

Article

Taken for Granted: Material Relations Between Disability and Codes/Guidelines

Janice Rieger ^{1,*} and Megan Strickfaden ^{2,†}

¹ Department of Interior Design, Queensland University of Technology, Brisbane 4000, Australia

² Department of Human Ecology, University of Alberta, Edmonton, T6G 2N1, Canada; megan.strickfaden@ualberta.ca

* Correspondence: j.rieger@qut.edu.au; Tel.: +61-04-5596-7005

† These authors contributed equally to this work.

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Abstract: This paper provides a critical examination of the taken for granted nature of the codes/guidelines used towards the creation of designed spaces, their social relations with designers, and their agency in designing for people with disabilities. We conducted case studies at three national museums in Canada where we began by questioning societal representations of disability within and through material culture through the potential of actor-network theory where non-human actors have considerable agency. Specifically, our exploration looks into how representations of disability for designing, are interpreted through mediums such as codes, standards and guidelines. We accomplish this through: deep analyses of the museums' built environments (outdoors and indoors); interviewed curators, architects and designers involved in the creation of the spaces/displays; completed dialoguing while in motion interviews with people who have disabilities within the spaces; and analyzed available documents relating to the creation of the museums. Through analyses of our rich data set involving the mapping of codes/guidelines in their "representation" of disability and their contributions in "fixing" disability, this paper takes an alternative approach to designing for/with disability by aiming to question societal representations of disability within and through material culture.

Keywords: actor-network theory; agency; architectural design; critical disability studies; embodied experiences; knowledge production; museums; power relations; representation; spatial relationships

1. Introduction

From handicapped access to inclusive design, gains have been made to create inclusive spaces with a focus on the codification and regulation of the production of spatial environments as well as on "fixing" disability. This emphasis on the objective realm in design often leaves out the embodied experience of those with disabilities, thus, lumping everyone together. Most significant, is that the embodied experiences of people with disabilities, in relation to objects and spatial environments, be recognized as specialized knowledge and that this knowledge goes beyond generalizing the experiences of disability through codes/guidelines. According to Imrie and Luck, what seems to dominate in disability and design studies is a positivistic, scientific tradition, placing emphasis on the production of technical, objective knowledge and applications [1]. This production of technical, objective knowledge through codes/guidelines was highlighted throughout our research at the Canadian War Museum, the Canadian Museum for Human Rights and Canada's Sports Hall of Fame. It was through this research that we began to see different ways of producing knowledge at play and how these shape an understanding of how to design for disability. Building codes, barrier-free

design guides, accessible standards and other documented guidelines often act as “stand-ins” for the embodied experience of those with disabilities, and thus mask and obscure power relations and power dynamics.

Our research—framed around the material relations of these different cases—sought, in part, to map the myriad of connections between, within and among each museum. Mapping through actor-network theory facilitated our understanding of who or what the actants [2–6] were in our three different museum cases and how their entanglements and enactments began to shape an understanding of how designers design for disability. The evidence of the relationships between actants was drawn from the description, mapping and interpretation of our three case studies. As such, the aim of this paper is not about describing a theory or a model (about designing for/with those with disabilities) but rather about opening up a place of dialogue about the taken for granted nature of codes/guidelines, their relationship to disability, and the knowledge production around designing for those with disabilities. Furthermore, we wish to uncover the hidden or black boxed assumptions that come to inform codes/guidelines in order to advocate for the inclusion of the embodied experiences of those with disabilities to be a part of the design process.

