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Design Before Design: Learning to be Affected by Neurodiverse Spatial Practices

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ABSTRACT Current ethical and political revivals of design pedagogy foreground the participation of neglected subjects in attempts to democratize design practice. This article explores what participatory design practitioners in architecture might be required to learn when reconfiguring their tasks in the wake of Science and Technology Studies (STS) approaches to Participatory Things: treating them as a more-than-human assembly and unfolding process. This requires designers and architects to engage in designing the "pre-conditions" of participatory practice, "learning to be affected" by variegated actors and their peculiar ways of dwelling. In describing our attempts at approximating ourselves to the spatial practices of a neurodivergent person, we suggest this requires taking into account more-than-verbal experiences that liberal understandings of participation tend to exclude. This approach is here discussed as "design

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before design": a form of design practice learning from the alternative approaches to design practice that unfolding "things" might bring to the fore and invite to explore.

KEYWORDS: architectural design pedagogy, participation, Science and Technology Studies, more-than-human design, neurodiversity, more-than-verbal worlds

1. Introduction: A Renewed Interest in Design Pedagogy

Design pedagogy seems to be undergoing a recent revival, including in architecture.[1] Beyond a discussion on how to teach the tricks of different trades, this renewed attention seems premised on a wide variety of political and ethical concerns, ranging from gender and racism to environmental issues. Transforming the ways designers are trained, so the idea goes, would affect how they could go about their work in more convivial and just ways (Costanza-Chock 2020; Schultz et al. 2018a, 2018b; Kafka 2022; Richards 2022; *KoozArch* 2024). Particularly, signaling a break with modernist traditions, critical perspectives and expanded approaches in architectural education and learning, in and beyond the classroom, put forward approaches where participation in design practice, with its democratizing effects, becomes a key pedagogical motive of their explorations (Amescua Carrera and Ordóñez-Grajales 2022). These participatory approaches center the knowledges and ways of doing of usually neglected human and nonhuman actors, more often than not victims of design practices, as the beginning of explorations in alternative forms of architectural practice.

Following these concerns, we aim to put forward a reflection foregrounding an auto-pedagogical experience in which both authors engaged between 2019 and 2020: getting to know the spatial practices of a neurodivergent person, opening up a process to understand space otherwise, hence enabling a discussion of the requirements of participatory design approaches. In doing this, we came to learn the importance of working out, through design activities, the "pre-conditions" of participatory practice. With the term "pre-conditions," we want to pay attention to how participation is arranged, socially and materially, and the effect this has on the ongoing learnings this process might unravel. Whilst participation can sometimes be understood as an expert-driven tokenistic operation seeking consensual closing, hopeful stances in participatory architecture rather call for "relinquishing control" (Petrescu 2005; Till 2005), which many times opens up a crisis in how designers approach their tasks. How to deal with this crisis? How could one learn to prepare for it?

One relevant avenue for this should happen by increasing the representation of non-hegemonic subjects and bodies as design practitioners. Another, the one we wish to explore here, requires practitioners, especially for those situations where representation

cannot be attained, to engage in designing the "pre-conditions" for an unlearning encounter: opening up pedagogical spaces where to "learn to be affected" by the peculiar ways of inhabiting the world of the actors with which they wish to collaborate. Even if these strategies are not incompatible, we believe the second one to be as relevant in cases where their neglected knowledges would require radically re-learning what knowing and acting as an architect might mean. Hence, rather than trying to bring them in line to create solutions through consensus-making practices, designers should attempt to design the pre-conditions to make possible to work with the singularity of these actors' experiences.

To describe this, in what follows, we first resonate with a particular strand of reflections around participatory design in Science and Technology Studies (The Pedagogy of Participatory "Things") where the design studio has recently emerged as a key pedagogical site. We find of relevance the material-semiotic lines of insight of actor-network theory, feminist technoscience, and approaches to technical democracy, since they enable paying attention to issues of distributed agency between human and nonhuman actors, and put forward proposals for alternative design practices beyond its traditional understanding as the task of an expert human who shapes passive worlds. As we see it, a major challenge of these approaches is learning to participate in more-than-human design assemblies, where different parties could display different capacities and ways of articulating concerns and needs. We subsequently focus on neurodivergent people as a case in point, often referred to as unfathomable by neurotypical designers, enforcing what Stacy C. Simplican calls "the capacity contract" (Participatory Architectural Design Beyond the Capacity Contract?); hence resorting to standardized solutions that fail to open up to plural neurodiverse experiences and spatial practice (Beyond Standard Architectural Solutions).

In describing our auto-pedagogical approach (Learning to be Affected by Moritz and his Social and Material Spaces), we show the concrete operations this led us to: a design-driven sensory and material work opening up different approximations to neurodiverse space, generating opportunities for affective more-than-verbal encounters, beyond traditional approaches aimed at designing *for* neurodivergent subjects or *with* reductionist representations of their worlds. We close with a reflection on what this auto-pedagogical effort might mean for participatory design. Whereas Scandinavian designer Pell Ehn and his colleagues put forward a proposal to "design after design" – the process whereby in participatory "things" the role of the designer becomes that of setting up stages whilst designing and for the aftermath, extending the design process far beyond their intervention – what we wish to foreground is an approach to "design before design": that is, suggesting the participatory relevance of designing a pedagogy of its "pre-conditions," designing spaces and devices so as to learn from the alternative

approaches to design practice that unfolding "things" might bring to the fore and invite us to explore, especially when there are parties whose needs and concerns are usually neglected.

2. The Pedagogy of Participatory "Things"

Long active in Scandinavian participatory design, Pelle Ehn and his collaborators turned to Science and Technology Studies (STS) to rethink their conventional principles and methods (Björgvinsson, Ehn, and Hillgren 2012). Here, Bruno Latour's *Dingpolitik* became a relevant conceptual inspiration to rethink (a) the role of the designer (beyond being the sole agent in the design process), and (b) participation in design processes (beyond instrumentalist and consensus-driven readings). The notion of *Ding* is drawn by Latour (2005) from Heidegger's work. In contrast to inert and malleable "objects" cast as scenarios for human living, this old Germanic word designated the assemblies of ancient Nordic and Saxon people, spaces where people and nonhumans (animals, plants, material artefacts, and gods) would gather to discuss worries or take decisions. In this etymological borrowing, "things" are to be taken as "gatherings": that is, assemblies or meetings. This is crucial for Latour to put forward a meaning of politics going beyond an understanding in which human interests reign over matter, giving shape to the world as an inert background. For Latour, politics should rather revolve around working out "things," particularly those that the modern project has brought about. His *Dingpolitik*, then, addresses the relevant materiality of more-than-human assemblies and how they bring together or apart human and more-than-human agents in attempts at composing more livable common worlds.

