Interdependency:
Between Bodies and Architecture

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WHAT (WE EXPLORE)

This artistic research project explores the(re)production of space as a bodily process, through which the interdependence between the human body and architecture is investigated. We study this mutual relationship through visual and haptic realisations of the *in-between*, represented here by a medium at the scale of furniture – what we refer to, for now, as a *spatial prosthesis*. With this spatial prosthesis, we seek to discuss the makeup of a spatial experience through the body of persons in relation to materiality and spatiality of situations. What Ian Borden describes as *body-centric space*, exemplified through skateboarding as a series of precise spatial-temporal actions, is the supplemental realm (re)produced through bodily experiences in relation to architecture (Borden 2003). This architectural space, as experienced and enacted by individuals, is one of the means through which (social) space is produced (Lefebvre 1991). By focusing on how the body produces space in dialogue with architecture, this project unfolds the spatial experiences of persons with age-related cognitive or functional decline, through which it contributes to a deeper understanding of complex human–environment relations.

This work forms part of two broader research initiatives: *New Old: Re-designing for a Super-ageing Society* (2020-22) and *The Interdependency of Care* (2025). Both projects explore the role that architecture and furniture may play in addressing challenges associated with ageing in Denmark.

WHY (WE CHALLENGE)

Both the outcomes and the process of developing the spatial prosthesis introduce three essential conversations within this artistic research. To start with, we question norms that shape our understanding of design for an ageing population. By 2050, approximately one in six people worldwide (about 16%) will be aged 65 or older (United Nations 2024). People are living longer than ever before, and this demographic shift indicates that emerging older generations may encounter substantially different circumstances and hold different expectations for living conditions compared to their predecessors. Moreover, older people represent a highly heterogeneous population, with individual

differences in health and lifestyle becoming increasingly pronounced with age (WHO 2022). Designing for difference thus becomes even more critical in the context of a marked increase in the proportion of older adults (Clarkson et al 2003). This underscores the need not only to involve both today's and tomorrow's older adults in the creative process – to better understand and anticipate evolving needs and preferences – but also to critically and creatively challenge dominant aesthetic approaches that remain narrowly focused on limited dimensions of ageing.

Concomitantly, in a world where existing structures and systems are increasingly questioned and established methods and customs are persistently challenged, there is a growing need for new modes of architectural and design thinking. This project draws on a wide range of dynamic design practices and resists confinement to architecture, interior design, or furniture design alone. Instead, it engages material and immaterial forms of construction that respond to the spatiality of situations (Rendell 2006, Till 2009). Our approach to the visual and haptic realisations of the in-between space – between the human body and architecture – critically examines how spatial discourses and practices relate to the formal and material dimensions of architecture. In doing so, we work with the spatiality of the material environment and cultivate the capacity to analyse and conceptualise new spatial situations through the design of artefacts – specifically, the spatial prosthesis – which operate at the scale of furniture, mediating between the body and architectural space.

Finally, the project foregrounds the relational nature of spatial experience, emphasising that bodily experience is not static or purely individual, but dynamic and shaped through socio-material relations (Kafer, 2013; Hendren, 2020). Bodies are never fixed; even when sitting or lying down, they remain in constant micro-motion. Centred on the body, a series of spatio-temporal actions continuously produces (social) space, and body-centric space is closely connected to the notion of *locale.* Locale refers to the material context and accommodates particular spatial – temporal participations – actions and interactions that unfold through time. This perspective implies that architectural space should be understood not only in relation to architecture's structural and organisational autonomy, but also through its entanglement with broader spatial contexts (Giddens, 1989). Such phenomenological space includes the functional and cultural purposes of architecture while accommodating the stable, unpredictable, and often pleasurable dimensions of social relations. In turn, this reading of architecture underscores the importance of context and attentiveness to locality – the situatedness of architecture and our embodied experiences in place (Massey, 2005).

HOW (WE REALISE)

Taken together, these above threads establish the foundation for realising the spatial prosthesis as a furniture-scale mediator of human–architectural relations. First, we engaged with the floor. The floor is the architectural element that maintains the most constant contact with the body, anchoring each step to its material plane. Its surface continuously receives the weight, movement, and orientation of the human form. And yet, the floor is little more than the ground itself – an undifferentiated surface of the earth – or an architectural intervention devised to render that surface more habitable, useful or legible. Across cultures, floors have functioned as subtle registers of social practice and material culture, from decorative and functional mosaics to prayer rugs and tatami mats (Easterling, 2014). Historically, the floor has articulated tacit rules of conduct and embodied engagement, establishing spatial logics that guide movement, posture, and participation without the need for explicit instruction. Despite this complexity, the floor is often presumed to be perfectly flat and horizontal. But must it be?