We began our sojourn into the tenuous relationship between design and disability with several questions: How do ways of knowing in design shape designers’ abilities to design for those with disabilities? Are codes/guidelines trustworthy sources of information for how to design for/with those with disabilities? Who makes the codes/guidelines? Who may change them and how do they spread [7]? It was our intent to start this dialogue through three tangible examples of material culture—the Canadian War Museum (CWM), the Canadian Museum for Human Rights (CMHR) and Canada’s Sports Hall of Fame (CSHF)—in order to draw out and articulate some critical concerns and implications for design practice and education. The study of these three museums is part of a larger project where we look at how disability is represented [8–10] through the built environments, didactics and exhibitions at museums and historic sites in Europe, the UK, Australia and North America. The museum cases were chosen based on: their level of prestige (e.g., all national museums); whether the design of the building or exhibits explicitly considered accessibility; their geographic location in Canada; and whether the content of the museum is conducive to displaying information about disability. For instance, the three museums reported here were built relatively recently (CWM 2005, CSHF 2011 and CMHR 2014) and used more contemporary information about diversity and disability; the content explored in the exhibits at each museum had the potential to look at disability through different enactments [11–16] of war (CWM), sports (CSHF) and human rights (CMHR). Each museum study in our portfolio was studied as a distinct case where the exterior grounds and spatial environments of the building were analyzed by various researchers; analyzed by persons with disabilities along with the researchers through dialoguing while in motion (based on Anderson’s premise of “talking whilst walking” [17]); interviewing architects, designers, curators, and historians; soundscapes and audio walks; sketches and drawings; and analyzing significant documents in relation to the case and in the museum archives that relate to disability. This research approach was partly inspired by Callon and Rabeharisoa’s “research in the wild” [18] where they explored the complex embodied enactments of living (where people are entangled in their relationships with things) and emphasized that knowledge ought to be co-produced by participants and researchers. In order to better understand how disability came to be represented in the museum, we combed every nook and cranny, read every word and documented every kind of material. We used a multiple method approach to data collection to gain breadth and depth of information about the various human and non-human entities involved in the enactment of disability. As such, we analysed the museum grounds, the entrances, all the interior spaces (washrooms, cloakrooms, giftshops, reception areas, exhibit spaces, *etc.*) and the museum content (signage, displays, tags, didactics, artifacts, furnishing, *etc.*). Our resulting rich multisensorial data set [19] includes observational fieldnotes (researchers), reflexive journaling (researchers, some of the participants), photographs (of the museum exteriors, interiors, exhibits, storage areas, work areas, flooring, lighting, *etc.*), audio soundscapes (of interior and exterior

spaces), sketches, and transcribed recorded interviews (with participants). The analyses of our data involved initially mapping each case study separately then layering the data of all three cases. We used mapping techniques that are appropriate to actor-network theory and a multiple method data collection to better understand the ways that disability features within and among the case studies. This mapping was not to fix the networks but to analyse the relations between the actants. Therefore a series of multisensorial mappings were created including; layering of word clouds, line drawings and three-dimensional/folded explorations.

The methodological underpinnings of our work is transdisciplinary where it is informed by scholars who study material culture (sometimes grounded in anthropology) and systems thinkers who acknowledge that objects such as museums and exhibits tell us a great deal about people, culture and societies [20–24]. Although each of our case studies have large and comprehensive data sets, for this paper we report on the material relations between codes/guidelines and disability. We start with an overview of how disability is typically represented in design practices and follow this with an exploration into how codes/guidelines are a kind of “black boxing” [25,26]. Further, through the three case studies of museums in Canada, we begin to look into the relationship between spatiality and codes/guidelines with a view to critiquing how these are entangled.

2. Dis/ordinary Practices in Design

Designing for disability has witnessed potentially transformational opportunities in access design over the past half-century (*access design* referring to the paradigmatic shifts from *handicapped access* to *barrier-free design* to more recent *universal design* and *inclusive design*), but these shifts still seem unable to avoid codification and a “measuring up” [27]. This is also evidenced through research in design studies that looks into designing for others and includes, for example, participatory design [28], user-centred design [29,30], strategic design [31], and human-centred design [32]. The strategies of designing for others has transformed and been rescripted over the decades; when critically analyzing this transformation we see a myriad of approaches that include using precedents of “good” designs to help create new designs [33,34], involving end-users at various stages of the design process [35]), imagining absent users (e.g., developing personas) [36], developing guidelines that give information about specialized groups (e.g., through barrier-free standards around the world) and even modeling what end-users experiences might be (e.g., through empathic design). Although design research and design practitioners have come a long way towards creating things for other people, the task of designing for others is particularly challenging when considering people with disabilities. The problem for designers is that disability is a broad concept that includes numerous variations of, what are often considered to be, human deficiencies in physical, cognitive and/or sensory abilities [37]. This begs the question: how do designers create spatial environments for others who are very different from themselves?

