

Beyond the Designers' View: How People with Autism Experience Space

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Abstract

Harnessing all different dimensions of space is an immense, if not hopeless task. Thus the design of space is challenged by a complexity of meanings. The meaning attributed to a certain physical environment depends to a large extent on the personal interpretation people attach to this environment, influenced by their personal interests, attention and perceptual possibilities, whatever the designer's line of thought that generated this built environment.

Aware of the diverse ways in which a designed environment can be received, this paper attempts to understand the built environment from another perspective. It reports on a study that starts from different people with autism spectrum conditions, throwing light on their spatial interpretation and the way they deal with the physical environment. Insights from an analysis of autobiographies of people with autism, tinged with the experiences of engaging with people with autism in different contexts, give an idea of what understanding another view on the built environment could imply.

This paper presents fragments of a particular autistic world of experience as a challenge to open our eyes. It illustrates how some people with autism place an enforced confidence in the direct perception of the built environment, and it highlights the influence of extra connotations—exceeding the directly perceptible—which are inherently connected to space in our society. In an attempt to look at the built environment from this perspective, this stance enables us to be critical of the way we—architects and designers—think about designing space and it spurs us to be alive to the multiple complexity of space.

Keywords

architectural design, autism spectrum, built environment, design thinking, interpretation of space, interaction with space

Harnessing all different dimensions of space is an immense, if not hopeless task. The wide range of meanings the built environment may have adds even further to the complexity of space. This complexity is an intriguing challenge to the design of space. A design, nourished by the architects' line of thought, finally acquires a meaning in the way people deal with it. In view of the diversity of people dealing with the built environment, this paper takes up the challenge to take another view on the built environment, in order to trigger the complexity that captivates the design process.

Architectural Design and Autism

Space is a complex idea. Through the years, all kinds of scientists made frantic efforts to grasp the entire world, aiming to set up an informational dominance over it (Thrift, 1999). Without avail, Nigel Thrift (1999) poses, because thinking about space complicates immediately. The infinite web of meanings we are living in loads even the physical space with a distribution of meanings, meaning that are continuously regenerated by people interacting with the built environment. The meaningful entities of space are interpreted by their habits of action (Määttänen, 2007). In this way, one place in natural space may well have different meanings; it may be a place for different habits and practices at the same time.

Physical space incites people to a certain way of dealing with it, it affords certain behaviours. And even the meaning of this space, the meaning of architecture, can be interpreted as an affordance, Jonathan Maier and Georges Fadel (2009) argue. In the sense of James Gibson's idea, this implies that the interaction between people and the built environment depends not only on the physical form of architectural elements, but also on the observer's past experiences, beliefs, aesthetic preferences, etc. The meaning of any architectural attribute, therefore, depends on the individual (Maier & Fadel, 2009), which complicates the built environment even more.

The idea of affordance may also mark the process of designing space, in which possible behaviour response can be anticipated (Maier & Fadel, 2009). However, designers do not only work with certain attributes or elements, related to previously defined meanings or affordances, as signs which has to be combined and recombined (Louridas, 1999). By seeing things in different ways, designers succeed in determining meanings, and organizing them in a structured whole. Designers reorganize meanings depending on the result, they redefine meanings, and in this way, designers do not only speak with their work, but they also speak through their work. Designers pour themselves into the design process, they disclose themselves through the design. The result of a design carries some part of the designer/s in it (Louridas, 1999). But whatever the considerations from which designers organize a certain environment as a structured whole, eventually, the built environment acquires a meaning through interaction with people. What is meant (or not meant) in a particular architectural setting depends on the prior experiences of the individual (Maier & Fadel, 2009), and people interpret the built environment based on their own habits of action.