Although the vertical and horizontal planes conventionally structure access and circulation, architectural discourse has explored an alternative mode of movement through the introduction of the oblique surface. As Boom (2014) notes, two distinct yet intertwined challenges shaped the emergence of the oblique as a critical spatial strategy. Timothy Nugent argued for the universal necessity of the inclined plane – the ramp – as a means of accommodating diverse bodily differences in circulation. Over more than four decades of advocacy and research, he worked to establish architectural design guidelines for disabled people, positioning the ramp as a central element in making the built environment more inclusive (Hamraie, 2017). In a different but conceptually resonant trajectory, Claude Parent and Paul Virilio developed what they termed *the function of the oblique* in the 1960s (Parent et al., 2003). Rejecting the dominance of the orthogonal paradigm, they proposed inclined planes – slopes, ramps, and angled surfaces – as mechanisms for provoking dynamic, physically engaged encounters with space, cultivating productive instability and new forms of social interaction. In line with these challenges to orthogonality, our work seeks to transform spatial settings into dynamic landscapes that heighten bodily awareness and foster responsive, adaptive relations between body and environment. In practice, we sculpt the elevated and inclined surface to accommodate diverse bodily possibilities – not only offering support and comfort but also provoking a wide range of actions and interactions. Across a typical day, approximately one-third of our time is spent lying in a relatively horizontal position, while the remaining two-thirds involve standing upright, moving

through space, or engaging in activities supported by different structures. Everyday activities such as reading, eating, and sleeping are traditionally associated with specific furniture typologies. The bed remains the typical domain of nightly rest, yet during the day the body is supported by a broad repertoire of furnishings – whether reading in a low lounge chair, dining at a table, or working at a desk. At the same time, although bodies may appear similar at first glance, individual requirements, preferences, and physical limitations significantly shape the ways in which we sit, stand, lean, or lie down.

Age-related functional impairments or physical disabilities further expand the range of bodily sizes, proportions, and required forms of support. Moreover, our needs and preferences shift over time, producing additional layers of variability. These manifold differences shape our choice of furniture and should likewise inform design practices that have too often defined desirable geometries – size, height, and proportion – through averages or idealised bodily measurements (Kajita, 2020). Colomina and Wigley (2016) describe this unfortunate situation as an alignment between bodily geometry and the spatial geometries it encounters. Yet such an alignment must also account for the fact that bodies are never still: even when sitting in a chair, the body engages in continuous micro-movements. Rather than imagining a fixed position governed by precise angles and dimensions, we must instead allow for tolerance – an openness to accommodating these subtle shifts. Accordingly, our approach deliberately avoids designing for singular or predetermined actions. Instead, its dynamic landscape not only suggests but also accommodates subtle differences in use. These intentions materialise in a circular form with an oblique surface measuring 2.8 metres in diameter. With its height ranging from 160 mm to 800 mm, the spatial prosthesis invites multiple ways of occupying and engaging with it, allowing diverse bodies to produce distinct spatial situations in dialogue with the surrounding architecture.

In this case, the architectural setting is Aarhus City Hall, designed by Arne Jacobsen and Erik Møller in 1941. The building's interior is characterised by a generous and sensuous materiality, articulated through rounded forms inspired by Gunnar Asplund's City Hall in Gothenburg. The main entrance hall – where our installation is situated – is bordered by access to a long administrative wing, an auditorium, and a large mural that marks the threshold to the city council chamber on the upper level. Throughout the building, every element has been meticulously designed: ceramic tile floors, bog oak parquet, a spiral staircase with brass handrails and beech cladding, and mahogany

furniture co-designed with Hans J. Wegner. Together, these components form a harmonious constellation of materials, colours, forms, and details. Within this richly articulated architectural milieu, the spatial prosthesis accommodates a spectrum of spatio-temporal actions, enabling bodies to explore alternative modes of sitting, leaning, reclining, gathering, or pausing. Through such engagements, the piece reveals the unpredictable – yet often pleasurable – dimensions of social interaction, allowing spatial practices to unfold in ways that extend, respond to, and reinterpret the existing environment.

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Drawing by Masashi Kajita, 2026.

References

Boom, Irma. *Ramp.* In *Elements*, edited by Rem Koolhaas, AMO, OMA. Venice: Marsilio Editori, 2014.

Borden, Ian. *Skateboarding, Space and the City: Architecture and the Body.* London: Berg Publishers, 2003.

Clarkson, John, Coleman R., Keates S., and Lebbon, Cherie, eds. *Inclusive Design: Design for the Whole Population.* Springer, 2003.

Colomina, Beatriz, and Wigley, Mark. *Are We Human?* Oosterbeek, the Netherlands: Lars Müller Publishers, 2016.

Easterling, Keller. *Floor.* In *Elements*, edited by Rem Koolhaas, AMO, OMA. Venice: Marsilio Editori, 2014.

Giddens, Anthony. *The Constitution of Society: Outline of the Theory of Structuration.* Berkeley: University of California Press, 1989.

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

Hendren, Sara. *What Can a Body Do?: How We Meet the Built World.* London: Penguin, 2020.

Kafer, Alison. *Feminist, Queer, Crip.* Bloomington: Indiana University Press, 2013.

Kajita, Masashi. "What Kind of Bodies Do Architects Imagine When Designing." In *Age Inclusive Public Space*, edited by Dorota Hauderowicz and Serena Ly. Hatje Cantz, 2020.

Lefebvre, Henri. *The Production of Space.* Malden, MA: Blackwell Publishers, 1991.

Massey, Doreen. *For Space.* London: SAGE Publications, 2005.

Parent, Claude, Virilio, Paul, and Mostafavi, Mohsen. *The Function of the Oblique: The Architecture of Claude Parent and Paul Virilio 1963–1969.* London: Architectural Association Publications, 1996.

Rendell, Jane. *Art and Architecture: A Place Between.* London: I.B. Tauris, 2006.

Till, Jeremy. *Architecture Depends.* Cambridge, MA: MIT Press, 2009.

United Nations. *World Population Prospects: 2024 Revision.* https://population.un.org/wpp/, 2024.

World Health Organization. *World Report on Ageing and Health.* Geneva: WHO Press, 2015.

Bios

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