As designers and non-designers, we are constantly “measuring up” disability and looking at disability in relation to ergonomics, impairment, anthropometrics and human factors. Measuring up the disabled body in order to design for it reinforces a normalizing vision of difference that is a filtering down into an “average”, which does not consider the embodied experiences of those with disabilities (especially the embodied experiences of those with multiple disabilities). Furthermore, working with end-users in design has predominantly been an asymmetrical process; designers do not engage in processes where they really get to understand the lived experiences of other people and therefore, they often are validating their own ideas [38]. Boys describes that in design education, students and faculty may base their ideas on what they already know (about themselves and their peers) or on stereotypical notions of others (disabled equals wheelchair) [39]. It is assumed that, through the practice of repeated design exercises, designers will learn to listen to their clients and users, and will interpret and translate various diverse articulations into built form. In fact, research shows that design students do not learn to engage with disability or occupancy more generally [40]. In a study that compares UK and Canadian design students, Strickfaden and Heylighen illustrate just how embedded this disconnect is in design

education and how it moves students away from disability as part of a critical, theoretically informed analysis of design [40]. Strickfaden and Heylighen suggest that the problem lies in designing for “absent or even imaginary people” rather than with participating users, and look for techniques to enable students to empathize more with diverse users [40].

There is also a paradox of participation in designing for those with disabilities, in that the participation is often designed to empower users in decision-making leading to “the same old patterns of power repeat[ing] themselves” [41] (p. 1372). Jones explains that in an attempt to satisfy regulations, these responses often end up with a bureaucratic formalism, with citizen involvement as a “token, bringing a degree of worthiness to the architectural process without transforming it” [41] (p. 1372). For the most part, designers are unaware that codes, maps, building plans, regulations and guidelines are a specific kind of knowledge production that is laden with politics and power [16]. That is, when a designer is forced to follow codes/guidelines, they are also forced to interpret those codes/guidelines, typically based on their own biases. This means that the use of codes/guidelines can be seen as a burden or a challenge, being connected or disconnected from human experience, or simply another meaningless checklist to tick off in the process of design creation.

Furthermore, when considering codes/guidelines we know that they have originally been based on some kind of human consideration. It is uncertain whether the creation of codes/guidelines is the result of participation of people with disabilities or whether it is by committees that somehow speak for disability, but either way there is a fixing that occurs when these codes/guidelines are completed. De Carlo argues that the politics of participation become too settled and unquestioned, which suggests that “when we plan ‘for’ people . . . we tend, once consensus is reached, to freeze it into permanent fact” [42] (p. 13). This fixing or freezing of humanity into fact is not only a degradation of personhood, it is a simplifying of reality. When it comes to spatiality, considering the myriad of different ways spaces can be configured, this degradation and simplification goes against the very intent of designing environments for inhabitation.

Returning to what material culture and systems thinking through actor-network theory can offer designing, we believe that the focus in design from products and outcomes to acknowledging agency, enactments and entangled relations is crucial. When acknowledging the power of a non-human thing, such as a code or guideline, we can begin to map it to better understand where its power lies. Based on our preliminary assessment of codes/guidelines, we know that they are a specific kind of knowledge that requires interpretation and that they are entities that simplify and translate human experiences. Codes/guidelines have a specific agency in that they do not simply transport human intentions but actively shape, co-construct or translate these intentions. From this position, it is easier to begin to see the relationships between human and non-human entities, which then opens up and encourages new linkages for being and doing [43]. In other words, our research is an exploration by/through material culture into the dis/ordinary practices of design.