The relevance attributed by Latour to design and architecture in this prompted some designers and architects, Pelle Ehn amongst them, to reflect on their role and practice not particularly as shape-givers or solution-bringers closing worlds through objects, treating matter or nonhuman existence as inert or passive. Instead, designers appear as inquirers, co-articulating the lively and troubled existence of assemblies, partaking in open-ended processes with a plurality of agents (Domínguez Rubio and Fogué 2015; Calvillo 2018). In this wake, Ehn and other colleagues have particularly been exploring at length how these reflections might affect the principles and practice of participatory design. In doing so, they have been moving away from instrumental readings of participation – not treating it as a process akin to consensual closing, as collaborative architects have been long suggesting (Petrescu 2005; Till 2005) – and exploring what the turn to things and the relevance of nonhumans in design would do to participatory design (Bastian et al. 2017).

In their hands, participatory "things" entail emergent processes where diverse human and nonhuman agents partake in joint explorations. As a result, Ehn and his collaborators propose a new design task beyond "projecting": understanding design activities as a

process of "infrastructuring." Instead of teleologic and hylomorphic musings on human intentions giving form to matter in temporally circumscribed activities ("projects"), "infrastructuring" involves material gatherings: setting up stages involving different actors – and the differences and transformations they bring to fore – during and after designing, extending the temporality of design far beyond the intervention of designers. This, they note, implies a shift from classic participatory approaches as a form of "use before use" – that is, processes of getting to know who users are and what they want or desire before designing for or with them – to what they term "design after design" (Björgvinsson, Ehn, and Hillgren 2012). For them, participatory design cannot end when designers present a closed product or a solution to a given target audience. Rather, it is an unfolding process different agents partake in. In such a scenario, the designer's role changes radically: in the unfolding of participatory "things," or more-than-human assemblies, rather than creating expert-driven instrumental processes of participation to produce closed-down products and services, designers' temporary "infrastructuring" interventions are just one amongst many.

But how can designers learn to take part in these participatory things? This becomes an even more pressing question when participatory practice seeks to undo the violence with which certain involved parties are treated. This is where current design pedagogy concerns with which we started come to matter. In a similar vein, different STS scholars have pointed out the relevance that certain human and nonhuman actors, whose concerns "are deemed [...] unreasonable or irrelevant" (Blaser 2016, 548), might have to undo and redo our understandings of both what is at stake and how to explore alternative forms of inhabiting, a process of suspension and exploration of our understandings of the *cosmos* – who we are – and *politics* – how to live together – that philosopher Stengers (2005) addresses as "cosmopolitics." The question then becomes how to care for what Puig de la Bellacasa (2017, 52) calls "neglected things," inviting active engagements with "those who can be harmed by an assemblage but might be unable to voice their concern."

A good example of how neglected actors affect design pedagogy might be the UK-based *DisOrdinary Architecture* project, founded by Zoe Partington and Jos Boys, whose aim is to "do disability differently" (Boys 2014), challenging "underlying attitudes, assumptions and practices that frame disabled people in particular and limited ways" (Boys 2018, 36). The project, hence, foregrounds the experiences, expertise, and creativity of disabled artists, creating opportunities for collaboration with students, educators, and practitioners in a variety of contexts. The aim is not just to create "better inclusive design 'solutions', but also better understandings of how the 'normal' is constructed in everyday life, and how it can be critically and creatively contested" (Boys 2018, 36). Participation, therefore, is understood here as an opportunity to transform the tricks of the trade of so-called

experts, challenging ableist attitudes and generating other possibilities for architects to relearn their practice. This approach also resonates with what Raymond Lifchez (1987) did in the 1980s in a series of design studio projects at UC Berkeley, where disabled activists were not invited as "end users" for specific projects but as "expert consultants" helping to consider accessibility in any project.

A similar ethos also moved a series of STS-driven scholars to experiment with design pedagogy in the school of architecture in Alicante (Spain). These experiences, of which we have both drawn inspiration from and partaken, have attempted to make the pedagogy of participatory things thinkable and practicable in a wide variety of ways. The approaches and experiments of the architects in Alicante have been recently described as an attempt to go beyond the normative subject and recipient of architectural practice throughout the twentieth century – usually male, white, able-bodied – showcasing final degree projects where different avenues for architectural practice were explored when working together with radically different and usually neglected human and nonhuman actors (Nieto 2022).[2]

Inspired by this, one of us partook in similar teaching approaches when working in a department of architecture in Munich: a series of design studio projects, titled *Design in Crisis* (Farías and Criado 2018; Farías, Criado, and Remter 2023; Criado 2021), where we experimented with creating briefs and situations that would force students to radically reimagine their practice (e.g. "prototype a co-design toolkit for a more-than-visual architecture, learning from and with blind architects," "help beavers have a say in the green intervention of a river basin"). The aim was to sensitize students to design otherwise in the face of actors and situations putting in crisis their solutionist approaches. More than simply attempting to "give voice" to neglected parties in participatory processes, the approach was to consider the performativity of the material devices used to do so (Criado 2021), for two main reasons: on the one hand, because the ways participation is socio-materially practiced also have effects, enacting particular versions of subjectivity, agency, of the problems at hand, and the means to approach them; on the other hand, to mobilize architects' material know-how in the problematization of their own practice.

But beyond formal educational settings, how could the art of participatory "things" be learnt in situations where usually neglected actors might dispute the understandings of what is at stake, as well as the practice, the knowledges involved, and the aims of designing? What could the pedagogy of design be when attempting to design with actors that might put ready-made ideas and practices of participation in crisis?

3. Participatory Architectural Design Beyond the Capacity Contract?

The idea of engaging in a joint auto-pedagogical experiment emerged when, at the end of 2019, one of us (Micol, an architect

interested in STS perspectives on design) moved to Berlin for a semester to undertake a research stay (Rispoli 2021a, 2021b), working in close collaboration with the other (Tomás, an urban anthropologist with experience in working collectively with activist disabled collectives and designers, and having taught for three years in an architectural school, who was working there at the time). During those months in Berlin, accommodation was found with a family with whom, beyond a rental agreement, she gradually developed a strong emotional bond. In particular, the encounter with one of the members of this family, Moritz, a neurodivergent person, had a significant impact on her: this bond developed in the fraught and puzzling attempts at working out how to live together in ways she was not used to, where different meanings of social distances or what might an obstacle or an enabler in the home could emerge.

Given the motivation of the stay had to do with rethinking the role of the architect, following up on the pedagogical experiences mentioned above, this prompted Micol to explore what she could also learn from this experience "as an architect." Given Tomás' work in the field of urban accessibility activism, and his interest in how a concern for bodily diversity has transformed architectural practice, a shared concern began to emerge, thus leading to a collaborative approach on what neurodiverse spatial practices might entail for architectural design practice. Specifically, the questions that motivated and guided our exploration were: How to design together with neurodivergent people while avoiding reliance on biomedical categorizations, which often result in assimilation or control practices? How might their spatial practices instead challenge or expand traditional architectural practice and, in particular, participatory design's approaches? What alternative understandings of space and design might neurodivergent people – in this specific case Moritz and his spatial practice – invite architects to practice?