Starting from a wide diversity of people, this paper investigates the interpretation of the environment and the use of space by people with conditions on the autism spectrum, shortly people with autism¹. While neuroscientists are still looking for a biological explanation, autism is diagnosed on account of a characteristic behaviour, known as restricted and repetitive actions (Wing, 1997; Happé, 1999). Nevertheless, according to most theoretical approaches, the true essence of autism underlying this distinctive behaviour is supposed to be situated in a characteristic difference on a cognitive level (Baron-Cohen, 1995; Lawson, 2003; Noens & van Berckelaer-Onnes, 2004). Their specific 'distinct' way of perceiving and information processing causes people with autism to make sense of their surrounding world in a unique way (de Roeck, 1997), moulding the way they view, and engage with, reality (Lawson, 2003).

Both the characteristic behaviour and the particular way of sense-making of people with autism, influence their spatial experience and interaction with the physical environment. This is a central argument to confront the perspective of people with autism spectrum conditions and the design of the built environment. Gaining insight in the built environment from the perspective of people with autism, this paper aims to open up the designers' view on (designing) this environment.

Accessing Another Perspective

To get an idea of an 'other' view on the built environment, i.c. an autistic perspective, this study intended to engage extensively with people with autism in different ways. However, since impairments in social interaction and communication are considered as common characteristics of the autistic spectrum (Happé, 1999; Wing, 1997), it is not obvious to gain access to the range of thought of people with autism. This prompted us to explore other approaches. To start with, our study took advantage of the fact that some people with autism poured out their reflections on the surrounding world—including the built environment—by writing them down (Baumers & Heylighen, 2010). A number of autobiographies were selected on the dual condition of having been written by people with autism themselves and about

¹ The autism spectrum consists of divergent pervasive neuro-developmental conditions, entailing difficulties in social interaction, communication and flexible thinking or acting (Wing, 1997).

experiences of their own lives (see Sellin, 1993; Gerland, 1996; Rand, 1997; Willey, 1999). The analysis of these sources investigated the way people with autism talk about space and the importance they attach to their physical environment, as reflected in written stories.

Joining onto this earlier analysis of writings, the first author also engaged with the doings of people with autism in various settings. Associating with people with autism in three different contexts, he tried to understand their bodily interaction with the physical environment, paying attention to the way they use space, to their behaviour in relation to the built environment, and to the influence of the physical environment on their doings.

A first setting comprehended a short introductory period in the daily living environment of a young woman with autism, living in a common housing facility for people with an intellectual disability. In this house, the woman with autism was living together with seven other persons with an intellectual disability. The researcher joined the daily life in the house during one day, giving attention to the woman with autism both in the common spaces and her private room. A second engagement occurred in a housing facility only for people with autism. For several successive days, the researcher participated the evening-activities in a house of six people, starting from the moment they came home from the workshop until the time they went to bed. During these days, the principal point of interest was the interactions in the collective places, although in personal contact with the occupants, the researcher also explored some private rooms.

A third setting considered in this paper, is the audit of a university building in which the researcher collaborated with a student with autism (Heylighen *et al.*, 2010). In close cooperation with the student, the integral accessibility of the facility was questioned. Because the audit was focused on the accessibility of the building itself, this personal interaction clearly revealed the view of the student with autism on, and his engagement with, the built environment.

In this study, we want to give depth to a few insights from the earlier study of autobiographies of people with autism by relating them to an interpretation of the observations in different settings. In this way, fragments of an autistic perspective on the built environment are sketched, as a basis for a critical reflection on our own way of thinking about the built environment.

Fragments of the Built Environment

Interpreting their Writings

The analysis of a selection of autobiographies of people with autism—shortly *auti*-biographies—revealed some characteristic aspects of an autistic view on the built environment (Baumers & Heylighen, 2010). Within the scope of this paper, we want to throw light on three of the mentioned aspects, three particularities of an autistic world of experience that were noted in the written stories of people with autism: the confidence offered by physical space, the hidden logic associated with space, and a direct and conscious way of experiencing the world.