3. Disability and Its Relations

Coming to understand the complexity of disability and its relations is not a simple problem solving activity. This begs the question, how is disability understood and how to design for it? Based on our involvement in design practice/teaching for more than two decades each, the knowledge gained from our broader research programs, and the case studies featured in this paper, it seems that many designers believe that codes/guidelines are trustworthy sources of information, even though they are not aware of how these codes/guidelines are created. This taken for granted nature of codes/guidelines and their power and authority is a common pattern in our case study research on museums in Canada. Commenting on the taken for granted aspect of codes/guidelines, a senior interpretive planner shares: “So at the . . . museum, there were standards developed for accessibility. How they came about? Gosh, I think they were probably based in large part on the Smithsonian guidelines You can’t exactly call them the gold standard, but they’re what’s most readily available and widely accessible” (interview with senior interpretive planner, Ottawa, April 2015).

A museum director discusses the regulations and standards used in order to maintain status as a designated museum in Canada, they say: “We have our standards bible, as they call it. Anytime we want to know something, we go to it and refer to it” (interview with museum director, Calgary, June 2015). What is interesting here is that standards and guidelines are referred to as definitive and overtly reliable sources of information that are followed. Although our first professional indicates that they cannot be called the gold standard, they do not state why or how, they simply state that standards are available, which is why they are used. Our second professional overtly calls standards a “bible”, which alludes to a source to be followed and not questioned.

Further, when touring the three museums with the architects and project managers involved in the construction of the museums, they commonly pointed to features of “disability” (e.g., doors with automatic push buttons, separate toileting stalls for people with disabilities, ramps to gain access to certain spaces) that met codes/guidelines. While displaying these features they unanimously appeared to be proud to have met the codes/guidelines even when the feature was not the best solution to the problem (which, interestingly, they also sometimes pointed out). In one of the museums, this adherence to codes/guidelines had an overtly negative affect on the designed environment, which was that code/guidelines specified that public spaces needed to be accessible and as such the design did not consider that the office/collection/ticketing/projectionist spaces could also be accessible. The result is a building that is inclusive for visitors but not employees (the people that spend the most time there). Furthermore, through document analyses of the guidelines/standards used in our museum cases (referred to by our participants), we found that some of the handbooks that are meant to speak to best practice in museums fail to address issues of inclusion/access for people with disabilities altogether.

There is no denying that codes/guidelines are of assistance (in that they bring awareness of the needs of those with disabilities to the design community), but they also bring about limitations and challenges that are not often realized. In other words, these documents have become a crutch, wherein designers refer to what we might call minimum standards and incorporate them into their designs, not because of a deep understanding and empathy for the user, but because it is a code requirement. Instead of engaging with the embodied experience of those with disabilities, designers now can refer to a prescriptive manual that will tell them how to design for those with disabilities. These codes/guidelines allow for a disengagement of the designer to the user that is a heightened kind of abstraction of the absent user that reinforces a loss of sensitivity [44]. In other words codes/guidelines reinforce a “fixing” of disability and disengagement with the end user who has abilities other than one’s own. There is a sort of indifference to difference that reinforces a multitude of assumptions about disability that are then standardized and codified. Jones speaks to this “absent present” in design; there is an absence of the disabled body and furthermore, the representation of the templated disabled body is too technical, rational and not problematized in design practice and education [41]. They expand: “The tendency for systems of thought to over time become normalised orthodoxies—increasingly secure in their normative assumptions and modes of working—has been described as ‘black-boxing’” [41] (p. 1371). This kind of black boxing makes certain knowledge systems less open to scrutiny from the outside [41]. Following Jones critique of universal design, we argue that there must be a sustained cultural critique in design practice and education to avoid the tendency towards taking for granted the normative or political desirability of such approaches [41]. Designers must learn to actively scrutinize their practice, values and behaviours to reveal the assumptions at play in designing for disability and to challenge the scientific, objective basis of codes/guidelines [41].