We set sail reading and considering the challenge given forms of neurodiversity might entail for participatory design processes relying too much on articulate language to explore needs and solutions. This matters, since liberal notions of political participation tend to be premised on an agential subject, capable of expressing concerns through what comes to be treated as articulate language, which has historically side-lined neurodiverse people. Political scientist Stacy C. Simplican (2015) addresses this as "the capacity contract": the linguistic, cognitive, intellectual, and mental conditions of legibility for a subject to be treated as a citizen with rights and obligations. This conception of political participation entails that we imagine that the most important political duties are cognitive tasks, such as reasoning, reflection, judgment, and deliberation. For political decisions to be legitimate, we expect people to reason sufficiently about themselves, the world around them, and the political futures they desire. (Simplican 2015, 3)

Disability studies scholar Berger (2019) traces this back to the liberal "social contract theory" (spanning from John Locke to John Rawls), according to which "political agency" implies humans displaying or rendering themselves readable as having rational and linguistic capabilities, hence able to express their thoughts, wishes, and desires in a normative way to be able to enter, in legal terms, into a contract.

Interestingly, the "capacity contract" also haunts disability rights activism. Even if there are many possible readings of the slogan "Nothing about Us without Us," one possible version seems to further liberal assumptions that disabled people must be heard or made conversant with issues mattering to them in their very presence, because they can clearly speak for themselves. But what happens when this is not the case, what to do with relevant neurodiverse forms of experience and expression then, which could be the foundation of alternative meanings of politics and participation? As media and disability studies scholar Jonathan Sterne (2021, 37) discusses, going back to his own experience with throat cancer, there seems to be an assumption that "an experience of wholeness and personal integration is essential to claiming identity." In highlighting this, he goes in a similar direction to Simplican's attempt to explore what disability politics might be beyond the capacity contract.

These reflections clearly resonate with the activist movement that gave rise to the term "neurodiversity," vindicating plural and more-than-verbal experiences and forms of being "neurodivergent" subjects. These terms were invented by speaking autistic people opposing "neurotypicality," usually associated with a hegemonic understanding of the human mind (Judge 2018). While the term neurodiversity emphasizes such plurality, the adjective "neurodivergent" is generally used as a self-representative vocabulary (Graby 2015; Yergeau 2018), disputing liberal-ableist readings of their bodies as "incapable" that "tame the exuberant body [...] limiting [their] potential to express beyond the stranglehold of neurotypical models of personhood" (Manning 2020, 273). Valuing these diverse modes of experience matters to dispute liberalism's capacity contract and the ableist tendency to treat these neurodiverse experiences as impairments. Interestingly, neurodiversity posits a more-than-verbal expansion of experience, vindicating the potential of other forms of sensory knowledge-making to contribute to alternative understandings of politics. How could participatory designers consider and become affected by such more-than-verbal experiences, of both suffering and togetherness, that lay below and beyond the capacity contract? Even more, what alternative forms of ethical and politically inclined design practice might they invite to explore?

This was the challenge at the core of our inquiry. Our initial assumption was that to facilitate the unfolding of participatory "neurodiverse things" would require taking a step backwards, putting conventional architectural approaches and tools in crisis; hence

sensitizing ourselves as practitioners to ways of inhabiting more-than-verbal worlds, and learning to be affected by neurodiverse spatial practices. In such exploration, neurodiversity became a conceptual operator, following the steps of philosopher Erin Manning, who sees it more as a "path [...] to explore insurgent life [...] as a platform for political change that fundamentally alters how life is defined, and valued" (Manning 2020, 5).

4. Beyond Standard Architectural Solutions

We began by analyzing how architects have usually responded to the challenge of accommodating bodily diversity in urban environments and, in particular, how they relate to neurodivergent people in their design practice. Broadly speaking, in the Euro-American context, what is usually known as "accessible design" can be traced back to the successful efforts by disability rights activists to enforce the "social model of disability": hence democratizing design, and incorporating many experiences and knowledges in the otherwise expert production of regulations, standard objects, and urban interventions (Criado and Cereceda Otárola 2016; Hamraie 2017; Williamson 2019). As a result, in the last decades, there has been a non-linear transition from "special solutions for special needs," with a rehabilitative ethos, to more recent "inclusive" (Imrie and Hall 2001), "multi-sensory" (Imrie and Luck 2014), and "universal design" (Imrie 2012) approaches, premised on the assumption that all humans will face a disability throughout their lives, thus mainstreaming accessibility issues in architectural projects. Although this should foster a culture of perpetual adaptation (Hendren 2020), accessible design projects are frequently undertaken in problematic universalistic ways (Hamraie 2016).

Indeed, architectural approaches tend to remain predated by two main problems: (a) a certain solutionism, portraying the designer as solution-maker, hence acting as if the problems, the needs, and the experiences were fully apprehensible when not already laid bare for them to work on them, many times uncritically using biomedical categorizations of the body that end up inscribed in regulations and codes; and (b) an understanding of spatial solutions conceived as standards, many times Euclidean in nature. This allows architects to readily conceive of three-dimensional or volumetric standardized solutions that might be of help for wheelchair users, navigating spaces on top of a heavily standardized machine, but that renders them incapable of relating to sensory plural, changing, or complex to grasp spatial practices, such as the ones that blind, D/deaf, or neurodivergent people explicitly bring to the fore (Manning 2020). This became clear to us whilst revising key projects by architects and designers interested in and committed to creating more livable urban arenas for neurodivergent people (Figure 1). We will address in what follows the main six we went through.

Figure 1
Joint review of design projects aimed at creating neurodiverse-friendly cities and spaces, to reflect on recurring logics. Photo: Micol Rispoli.

Many of the examples under consideration unsurprisingly revealed a functionalist reading of neurodiversity, as if the issues were already known, using textbook neurological understandings from clinical studies, rather than approaching people from their modes of dwelling. Emphasis tends to lie on the "help" neurodivergent individuals might receive through certain technological fixes, of which architects always appear as expert harbingers.

For instance, referring to other works (Rimland 1964; Delacato 1974), architect Mostafa (2014, 144), author of the Autism ASPECTSS™ Design Index, writes that autism "is characterized by repetitive behavior, limited communication skills, challenges in social interaction and introversion—may be a result of a malfunction in sensory perception […] leaving individuals with autism with an altered sensitivity to touch, sound, smell, light, color, texture etc." In her article, she proposes a series of design principles that would allegedly improve the conditions of habitability of built spaces for these individuals. They are understood within the generic category of "autism," never in their singularity, and their sensory experiences are labelled as "malfunctions", with no interest in investigating their ways of inhabiting the world. The authors of *Designing for Autism Spectrum Disorders* (Gaines et al. 2016) engage in a similar approach: drawing from what they call the "foundational theories" of Autism Spectrum Disorder (ASD) – studies at the crossroads of medicine, psychology, and psychiatry – they outline recommendations for designing spaces suitable for autistic people, whose modes of social interaction are labelled with the term "mind-blindness." These recommendations are accompanied by Euclidean spatial representations, not considering other ways of experiencing space.

