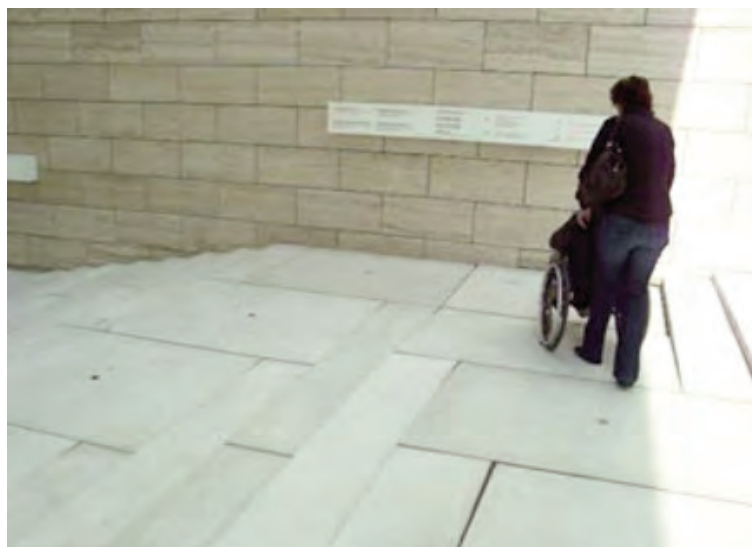


Figure 9-10: Sun reflecting on the stairs.
Charlotte enters by following the dots.
(© CVD)

Figure 10.

even roofs made of sheets of corrugated material are shown to the visitor, because these roofs are also part of the city!" (Wijle 2010).

Philip is very positive about the windows. Even when there is a statue in front of the window, he tries to get closer to catch a glimpse, for example of the oak tree. He appreciates the views on the garden and the city. In the long volume he asks

whether it is possible to see the Town Hall because he remembers this magnificent view from a previous visit. A bit later, Philip recognizes the view (Fig.13). Still in the long volume, he notices daylight penetrating the building and suddenly goes closer to the window. The window in this particular space was darkened earlier, he thinks, because he does not remember the view. Also in another space he guesses the windows were darkened before. In some cases, the project architect explains, the architecture team thought the view as interesting