As codes/guidelines continue to be produced and translated in different ways, they create predictable chains of associations and therefore become further black boxed [3]. This stabilization of these chains of associations or social links are about power and domination rather than how they come into being [3]. To clarify, power here is not a property of any one of these elements but of a chain of associations [3]. As such, it is not just the code, guideline or standard but the entanglement of that code/guideline with other actants, such as designers, museum professionals, and architecture that creates a dominant chain. Mapping through actor-network theory allows for

a layered and complex understanding of the agency of codes/guidelines and the entanglements therein. Our mappings do not fix codes/guidelines as obligatory passage points [45] but rather reveal the complexity of these nonlinear chains of associations and the need to further investigate their taken for grantedness. It is important here to also clarify that our research is a pushing back against representation, fixity and meaning making and a pushing towards enactments and new modes of engagement in/around disability.

It is also important to clarify, following Sprague, that power and positionality frame our ways of knowing and that research should be critical of the prevailing assumptions about what knowledge is and who is a trustworthy source of information [46] (p. 2). Sprague explains: "... all knowledge develops out of specific social contexts and sets of politically relevant interests, and that mainstream social science, like mainstream knowledge more generally, tends to assume the position of privileged groups, helping to naturalize and sustain their privilege in the process" [46] (p. 2). As such, according to Sprague, codes/guidelines are reinforcing privileged groups rather than the embodied experiences of those with disabilities, which is a masking and obscuring of the power relations represented in codes/guidelines about disability. This privileging and obscured representation of disability is then used to inform designers how to design for disability. Connecting to the work of Callon and Rabeharisoa [18] on "research in the wild" we believe that designers and policy makers have the opportunity to redress policy/guidelines by reconsidering how these documents are produced in the first place.

A historian from one of the Canada's national museums explains his approach to the creation of content for exhibitions and how it is very much informed by codes/guidelines: "For example, in audio visual production, guidelines will inform how I approach content destined for audio visual. So it'll help me to make decisions about what's in, what's out, these sorts of things" (interview with historian, Ottawa, May 2015). Here, codes/guidelines govern more than just physical access in the built environment; they dictate content in a museum and access to that content as well. This is the case for audiovisual content but also for content that is to be experienced through other multisensorial experiences, like tactility. Throughout all of the three museum case studies, access to content through touch was very limited because of codes/guidelines in relation to conservation and exhibiting practices. Our research into the multisensorial experiences within the museum case studies revealed that while tactility is attempted (through reproductions of artefacts, tactile maps, and touch screen technologies) it is largely unsuccessful because tactility is still operating within a technical distancing of codes/guidelines and is not understood as an embodied experience outside of touching with just the hands.

By using actor-network theory to understand relational spaces, Rydin's analysis of planning processes found that a degree of stability is often fostered by processes of calculation, classification and standardization [47]. They argue (following Callon [26]) that these processes, and their complexities, assumptions and uncertainties, are often hidden within "black boxes" [47]. Furthermore, they argue that: "such black boxing resists the opening up of calculative processes to negotiation. Rather, they create areas within networks where relationships between actants are 'taken for granted' and unchallenged" [47] (p. 26). This taken for granted aspect of codes/guidelines means that they are left unchallenged and kept at a distance, much like disability itself is often marginalized and kept at a distance. To break this taken for granted black boxing, Latour [3,25] suggests the actor-network metaphor because it allows for human and non-human entities to be considered differently wherein agency is flowing and in flux. Callon elaborates that: "the actor-network should not ... be confused with a network linking in some predictable fashion elements that are perfectly well defined and stable, for the entities it is composed of, whether natural or social, could at any moment redefine their identity and mutual relationship" [48] (p. 93).