Living in an incomprehensible world, a lot of *auti*-biographers push forward the physical space as a source of certainty. Physical space, presented as a fixed and self-evident feature of the environment, gives a sense of grip the authors are looking for. The physical characteristics of space, which are directly perceivable, seem to inspire more confidence than human beings. Even though some authors write that, from a physical point of view, there is no essential difference between people and objects, the meaningful world behind human beings arouses some unpredictability and uncertainty. “When I’m not concentrating on people,” Brad Rand (1997) writes, “they just look like shapes, like furniture and trees are shapes.” But Birger Sellin (1993) clearly differentiates this view: “Because of important reasons I can find safety only in things. People are incalculable and distinct monsters.” The incalculable feeling in associating with people is also reflected in the behaviour people

with autism describe in their stories. In this way, Liane H. Willey (1999) relates she knew how to control herself, if she started to lose her bearings. “Whenever things became too fuzzy or too loud or too distracting; whenever I began to feel as though I would come unravelled, I knew I could crawl into my alcove and crunch up into it until I felt as square and symmetrical as the alcove itself.” In the alcove, she could always find herself. And just like Liane, most of the authors describe how they—faced with unsteady situations—seek comfort in reliable spaces, where they find a tangible source of peace and safety, rather than to seek comfort with other human beings.

However, even though in most stories of people with autism the physical space features as a source of grip, the built environment—brought into use in society—reveals an unpredictable side too. Each of the considered anti-biographies reports about problems experienced in dealing with the built environment, or rather ‘maladjusted’ behaviour compared to the expectations of society. Gunilla Gerland (1996) describes her struggle to interpret the built environment ‘correctly’, so as to be able to deal with it in an appropriate way. Musing on the way other people deal with space, she tries to explain her ‘maladjusted’ behaviour. “There *must* be a sign of some sort on the doors, because the others didn’t hesitate over where they should go.” Not sure to find a traceable proof of what the others seemed to see, she had a fleeting thought that “maybe the others knew automatically which lavatory they should go into, and so needed no special labels in the way I did. Perhaps they had innate abilities for knowing that kind of thing?” (Gerland, 1996) And probably, Gunilla’s explanation is not that far-fetched; there may be such an invisible logic in the built environment, owing to the cultural and social connotations associated with it. Not only human beings, but also objects and the whole built environment are loaded up with additional layers of meaning which, in our society, are assumed to be inherently connected to space. Such layers of meaning cannot yet be perceived just like that.

This raises a third remarkable aspect in the stories of people with autism. In each of the anti-biographies, the authors explicitly testify to a direct and conscious way of perceiving the physical environment, in order to position themselves in the world. Gunilla Gerland (1996) describes how she, scared by the sudden sound of a moped, tries to find a way not to lose herself. “So as not to fall over or explode from inside, I would grab the fence where I was standing, pressing myself against it and holding on hard. I had to feel something that stood still, something anchored, in a world that had suddenly become totally unpredictable.” (Gerland, 1996) Clutching the rails of a fence, or crawling into an alcove under the bed, the authors succeed to come to their senses again, starting from a conscious experience of the physical environment.

Witnessing their doings

The fragments of an autistic perspective on the built environment presented above arose from an analysis of written reflections of people with autism. These fragments are reconsidered in the light of the behaviour regarding space, observed during real interactions with people with autism.

In the interaction of people with autism with space, it also dawned how the physical elements of space are able to give some grip, and even more, how the sense of grip can be qualifying to the use of space. In this respect, the first author witnessed the weekly cleaning ritual of the young woman living in a housing facility for people with an intellectual disability. After she had accurately dusted every little spot in reach, persuading herself that every object in the room was still present in the way she expected, she put the bucket with water in the middle of the corridor. A somewhat ill-chosen place, perhaps, but while completing every next stage of the cleaning plan, she had to walk conscientiously around the place where the bucket—coincidentally or not—had been arrived. A similar situation struck the researcher in the other housing facility, where the plan to play a game fell through because the playmate was not able to take the game. An ironing board, awkwardly placed in front of the cupboard, prevented him to open the cupboard. A simple object, be it a cleaning bucket or an ironing

board, was standing convincingly on its own spot, exuding an immovability that was able to determine the following moves.