Some other proposals, even if showing an orientation towards the participation of neurodivergent people, employ rather tokenistic and

language-centric devices, such as ready-made questionnaires or surveys, many times resorting to relatives or carers as information providers. Our impression is that these approaches would tend to enact the capacity contract, given their lack of any concern for finding more-than-verbal approaches to participation: no attention seems to be paid to how these participatory devices enact concrete subjectivities by the very exclusions they bring about; also, there is no account of the process of their implementation, the problems or resistances, and possible openings there emerging.

For example, when inviting architects to design "spaces where different populations can co-exist" (Lo Chan 2018, 1), the author of *Neurodivergent Themed Neighbourhoods as A Strategy to Enhance the Liveability of Cities: The Blueprint of an Autism Village, Its Benefits to Neurotypical Environments* stressed the importance of considering the opinion of autistic people, using a ready-made questionnaire in the research leading to her proposal. However, questionnaires and surveys of this kind only address speaking individuals, when not relatives or carers, and are not particularly sensitive to more-than-verbal modes of expression or relating to space. The *Autism Planning and Design Guidelines 1.0* result from a similar approach in a design studio in 2017–2018, carried out by Ohio State University City and Regional Planning students. In this project, besides developing a set of guidelines aimed at "helping" autistic people, Mercedes Bann and their colleagues proposed a participatory approach envisaging the involvement, by means of "verbal consent," of autistic people and their relatives in two separate focus groups: these were aimed at collecting "useful information that will contribute to the city planning profession for adults on the ASD spectrum" (Bann et al. 2018).

Interestingly, other examples by designers adopt "empathetic" approaches to their projects, based on the idea that they can understand the experience of neurodivergent users by means of simulations and impersonations. For instance, Central Saint Martin's graduate Di Peng designed a *Dementia Simulator* headset that purportedly lets "wearers experience symptoms of the disease for themselves [...] The helmet affects each of the senses, in an attempt to replicate many of the challenges faced by dementia sufferers" (Tucker 2016). The *Empathy Bridge for Autism*, designed by the Royal College of Art graduate Heeju Kim, is a kit consisting of lollipops and candies that make it difficult to speak clearly, an augmented reality headset altering perception, and a pair of headphones that amplify nearby sounds to simulate the alleged common "difficulties" experienced by people with autism (Tucker 2017). Even if these approaches might be more directly engaging more-than-verbal perception, empathic design practices, as Kim Kullman amply discusses (2016), can be very problematic for a series of good reasons: simulations can lead to an "over-identification" and exaggeration of the environmental effects of "impairment."

Indeed, disability rights activists and scholars have long been warning that their quick use in disability awareness training can reinforce stereotypical ideas disregarding actual and singular life experiences (French 1992; Burgstahler and Doe 2004), also having profoundly problematic epistemic effects: substituting the experiences of disabled people for those of the designer. As a result, the main ethical outcome many disabled designers and activist have put forward is for a need to increase their representation in design practice (Hendren 2020). However, a sole emphasis on representation risks reinstating a solution-driven ethos that leaves the designer in control of the process. How to approach the task of design when this might not be possible or desirable?

In view of a lack of relevant examples of open-ended and more-than-verbal participatory attempts, we came to understand that a different approach to design was needed: one whose ethical implications lie in designing the pre-conditions for a possible encounter with actors and their ways of being that would undo existing approaches to design, enabling a transformation of design practice.

5. Learning to be Affected by Moritz and his Social and Material Spaces

In our attempt to explore more open-ended, immersive, and radically participatory approaches in the vicinity of neurodivergent people, we launched a series of explorations foregrounding Moritz and his ways of being in the world, a design process inviting to rethink the kind of participatory practice they could lead us to learn. This pedagogical situation unfolded over a period of four months around a series of concrete design operations, of the sensory and material kind. Besides engaging in everyday life with Moritz, we started out developing some sensory experiments, aimed at rethinking spatial practice beyond neurotypical dimensions. Then, a series of graphic approximations to Moritz's practices were devised, generating opportunities for affective encounters with his social and material spaces. We could say that what we attempted to activate resonated with what Manning terms an "approximation of proximity" (2020): more-than-verbally coming into Moritz's proximity without cancelling our differences, in an always approximate and never complete way. An approximation "grounded not in affinity […] but in a feeling for another that entails an encounter with something irreducible and different, often inaccessible," to paraphrase Trimingham (2005, 66). These attempts prompted the design of devices to learn to be affected by Moritz's spatial practice.

5.1. Doing Away with Neurotypical Space, Putting Architecture Tools and Visual Culture in Crisis

We started by undertaking a series of sensory experiments, eliciting alternative modalities of perception, in an explicit attempt to abandon

our neurotypical understandings of space. For this, we resorted to artist Marcus Coates' (2014) *A practical guide to unconscious reasoning*, a wonderful repository of intriguing and funny rule-based instructions (walking backwards in a crowded street; learning to feel the void of a room like a bat; crawling through the house like a child). Coates' artistic explorations were particularly inspiring for us, since they are the result of his investigative work "struggling to relate" with human or nonhuman others. Coates' experiments were also similar to the "exercises in disorientation" that Trimingham (2022, 123–32) proposes as part of an Autistic Curriculum intended to make one feel beyond "pre-chunked" or neurotypically-ordered events. Trimingham wonders how we can open ourselves up to the singularity of neurodivergent people's experiences, rather than bringing them into line with our neurotypical world, which too quickly defines what is human and what is less-than-human.

We also put together a guided walk, where experienced ethnographer Patrick Bieler (2021) – working on how "people with mental distress" relate to social and material urban environments in their everyday lives – showed us around the neighborhood of Berlin where he had done extensive field research, telling us in-depth stories of how his ethnographic counterparts (whom we couldn't meet for data privacy reasons) singularly experienced space. This walk wanted to stage a contrast between storytelling and regular architectural approaches to visual documentation. Hence, whilst Micol attempted to sketch and take pictures of the places Patrick referred to, Tomás documented the encounter. The walk brought about a very productive frictional moment: whilst Patrick wanted to make us feel singular spatial practices and issues, Micol struggled to inscribe them visually, in the regular way that might help an architect start thinking of spatial solutions. Each story was different from one another, displaying singular feelings, sensations, and peculiar atmospheric perceptions of distinct individuals, therefore composing a complex patchwork that proved hard to describe in the, rather neurotypical, *res extensa* of architectural practice. For instance, some of Patrick's counterparts used to walk as close as possible to the buildings, because they felt more protected from the street noise and the traffic, one of them carrying her bicycle with her at all times, as a protective shield in crowded streets; but another one felt protected from the noise of cars in the crowded streets; many of them felt intimidated by piles of rubbish along the streets; one of them would never go inside a famous shopping mall in the neighborhood because it was too noisy, and would never take the escalators, because she was afraid the floor would collapse under her feet. An interesting series of conversations ensued in the next days, stemming from Micol's difficulties in trying to relate to the singular spatialities of these stories, particularly revealed the problems her background as an architect created. An all-encompassing solution, what architects tend to strive for, was not

thinkable or desirable. How to practice architecture in such a context then?