We propose that rather than considering disability as a homogenized cluster where it is black boxed into a meaningless void of codes/guidelines, that designers acknowledge that the experience of (being, having, experiencing) disabilities is heterogeneous, variable, and cannot be codified. We

are not arguing for a deregulation of design, but for an opening up of codes/guidelines to criticality. Wherein, the knowledge of how these codes come into being, their applicability to specific designs and their shaping of spatial relations are scrutinized.

4. Relational Space: Spatial Relations

By encouraging designers to break through the barrier of their own world and to engage with approaches through material culture and actor-network theory, they can begin to understand design within a larger frame and avoid the impulse to 'measure up' disability and rely on the codification of disability. If the people who inhabit spaces are not involved in materially shaping the outcomes of the design, designers risk producing a "scenic", disempowered notion of these inhabitants [41] (p. 1372). Furthermore, codes/guidelines are highly interpretable and designers are not taught to interpret them critically, but just believe them implicitly. A senior architect who worked on one of Canada's national museums comments about the limitations of codes/guidelines:

Building codes are great for building types. If you've got a shopping centre, a code tells you what you need to do; if you've got a Walmart store, it tells you what you need to do; or for office buildings, it tells you what you need to do. But where there is a sort of design ambition that goes beyond it or a building program that relates to something in the atypical type, the codes can only take you so far. (interview with a senior architect, Winnipeg, June 2015)

Although this architect acknowledges that codes/guidelines have limitations, they also state that codes/guidelines give directives in particular situations. How does an architect know when a code/guideline is really appropriate or when it has limitations? Where do they learn to interpret the codes/guidelines? And when do they choose to gain information from other sources? A design consultant who worked on many national projects including two national museums in Canada comments about the performed, observed and embodied experiences of people with disabilities in the context of objects and spatial environments: "Spending an afternoon with a person with a C2 spinal cord injury who frog breathes and runs his computer with his tongue, is not something you get from any textbook . . . you do not get that from anywhere else" (interview with design consultant, Winnipeg, June, 2015). Furthermore, the same design consultant who worked with design teams across North America has found that codes/guidelines, books, and documents can only go so far because they are geographically specific (municipal, national) and there is a great deal of misunderstanding about the use of codes in different countries and their interpretation. They explain:

The exhibition designers were constantly quoting ADA [the American Disability Act] and I was constantly criticizing them . . . and so sometimes, with the Americans, I have to say, okay, here you've got to walk in people's shoes. I will give you a real simple example: I was working on a community college and trying to explain to the architects what ASL interpreting was like. If you had an ASL interpreter in a classroom, what does that mean? And they were just not getting it. So I set up a meeting where I brought a very well respected member of the deaf community with me, who brought an ASL interpreter and we spent four hours in the architect's office reviewing drawings and at the end of it they got it. (interview with design consultant, Winnipeg, June 2015)

It is clear that this design consultant advocates for considering the embodied experiences of people with disabilities as a means to illustrating some of the pertinent issues around spatiality with architects. Our research does not necessarily conclude that consulting with people who have disabilities is more important than codes/guidelines, however, based on our case studies we began to see that going beyond the use of codes/guidelines by consulting with the people with disabilities, preferably in environments similar to what are being designed, and seeing their embodied experiences, became a significant enactment by deconstructing the homogeneity of codified spaces.

Even though individual designers may value diversity and inclusion, there is still the need for a larger professional shift, wherein the value of embodied experiences are a part of the process of designing rather than a reliance on codes/guidelines. A museum professional at The Canadian War Museum speaks to how challenging it is for them to create an inclusive museum beyond mandated codes and guidelines because of a lack of an institutional statement that values inclusion and difference: "In the absence of a vision or a statement, it becomes hard to get the approval to move ahead" (interview with museum professional, Ottawa, April 2015). Furthermore, they spoke to the challenges involved when there isn't leadership that values inclusion, disability or other ways of understanding otherness. That is, they indicated that to have an inclusive museum there has to be a shared value system and that value system has to be communicated and shared at every level of the institution. They expand: "What I have seen as the single biggest barrier to even meeting or surpassing standards, guidelines and best practices has been the absence of a kind of a philosophical statement about the importance of accessibility. There is no buy-in or commitment beyond minimum standards, which within minimum standards that will be the lowest ones possible" (interview with museum professional, Ottawa, April 2015).