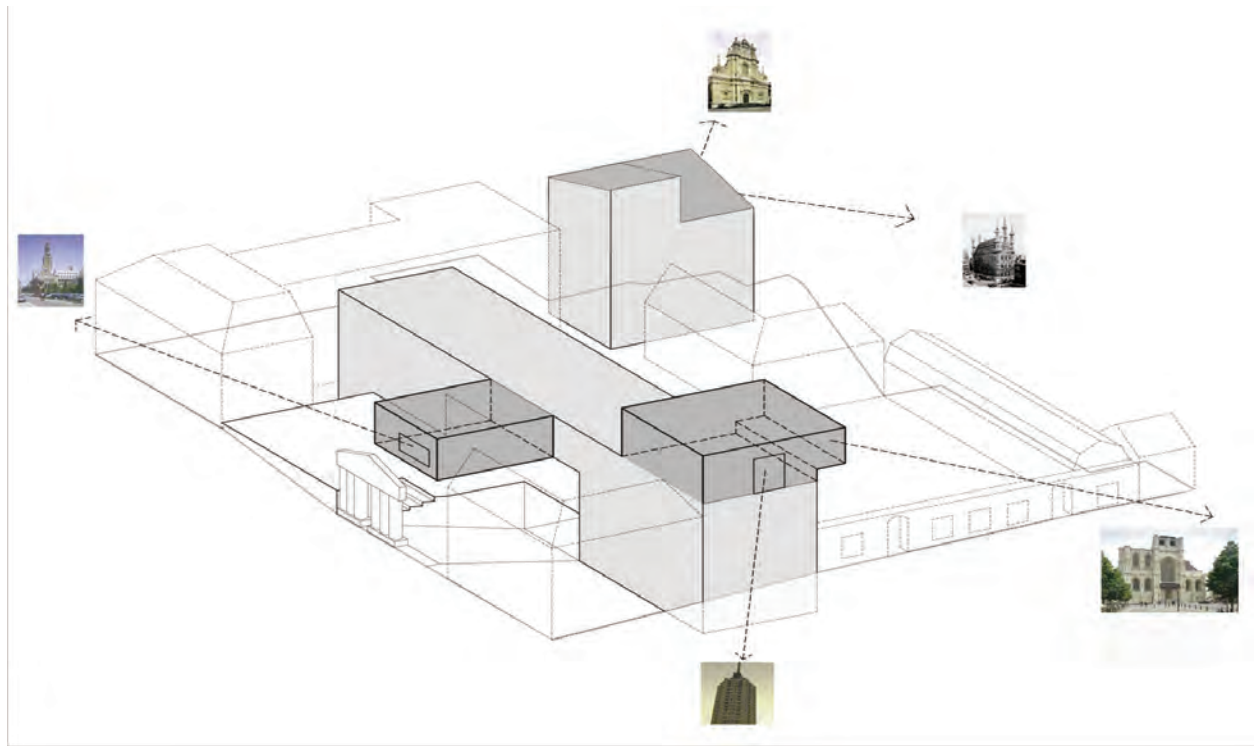


Figure 11.



Figure 12.

Figure 11-12: New volumes extending with well-considered windows offering great views (© Stéphane Beel Architects; CVD).



Figure 13.



Figure 14.

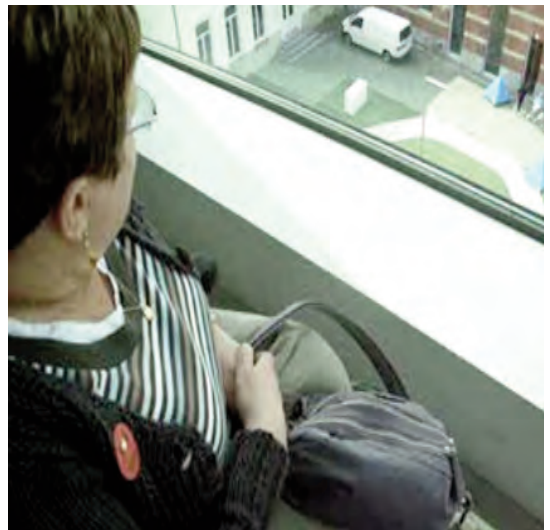


Figure 15.

Figure 13-15: View on the Town Hall. Statue in front of a window. Charlotte watching the garden. (© CVD)

but the organisation decided not to show it. He also admits whether the windows are darkened or not depends on the exhibition. So because the windows are used differently now, the museum offers a totally different experience for Philip.

The views also appeal to Charlotte. But unfortunately, the windows are sometimes too high for her. At other times a statue in front of a window restricts her enjoyment of the view (Fig.14). But in general she appreciates the windows (Fig. 15). Spread over the whole museum site, there are several windows that do provide an excellent view for her.

The architecture guide recommends to point out the windows and views to visitors who use a wheelchair. During the visits, however, we notice that Charlotte and Philip spontaneously attend to the windows, even in difficult situations; we do not need to make them aware of the views. When we confronted Philip with the concept of walking from one spot of light to another he did not know immediately whether it was accurate. But considering their reactions during the visits the concept apparently seems to work.

In Philip's opinion, daylight is always a quality in a building. Both the consulted persons are of the opinion that there is enough daylight in this museum and that the views are well positioned. Although the project architect tells us that the views have to help persons to orientate themselves inside the building, Charlotte and Philip do not experience them in this way. Philip is not certain about this function and to test it he would have to visit the museum by himself. Charlotte appreciates the views but they do not help her to orientate herself on the site. In Philip's opinion this is not a bad thing because otherwise the building would be immediately transparent from the first visit. A building which gives itself away from the first visit he finds boring.

4. Discussion and Conclusion

We started this article with a brief outline of the relationship—past and present—between architecture and the human body. From ancient times onwards, people have been trying to derive proportions and dimensions from a standardized body, and to translate these mathematical principles to architecture, sometimes even literally. Similarly, measurable aspects of disabled bodies have been translated into accessibility norms and guidelines by fixing maximum heights of thresholds and minimum

widths of doors. These measurable proportions and dimensions, however, tell us little about the bodily experience of architecture, and how this experience relates to the experience intended by the designer.