5.2. Generating Cartographic Encounters with Moritz, his Family, and their Flat

To learn from Moritz's spatial practice, we went back to Fernand Deligny's cartographic approaches (Petrescu 2007; Manning 2020). In his work as psychiatrist and educator, he became known as one of the main exponents of French anti-psychiatry in the 1960s and 1970s, creating alternative caring networks for children *hors de parole* ("outside of speech"): criticizing the centrality of psychoanalysis and its reliance on language, he developed a particular method, known as the mapping of *lignes d'erres* ("lines of flight"), drawing the movements that non-speaking autistic children traced on their walks in everyday activities. Even if Moritz indeed spoke, mostly German and some English, our idea was that this might enable us to approach, more-than-verbally, his "sensory-rhythmic attunements" (Malcom 2022) with everyday spaces. We particularly wanted to consider how Moritz inhabited what is now his mother's flat, and how spatial arrangements became relevant for him or others. This was done by Micol both being in direct contact with him and eliciting his family's spatial experiences. In contrast to conventional "service" relationships, where designers call on relatives or other experts as "information providers" to propose design solutions, Susanne (Moritz's mother) and Julian (his brother) here acted more as epistemic companions in an attempt at approximation: not speaking *for* Moritz, but *from* their own experiences together with him, sharing their rich personal, experiential, lived experience on their spatial arrangements: on how Moritz had activated particular devices and bodily habits in their search to live together.

This led Micol to cartographically document the qualities and uses of Susanne's apartment, where Moritz had lived for a long time and to which he frequently returns, in order to reconstruct sedimented habits and elicit more-than-verbal experiences. For this, Micol showed photos, plans, and drawings to all of them, as a way to start out a conversation in English, which mostly involved Susanne and Julian (Figure 2). At their request, she followed them as they moved from one room to another. In a similar fashion to Cleeve's (2020) attempts at unearthing the complex more-than-verbal spatial arrangements of a dementia care unit through attentive drawing practices, Micol documented the movements. After, she invited them to point out particular objects and spaces, allowing particular memories to emerge, taking notes on these conversations. Susanne, for instance, shared that "when I set the table, I usually put the glass right in front of him, and a little further away" so he can see it, since his brain doesn't seem to process items below or to the sides of the visual field (Figure 3). She also made reference to how he requires a great color contrast for objects to be fully distinguishable. Julian, for

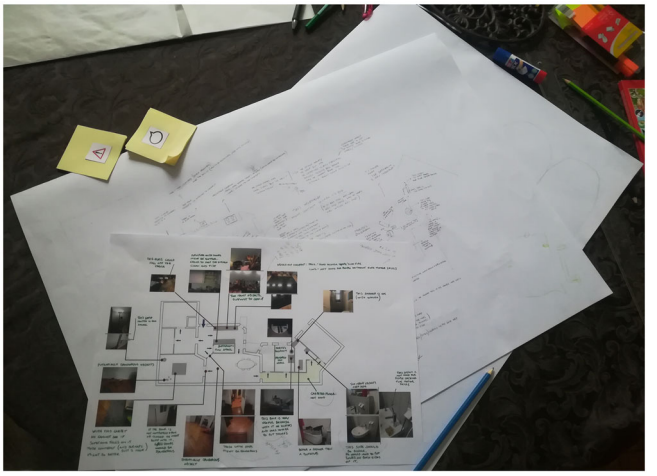

Figure 2
Cartographic mapping of Susanne's apartment, where Moritz grew up, aimed at reconstructing sedimented habits and elicit more-than-verbal experiences. Photo: Micol Rispoli.

his part, discussed Moritz's movements: even if he has issues with fine hand movements, "such as picking up small objects. He cannot switch this lamp on or off, the switcher is too small," he moves much faster than any of the other family members. Micol then started for a while paying attention to these things when interacting with him, transcribing their encounters in text and sketch. For instance, this awareness of Moritz's perception and ways of moving facilitated other interactions between them, such as in everyday encounters reaching out for things in the kitchen or when eating together.

Beyond everyday interactions, the cartographic explorations of the flat when recollecting stories from Susanne and Julian as well as interacting with Moritz made us reflect on how to make those spatial singularities relevant for an architect to be able to work them out in any attempt at a possible more-than-verbal participatory practice. How to do so?

5.3. Bodily Interfaces to Grasp Moritz's Spaces

In a very inspiring text for us, Latour (2004) asks "how to talk about the body?" Resonating with pragmatist philosopher William James (1967, 153), for whom "Our body is the palmary instance of the ambiguous," Latour suggests how the body never appears singular and accomplished in itself, more as an interface whose contours and nuances become articulable as a result of practical explorations with other human and nonhuman entities. Taking the training of experienced perfumers as an example, he reflects on the effects of using *mallettes à odeurs* (odour kits):

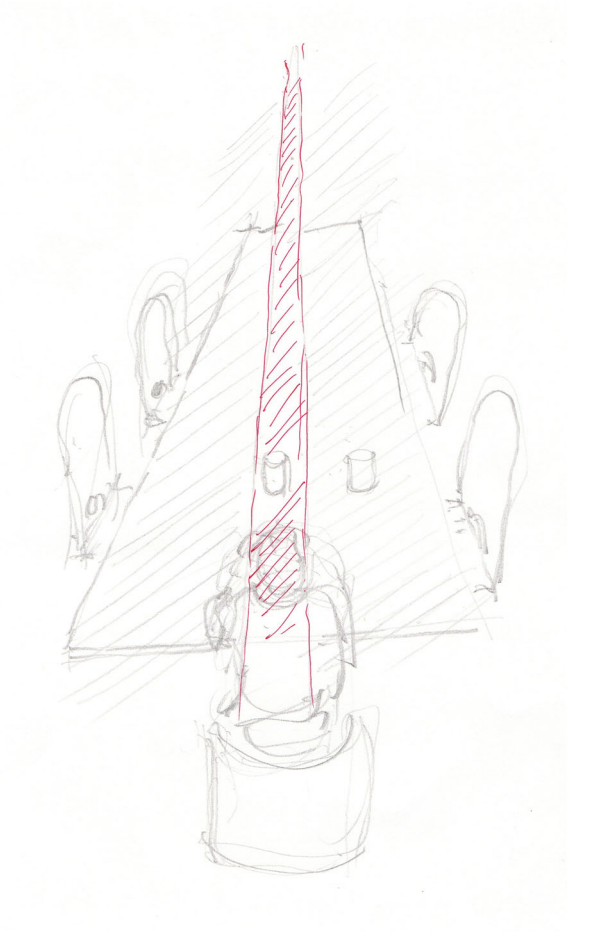

Figure 3
A sketch attempting to understand Moritz's visual field, following Susanne's stories. Photo: Micol Rispoli.