Furthermore they expanded on the shortcomings of just relying on codes and guidelines: "But in doing evaluations, having feedback from visitors, in looking at unsolicited feedback as well, it was very apparent that first of all, if those minimums were being met, they weren't satisfying visitors, and visitors of a range of abilities, conditions and personal situations" (interview with museum professional, Ottawa, April 2015). This statement reinforces our speculation that codes/guidelines do not often consider the complexity of abilities and the different kinds of involvement with material things, for all people.

The key here is to see spaces as complex, relational and material and to be critically aware of the agency and chains of associations that stem from codes, guidelines and standards. In other words, it is not about just replacing the agency and power of codes/guidelines with embodied experiences because this just shifts the agency and doesn't acknowledge the network and chains of associations. In this way, we believe that disability can be expressed, mapped and represented, not as something that is fixed or black boxed, but as something that has meaningful, complex and perhaps even as having ambiguous relations to spatiality.

5. Conclusions

This paper takes an alternative approach to considering how people design for/with disability by questioning codes/guidelines as material and societal representations of disability. By studying the enactment of disability through three museum case studies, we were able to map the relations between human and non-human entities and begin to open up a criticality in design around the taken for granted nature of codes/guidelines. What actor-network theory and the mapping of the actants in these museums has shown us is that when codes/guidelines "stand in" for a complex societal issue like disability, they minimize the meanings and enactments of living. This emphasizes that disability is complex and that it cannot be reduced to basic templates. Therefore, in order to overcome the two-dimensional and limited understanding of disability in/through codes/guidelines, the actor-network and its assembling and reassembling needs to be inclusive of the embodied experiences of people with disabilities in context with objects and spatial environments.

Current practices in designing for those with disabilities most often approach disability as "universal" and one-dimensional, which essentially ignores the many nuanced layers of human experience [49]. Furthermore, recent studies have shown that codes/guidelines are not sufficient to ensure inclusive design for diverse populations [50,51]. The findings from our research support a rethinking of how to design for people with disabilities and the need to deconstruct the predominantly, homogenously presented concept of disability through the use of codes/guidelines. The ability of codes/guidelines to shape relationships within the network and the potential they have to govern needs to remain open to scrutiny and negotiation so that the chain of associations does not become black

boxed. These museum case studies suggest that this black boxing is not yet stabilised and complete, and there remains space for criticality within the networks. In summary, we believe that reconsidering how knowledge is produced for design, and encouraging understandings of how codes/guidelines are a certain kind of knowledge that has limitations, we believe design outcomes (buildings, objects) can move into a new era.

By using actor-network theory and mapping the relations within these networks, it has the potential to open up the “us” versus “them” approach to design, as design is seen as a chain of relationships and an entanglement of human and non-human entities. Our case studies revealed that the inclusion of people with disabilities and their embodied experiences in designing became a significant enactment by deconstructing the homogeneity of codified spaces. Design approaches that rely on dimensional templates of codes/guidelines do not allow for the messy and complex relations entangled with disability to be understood. As such, we advocate that design should not just be about outcomes and problem solving but about moments of unknowingness [52]. An unknowingness that allows designers to go beyond the taken for granted notion of codes/guidelines and towards a “...willingness to become undone in relation to others” [52] (p. 136). It is through this collective that this undoneness and unknowingness has the potential to open up design to an inhabitation of embodied experiences that are connected to the relational multisensorial enactments of those with disabilities, rather than a distancing through the codes/guidelines that take for granted the experiences of those with disabilities.

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