Stéphane Beel Architects intended to create a very accessible entrance where all visitors can enter together. Unfortunately, many architects still seem to have troubles to integrate usability and accessibility elegantly with the architectural concept: *"Most buildings are first designed and then these 'special requirements' are merely pasted on"* (Malik 2006). Instead Beel's design questions the basic form and content of the physical fabric of an entrance from the perspective of accessibility. Philip and Charlotte appreciated the concept, but its realisation still shows some problems. A special feature of the building is the daylight admission. Stéphane Beel (2009) mentioned that the visitor is guided by the spots of light. Unconsciously, Philip and Charlotte seemed to be attracted to the windows indeed.

By attending to the experiences of these two disabled visitors, we abandoned the prevailing relationship between architecture and the body. Instead of reducing the human body to a source of an abstracted system of proportions or measurable aspects, we acknowledged the full sensory role of the body in experiencing the built environment, thus providing evidence that architecture is not only seen, but experienced by the whole body (Pallasmaa 2005).

In establishing this new relationship between architecture and the body—or rather two bodies—our analysis revealed a discrepancy between the architect's conception of use and the observed use, suggesting that design decisions have been taken in favour of a strong presence of the concept. The intended equality in the entrance, for instance, translates into a visual uniformity that hinders ease of use not only for the visually impaired visitor, but even for the visitor with perfect sight. Inside the building, the concept of being guided from one spot of light to another conflicts with the building's use as a museum; whence the covering of the windows. Judging from the experience of Philip and Charlotte, however, it does seem to work in terms of visiting the building.

Moreover, in establishing this new relationship, the notion of aesthetics seems to acquire a broader meaning. Senses can be disconnected or reinforced by nature, e.g. people born blind learn to attend to auditory and haptic features in the envi-

ronment (e.g. Warren 1978). Sensory experiences can be consciously or unconsciously eliminated or emphasized by the museum's design and use.

Architects often associate disability with accessibility only, but in the light of a cultural model of disability, there is much to learn from the experience of disabled people. Striking is Philip's statement: "Experience of a building is much more than just accessibility". Although both visitors critically commented on the building, they mentioned that it is one of the best museums they have ever visited. The experience of a building is strongly related to the architecture, the concept, the ideas..., Philip said. To become aware of the experience of a building, consulting disabled persons is highly valuable. Stéphane Beel mentioned in one of his interviews that he always tries to imagine he is somebody else, e.g. a cleaning lady. Philip and Charlotte mentioned that able-bodied persons do not know how disabled people experience the built environment. Both visitors were really enthusiastic about their participation in our analysis because they appreciate that architects pay attention to them and their experiences.

To conclude, in providing another perspective on Museum M, our analysis has demonstrated that the relationship between architecture and disability entails much more than obeying accessibility norms or guidelines. On a more general level, it has demonstrated that the relationship between the built environment and the human body transcends the scope of mathematical proportions and functional dimensions. Moreover, it has shown that, rather than being limited to visual effects, architecture can contribute to a certain bodily experience. Architects may have specific intentions in mind, but the user (with an impairment) sometimes does not necessarily experience these. Attending to the experiences of disabled persons, and combining these with the architect's objectives, provides an interesting view of a building. Our analysis does not intend to criticize the one using the other; rather the combination of both views, each present in the building, makes for a richer understanding of what architecture is.

Acknowledgements

This research received funding from the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-

2013)/ERC grant agreement n° 201673. The authors would like to express their special thanks to everybody who has contributed to the study reported in this article, especially to Charlotte and Philip, the project architect and the architecture guide.

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Author(s)

Ann Heylighen,

KU Leuven, Dept. of Architecture,
Urbanism & Planning, Belgium
Email:ann.heylighen@asro.kuleuven.be

Caroline Van Doren

KU Leuven, Dept. of Architecture,
Urbanism & Planning, Belgium

Peter-Willem Vermeersch

KU Leuven, Dept. of Architecture,
Urbanism & Planning, Belgium