> Starting with a dumb nose unable to differentiate much more than 'sweet' and 'fetid' odours, one ends up rather quickly becoming a 'nose' (*un nez*), that is, someone able to discriminate more and more subtle differences and able to tell them apart from one another, even when they are masked by or mixed with others. (Latour 2004, 206–7)

In using these gadgets, these perfumers "learn to be affected," in Latour's terms, by the intricacies of smells.

Following this line of insight, we started to discuss more specifically how to prototype material devices that would enable learning to be affected by Moritz's spatial practice, in ways requiring to transcend our neurotypical perception. Like the *mallettes à odeurs* enabling perfumers to become sensitized to differences between odors, the architectural devices that we experimented with were intended to render articulate spatial practices where the contrast between

Figure 4
One of the architectural devices prototyped to become sensitized to Moritz's spatial practice: binocular lenses that channel sight and reduce contrast. Photo: Micol Rispoli.

different colors is more blurred and the angle of view is narrower (Figures 4 and 5); hence approaching a world where the contrast between different sounds appears to be less pronounced; but also haptic relations to things where fine motor skills are not central. These were in no way intended as simulations or empathetic devices stabilizing either Moritz or Micol's experiences. Rather, these devices operated as performative and speculative devices having the purpose and effect of engaging us in what Kullman (2016) defines as "perceptual variation": that is, expanding our perceptual range, putting our neurotypical understanding of the world in crisis, and enabling us to learn from Moritz's spatial practices.

As we came to understand, no participatory design practice could even start taking place without learning to be affected by Moritz's spatial practice, a perpetually unfinished process of approximating to topologies where, for instance, color and tactile contrast or continuity are not secondary qualities of an otherwise immutable Euclidean space but the enactments of the spatialities in which he dwells.

Figure 5
A view from the binocular device. Photo: Micol Rispoli.

These approximations have invited us to think and work out the pre-conditions required to practice participatory design beyond neurotypical hegemony, learning from Moritz's neurodiverse spatial practices. Even if the process concluded with these prototypes, due to the end of the research stay, Micol has kept in contact with Moritz and his family. What these design-driven experiments made possible was not just an articulate more-than-verbal relation with Moritz, Susanne, and Julian, but also a possible path to design together, in case this was deemed relevant. We have here focused on the learning process this work might entail, working out the necessary pre-conditions.

6. Concluding Remarks: Design before Design, or the Participatory Relevance of a Pedagogy of Pre-Conditions

The contemporary revival of design pedagogy, premised on political and ethical concerns, fosters the participation of long-neglected subjects because of its effects on the democratization of design. In continuity with this impulse, we have put forward an exploration of

participatory design in architecture drawing on a particular strand of reflections by STS-inspired scholars. Their reflections have challenged the idea that design practice is a task of an expert human shaping the passive world, rather extending agency to other human and nonhuman entities. By foregrounding a more-than-human perspective, they have also complexified the very meaning of participatory design: dwelling on the relevance of human and nonhuman assemblies, or "things," Pelle Ehn and his colleagues propose participatory design not to be undertaken as a series of instrumental operations through which designers seek consensual closure, but rather as an unfolding process in which different actors partake. A process that requires not just formal training, but learning from these actors and the emergences that unfold when working with them.

Following Ehn's inspiration, we have described a process searching to grasp tentative paths for designers to learn to participate in these unfolding things in situations in which some actors might put their practice and their ways of understanding the world in crisis. In the joint auto-pedagogical experiment in which we engaged in Berlin for a semester, we wanted to experiment with the art of participatory things together with a neurodivergent person, Moritz, and his family. Whilst participation tends to be premised upon the liberal stance that the parts to be included can voice their own needs and desires, we wanted to grope for ways to take into account the more-than-verbal experiences that the liberal "capacity contract" of political participation tends to exclude. In this regard, the expanded pedagogical situation we created aimed to explore space beyond neurotypical understandings, cartographically and materially approximating to Moritz and his ways of inhabiting the world. Rather than preparing us for the actual design phase (which usually follows an initial information-gathering one), these exploratory design-driven operations prompted us to create sensory approaches and devices so as to learn to be affected by his spatial practice, a potentially perpetually unfinished endeavor of approximation through the un-learning and re-learning of spatial notions and concepts.

Drawing inspiration from Ehn's thinking of participation in things as a "design after design" – where designers lose their centrality and become, rather, facilitators of "infrastructuring," thereby ensuring that the design process continues even when they leave the scene – our proposal, however, made us aware of the participatory relevance of a pedagogy of pre-conditions required for this to happen; something crucial when working with or in the vicinity of actors and issues whose ways of being in the world would prompt a re-learning of architectural tricks of the trade. This doesn't necessarily mean, as we have shown, avoiding to design; but rather putting design to the service of an unfolding inquiry of the pre-conditions that participation with these actors might require. We wish to term this approach "design before design," since we aim to suggest the relevant work of sensitizing designers through un-learning and re-learning operations,

taking care of the preconditions for participation in unfolding things. In thus approaching their task, designers would be required to partake in the unfinished and relevant pedagogical endeavor of designing the conditions to approximate actors, challenging their conventional notions and ways of undertaking participatory practice, hence remaining open to discover the many possible approaches to design practice that each of these participatory engagements would make emerge.

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Notes

1. This revival prolongs earlier traditions and reflections, in tune with the radical experiments that emerged globally in the late twentieth century, which, according to Beatriz Colomina and her collaborators (2022), sought to disrupt the disciplinary foundations of architecture, challenging modernist and colonial norms and forms of knowledge-production, reimagining the roles for architects as well as their practice.
2. These architects from Alicante engage explicitly with the question of how posthuman thought would transform their practice, especially addressing this in the pedagogic moment of the BA thesis. However, posthuman tenets have received stark criticism in disability rights advocacy and studies, and in particular from Black Feminist and Disability scholars, because the attempt to go beyond the human cannot happen at the expense of leaving those who are rarely counted as human in the first place. Rather, this foregrounds the need to dispute what counts as human (Williams 2021; Benjamin 2019; Erevelles 2011). In our particular context, we've found philosopher Erin Manning's (2020) musings on the emancipatory synergies between neurodiversity and Black thought to be of great relevance for a renewed pedagogy of architecture, particularly because they bring to the fore "more-than-verbal" ways of being in the world.