But the built environment contains more than only this convincing aura, as also illustrated by the use of space of people with autism in different settings. In one of the houses, the counsellors resolutely connected all activities to a particular place in the house. When one of the occupants caught the researcher red-handed in the entrance hall while he was quickly writing down a few notes, she severely reprimanded him: “Hey, without any problem, you can take a seat in the living room to write, you know!” Even in the world of the occupants, each place carried the meaning of the connected activity, and they convincingly proclaimed it to others. However, not all the meanings connected to spatial aspects in our society are as obvious. The audit of the university building in the company of a student with autism revealed that spaces and spatial elements are not always understood according to the meaning we associate with it. The student confided that the staircase of the building did not invite him to go upstairs, and the doors did not show him in a unquestionable way whether he was allowed to come in or not, even though this seemed obvious in the researcher's eyes (Heylighen *et al.*, 2010). And the other way around, when the researcher purposefully opened the dividing door to allow some circulation of air in the house of people with autism, one of the occupants abruptly closed it again. He started to pace up and down nervously, quickly looking around as if something unsuspected was on the verge to happen. The researcher understood that his intentions were probably not clear to the occupant. Only after the next day the dividing door was closed at the moment all occupants quietly had started their evening activities, it dawned that the interpretation of this spatial configuration in the occupant's world was not understood right away by the researcher either.

Finally, the interactions with people with autism also revealed an impressively attentive way of perceiving. During the exploration of the university building, the student frequently pointed at details, which passed the researcher completely: a door handle that was missing at the end of the corridor, or a tiny date indication hidden in a scutcheon next to the ceiling. But also the sounds of the wind around the building, or moving chairs a few rooms away, were details that would not have drawn the researcher's attention. And the conscious perception of space even seemed to exceed the researcher's own capacity of experience. When in the housing facility for people with autism, after a hot summer's day, an unexpected shower of rain provided some cooling, one of the occupants positioned himself under the cupola in the center of the living room. Noticing the occupant blissfully dancing back and forth, the researcher wondered what it was that this guy experienced. Was it the image of the falling raindrops that made him that happy? Or the sound of the raindrops on the glass? A light cooling breeze slipping into the room? Perhaps the very thought of relief? Probably, space contains a lot more aspects; aspects we cannot easily get hold of, but that a particular perspective on the built environment, in this case a consciously focused—maybe hypersensitive—experience of space, can bring to light.

Facing the Complexity of Space

Each of the considered examples lay bare a particular aspect of the world of experience of people with autism. Discussing these different aspects, we do not intend to give a decision on the world of experience of people with autism. The fragments of an autistic perspective on the built environment, put forward both by the analysis of auto-biographies and by the moments of interaction, offer an occasion to reflect on our own view on the built environment and to question the 'truth' behind this view.

In the study of the world of experience of people with autism, the attention was attracted by the grip offered by physical space and the sense of certainty and confidence this can bring about. Analogously, Ruud Hendriks (1998) explains how people with autism often feel rather supported by non-humans than by humans: “The nonhuman predictable behaviour and iron regularity are thing-like traits that people can only try hard to simulate.” The predictability and regularity of the physical space even turn out to cause objects, as immovable entities, to

qualify the spatial behaviour of people with autism. This notion of grip, offered by physical space in an autistic perspective on the world, can value the physical entity of objects. Even banal objects, like a cleaning bucket and an ironing board, or a small space beneath a bed, are essentially physical anchor points of the built environment, which can draw attention to what is undeniably here.

But even though the view on reality of people with autism would be focussed on those features that are given in direct experience, there is more to reality than actualities, as stated by John Lawson (2003). Emma Williams (2004) too describes how objects exist in a social world, and are an enduring source of social influence. Our world is shaped by human activity, and is full of things designed by people to be used in specific human activities by people who share a common body shape, similar needs, and a same cultural history. The same difficulties experienced by people with autism in social or interpersonal relationships constitute part of their problems in relating to objects and the built environment (Williams, 2004). Those difficulties come also to the fore in the stories and actions of people with autism, described above. They show that the additional layers of meaning, in our society inherently connected to space, follow from our own view on reality, which is no less an interpretation of this world. Which logic concludes that our own interpretation of space could be considered as being better adapted to 'reality'? Simply because it is self-evident—in accordance with our own interpretation—that a door is used to enter or exit, this layer of meaning is assumed to be generally accepted; but why would it be less appropriate to consider a closed dividing door as a promising sign of general quiet?