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References

Amescua Carrera, Jesica, and Mariana Ordóñez-Grajales. 2022. "Participation as Pedagogy." *Architectural Review* 1494 (September): 60–63.

Bann, Mercedes, Terrence Barr, Alex Blankenship, Tomesa Brown, Kevin Cannon, Alex Carlson, Linya Cheng, et al. 2018. *Autism Planning and Design Guidelines 1.0. Knowlton School of Architecture (City and Regional Planning Program)*. Columbus, OH: The Ohio State University.

Bastian, Michelle, Owain Jones, Niamh Moore, and Emma Roe. 2017. *Participatory Research in More-than-Human Worlds*. New York: Routledge.

Benjamin, Ruha. 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Cambridge, UK: Polity Press.

Berger, James. 2019. "Rethink: Agency, Theory and Politics in Disability Studies." In *Manifestos for the Future of Critical Disability Studies*, edited by Katie Ellis, Rosemarie Garland-Thomson, Mike Kent, and Rachel Robertson, 209–216. London: Routledge.

Bieler, Patrick. 2021. "BioÖkologien des Begegnens: Eine ethnografische Untersuchung der relationalen Konstitution psychischer Gesundheit und urbaner Umwelten." PhD diss., Humboldt-University of Berlin.

Björgvinsson, Erling, Pelle Ehn, and Per-Anders Hillgren. 2012. "Design Things and Design Thinking: Contemporary Participatory Design Challenges." *Design Issues* 28 (3): 101–116. https://doi.org/10.1162/DESI_a_00165.

Blaser, Mario. 2016. "Is Another Cosmopolitics Possible?" *Cultural Anthropology* 31 (4): 545–570. https://doi.org/10.14506/ca31.4.05.

Boys, Jos. 2014. *Doing Disability Differently: An Alternative Handbook on Architecture, Dis/Ability and Designing for Everyday Life*. New York: Routledge.

Boys, Jos. 2018. "The DisOrdinary Architecture Project: A Handy Guide for Doing Disability Differently in Architecture and Urban Design." *The Funambulist* 19: 36–43.

Burgstahler, Sheryl, and Tanis Doe. 2004. "Disability-Related Simulations: If, When and How to Use Them in Professional Development." *The Review of Disability Studies* 1 (2): 8–18.

Calvillo, Nerea. 2018. "Inviting Atmospheres to the Architecture Table." In *Inventing the Social*, edited by Noortje Marres, Michael Guggenheim, and Alex Wilkie, 41–64. Manchester: Mattering Press.

Cleeve, Helena. 2020. "Markings: Boundaries and Borders in Dementia Care Units." *Design and Culture* 12 (1): 5–29. https://doi.org/10.1080/17547075.2020.1688053.

Coates, Marcus. 2014. *UR… A Practical Guide to Unconscious Reasoning*. London: Book Works.

Colomina, Beatriz, Ignacio G. Galán, Evangelos Kotsioris, and Anna-Maria Meister. 2022. *Radical Pedagogies*. Cambridge: MIT Press.

Costanza-Chock, Sasha. 2020. *Design Justice: Community-Led Practices to Build the World We Need*. Cambridge: MIT Press.

Criado, Tomás Sánchez, and Marcos Cereceda Otárola. 2016. "Urban Accessibility Issues. Techno-Scientific Democratizations at the Documentation Interface." *City* 20 (4): 619–636. https://doi.org/10.1080/13604813.2016.1194004.

Criado, Tomás Sánchez. 2021. "Anthropology as a Careful Design Practice?" *Zeitschrift für Ethnologie* 145 (2020): 47–70.

Delacato, Carl Henry. 1974. *The Ultimate Stranger: The Autistic Child*. Novato: Arena Press.

Domínguez Rubio, Fernando, and Uriel Fogué. 2015. "Unfolding the Political Capacities of Design." In *What Is Cosmopolitical Design? Design, Nature and the Built Environment*, edited by Albena Yaneva and Alejandro Zaera-Polo, 143–160. Burlington, VT: Ashgate.

Erevelles, Nirmala. 2011. *Disability and Difference in Global Contexts: Enabling a Transformative Body Politic*. New York: Palgrave Macmillan.

Farías, Ignacio, and Tomás Sánchez Criado. 2018. "Co-Laborations, Entrapments, Intraventions: Pedagogical Approaches to Technical Democracy in Architectural Design." *Revista Diseña* (12): 228–255. https://doi.org/10.7764/disena.12.228-255.

Farías, Ignacio, Tomás Sánchez Criado, and Felix Remter. 2023. "How Would Animals and Architects Co-Design If We Built the Right Contract?." In *Design for More-Than-Human Futures: Towards Post-Anthropocentric Worlding*, edited by Martín Tironi, Marcos Chilet, Carola Ureta, and Pablo Hermansen, 92–102. New York: Routledge.

French, Sally. 1992. "Simulation Exercises in Disability Awareness Training: A Critique." *Disability, Handicap & Society* 7 (3): 257–266. https://doi.org/10.1080/02674649266780261.

Gaines, Kristi, Angela Bourne, Michelle Pearson, and Mesha Kleibrink. 2016. *Designing for Autism Spectrum Disorders*. Routledge.

Graby, Steve. 2015. "Neurodiversity: Bridging the Gap between the Disabled People's Movement and the Mental Health System Survivors' Movement?." In *Madness, Distress and the Politics of Disablement*, edited by Helen Spandler, Jill Anderson, and Bob Sapey, 231–243. Bristol: Policy Press.

Hamraie, Aimi. 2016. "Universal Design and the Problem of 'Post-Disability' Ideology." *Design and Culture* 8 (3): 285–309. https://doi.org/10.1080/17547075.2016.1218714.

Hamraie, Aimi. 2017. *Building Access: Universal Design and the Politics of Disability*. Minneapolis, MN: Minnesota University Press.

Hendren, Sara. 2020. *What Can a Body Do? How We Meet the Built World*. New York: Riverhead Books.

Imrie, Rob. 2012. "Universalism, Universal Design and Equitable Access to the Built Environment." *Disability and Rehabilitation* 34 (10): 873–882. https://doi.org/10.3109/09638288.2011.624250.

Imrie, Rob, and Peter Hall. 2001. *Inclusive Design: Designing and Developing Accessible Environments*. London: Spon.

Imrie, Rob, and Rachel Luck. 2014. "Designing Inclusive Environments: Rehabilitating the Body and the Relevance of Universal Design." *Disability and Rehabilitation* 36 (16): 1315–1319. https://doi.org/10.3109/09638288.2014.936191.

James, William. 1967. *Essays in Radical Empiricism*. Gloucester: Peter Smith.

Judge, Sara M. 2018. "Languages of Sensing: Bringing Neurodiversity into More-than-Human Geography." *Environment and Planning D: Society and Space* 36 (6): 1101–1119. https://doi.org/10.1177/0263775817748944.

Kafka, George. 2022. "Living Laboratory." *Architectural Review* 1494 (September): 68–75.

KoozArch. 2024. "New Rules for School: Challenging Norms in Architectural Pedagogy." February 7, 2024. https://www.koozarch.com/essays/new-rules-for-school-challenging-norms-in-architectural-pedagogy

Kullman, Kim. 2016. "Prototyping Bodies: A Post-Phenomenology of Wearable Simulations." *Design Studies* 47 (vember): 73–90. https://doi.org/10.1016/j.destud.2016.08.004.

Latour, Bruno. 2004. "How to Talk about the Body? The Normative Dimension of Science Studies." *Body & Society* 10 (2-3): 205–229. https://doi.org/10.1177/1357034X04042943.

Latour, Bruno. 2005. "From Realpolitik to Dingpolitik – An Introduction to Making Things Public." In *Making Things Public: Atmospheres of Democracy*, edited by Peter Weibel and Bruno Latour, 4–31. Cambridge: MIT Press.

Lifchez, Raymond. 1987. *Rethinking Architecture: Design Students and Physically Disabled People*. University of California Press.

Lo Chan, Eurydice. 2018. "Neurodivergent Themed Neighbourhoods as A Strategy to Enhance the Liveability of Cities: The Blueprint of an Autism Village, Its Benefits to Neurotypical Environments." *Urban Science* 2 (2): 42. https://doi.org/10.3390/urbansci2020042.

López Gómez, Daniel, and Tomás S. Criado. 2021. "Civilising Technologies for an Ageing Society? The Performativity of Participatory Methods in Socio-Gerontechnology." In *Socio-Gerontechnology: Interdisciplinary Critical Studies of Ageing and Technology*, edited by Alexander Peine, Barbara L. Marshall, Wendy Martin, and Louis Neven, 85–98. London: Routledge.

Malcom, Roslyn. 2022. "Sensory-Rhythmic Attention as Neurodiverse Attunement: Rupturing Normative Communication and Method." *Society for Cultural Anthropology*, September 6. https://culanth.org/fieldsights/sensory-rhythmic-attention-as-neuro

diverse-attunement-rupturing-normative-communication-and-method?s=08

Manning, Erin. 2020. *For a Pragmatics of the Useless*. Durham: Duke University Press.

Mostafa, Magda. 2014. "Architecture for Autism: Autism ASPECTSS™ in School Design." *International Journal of Architectural Research: ArchNet-IJAR* 8 (1): 143–158. https://doi.org/10.26687/archnet-ijar.v8i1.314.

Nieto, Enrique. 2022. *Posthuman Emergences. Architectural and Pedagogical Challenges from a Disciplinary Margin*. Alicante: Universidad de Alicante.

Petrescu, Doina. 2005. "Losing Control, Keeping Desire." In *Architecture and Participation*, edited by Peter Blundell Jones, Doina Petrescu, and Jeremy Till, 42–70. London: Spon.

Petrescu, Doina. 2007. "The Indeterminate Mapping of the Common." *field* 1 (1): 90–91.

Puig de la Bellacasa, María. 2017. *Matters of Care: Speculative Ethics for a More Than Human World*. Minneapolis: University Press.

Richards, Marie-Louise. 2022. "Pedagogies of Power." *Architectural Review* 1494 (September): 6–11.

Rimland, Bernard. 1964. *Infantile Autism*. New York: Appleton Century Crofts.

Rispoli, Micol. 2021a. "Careful Rearrangements: Experiments with Neglected 'Things' in Architecture." In *Care and the City: New Perspectives in Urban Studies and Planning Theory*, edited by Angelika Gabauer, Sabine Knierbein, Nir Cohen, Henrik Lebuhn, Kim Trogal, Tihomir Viderman, and Tigran Haas, 140–150. New York: Routledge. https://doi.org/10.4324/9781003031536-17.

Rispoli, Micol. 2021b. "Architecture in Crisis. Experiments with Participation and the Challenge of More than Human Worlds." PhD diss., University of Naples Federico II.

Schultz, Tristan, Danah Abdulla, Ahmed Ansari, Ece Canlı, Mahmoud Keshavarz, Matthew Kiem, Luiza Prado de O. Martins, and Pedro J. S. Vieira de Oliveira. 2018a. "Editors' Introduction." *Design and Culture* 10 (1): 1–6. https://doi.org/10.1080/17547075.2018.1434367.

Schultz, Tristan, Danah Abdulla, Ahmed Ansari, Ece Canlı, Mahmoud Keshavarz, Matthew Kiem, Luiza Prado de O. Martins, and Pedro J. S. Vieira de Oliveira. 2018b. "What Is at Stake with Decolonizing Design? A Roundtable." *Design and Culture* 10 (1): 81–101. https://doi.org/10.1080/17547075.2018.1434368.

Simplican, Stacy Clifford. 2015. *The Capacity Contract: Intellectual Disability and the Question of Citizenship*. Minneapolis: University of Minnesota Press.

Stengers, Isabelle. 2005. "The Cosmopolitical Proposal." In *Making Things Public: Atmospheres of Democracy*, edited by Bruno Latour and Peter Weibel, 994–1003. Cambridge: MIT Press.

Sterne, Jonathan. 2021. *Diminished Faculties: A Political Phenomenology of Impairment*. Durham: Duke University Press.

Till, Jeremy. 2005. "The Negotiation of Hope." In *Architecture and Participation*, edited by Peter Blundell Jones, Doina Petrescu, and Jeremy Till, 23–41. London: Spon.

Trimingham, Melissa. 2022. "Exploring an Autistic Curriculum: Of Pedagogy, Puppets and Perception." In *Knowing from the Inside: Cross-Disciplinary Experiments with Matters of Pedagogy*, edited by Tim Ingold, 123–140. London: Bloomsbury.

Tucker, Emma. 2016. "Di Peng recreates the experience of dementia with sense-distorting helmet". *Dezeen*, July 31. https://www.dezeen.com/2016/07/31/video-di-peng-dementia-experience-sense-distorting-helmet-central-saint-martins-graduate-movie/

Tucker, Emma. 2017. "Empathy Kit Uses Augmented Reality and Candy to Help Users Better Understand Autism." *Dezeen*, January 8. https://www.dezeen.com/2017/01/08/heeju-kim-emapthy-bridge-kit-help-users-understand-autism-augmented-reality-candy/

Williams, Rua Mae. 2021. "I, Misfit: Empty Fortresses, Social Robots, and Peculiar Relations in Autism Research." *Techné: Research in Philosophy and Technology* 25 (3): 451–478. https://doi.org/10.5840/techne20211019147.

Williamson, Bess. 2019. *Accessible America: A History of Disability and Design*. New York: New York University Press.

Yergeau, Melanie. 2018. *Authoring Autism: On Rhetoric and Neurological Queerness*. Durham: Duke University Press.