Also the conscious way of perceiving, noticed in both the stories and actions of people with autism, incites us to think. Different theories confirm that people with autism are characterized by a particular view on the environment, be it restricted to what is directly perceptible (Lawson, 2003) or just fragmentary (Happé, 1999). Due to a fundamentally different way of information processing, adequate sense-making needs to be consciously constructed step by step (Noens & van Berckelaer-Onnes, 2004). The conscious experiences of people with autism show that bringing a space into use can signify much more than only performing a certain action on a given place. Even the smallest details of the built environment can attract the attention, and in this way, using space includes seeing, hearing, feeling, smelling, ... and thoroughly experiencing different dimensions of that space.

The particular way of experiencing, consistent with the cognitive style of the autism spectrum, makes us aware of the fact that this world of experience may exceed our own experiences; it raises questions about our own view on the world. Considering these fragments of an autistic world of experience in the context of designing space may also inspire designers to burst the banks of their own world of experience. The complexity of the design challenges designers to question the way they think about (designing) the built environment.

First, the awareness of the sense of grip exuded by the physical environment can be put in the light of the design of space. Each designed artefact acquires a meaning in interaction with people, but are we—as designers—also aware of the meaning a 'beneath-the-bed' can imply? Moreover, a lot of extra layers of meaning are provided to a design. A design is loaded up with inherent meanings, which can afford certain behaviours—conscious or not. But do we—as designers—still question how a door can be designed so as to look inviting to enter? And third, the design of space can be influenced by many aspects, connected with the experience of the built environment. Different senses, but also those various layers of meaning, play a role in the experience of space, and this diversity of perception and sense-making could challenge—perhaps inspire—designers. Which aspects of a cupola are important in the design, if besides the incidence of light and the sound of rain, it is also possible to carry the blissful idea of cooling? The complexity of space, couched in the diverse perceptions and meanings, can invite designers to take up the challenge of questioning their own way of thinking, in order to be aware of the relativity of the designers' view.

However, it needs to be mentioned that the view of this research is relative too, simply because of taking a particular perspective on the built environment as a starting point. Furthermore, the analyses rely on a first exploration of the possibilities of this research. Both

concerning the anti-biographies and the moments of interaction, we do not pretend to give a complete image of a general perspective on the built environment according to *the* cognitive style of people with autism, if only it should exist. The interpretation of a selection of autobiographies happened from our own limited perspective. And it is not improbable that the image, shown during the interactions, is to a certain extent a disruption of the habitual rhythm, among other things because of the researcher's presence in the different settings. In a next stage of this research, the insights gained through this first analyses are used to refine the method, to consequentially look for more depth in exploring the perspective of people with autism concerning the built environment. Finally, although the discussion of the fragments in the light of architectural design raises more questions than offering answers, it also keeps open a lot of lines of thinking. To get a hold of the implications of these insights for architects, the frame of this research seeks to investigate design cases. The study of realized design projects intends to get a variegated idea of what designers can take in from insights from an 'other' perspective on the built environment.

Despite the mentioned limitations, this study tried to take on an autistic perspective to exceed the designers' view on the built environment. By elaborating fragmentary aspects of an 'other' way of thinking about space, which we do not always give a moment's thought, this paper raised a corner of the veil of the enormous diversity of possible interpretations of the built environment. In this way, the study offers a challenge to designers, a challenge that can be inspiring in dealing with the profound complexity that the design process implies.

Acknowledgements

This research is supported by the Research Foundation – Flanders (FWO), of which Stijn Baumers is a Ph.D. fellow. The research of Ann Heylighen is funded by the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement n° 201673.

Special thanks should also go to all who shared his/her expertise in aid of this study; in particular the authors of anti-biographies, the occupants of both housing facilities and the student who participated in the building visit, for letting me share in their personal world of experience, and the counselors of both housing facilities, for sharing their knowledge of daily experience.

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