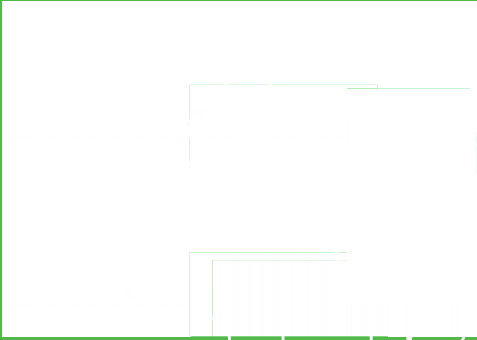

Yeoryia Manolopoulou,
University College London, The Bartlett School
of Architecture, United Kingdom

Perform- ing the Architectural Plan



**Egocentric and
Allocentric Drawing**

Performing the Architectural Plan

Yeoryia Manolopoulou

is an architect and design researcher. Her work is based on critical and experimental modes of design from two parallel positions: as Professor of Architecture and Experimental Practice at the Bartlett School of Architecture and as a practicing architect, founder and co-director of the award-winning studio AY Architects. Her projects include buildings, temporary installations, proposals for public spaces, critical artefacts, exhibitions and writings. She authored *Architectures of Chance* [Routledge 2013], founded the online publication series *Bartlett Design Research Folios*, and co-authored and curated the Irish Pavilion for the 2016 Venice Biennale. In 2014 she was nominated for the Emerging Woman Architect of the Year Award.

Abstract

Elaborating on experiments in spatial cognition and representation from the *Losing Myself* project, this chapter highlights the confines of the architectural plan as a drawing medium that privileges an allocentric conception of space, one that is progressively lost to those living with dementia. The chapter describes an alternative, performative mode of drawing that animates the architectural plan and incorporates egocentric representation, a more direct, person-centered conception of space that is retained for longer as we age.

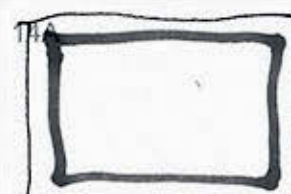
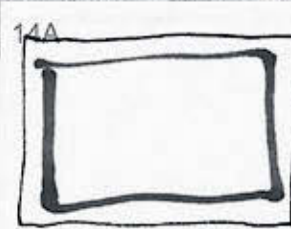
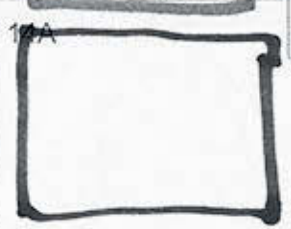
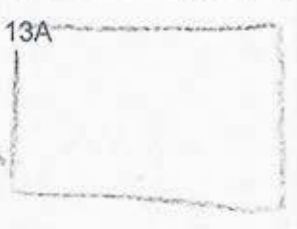
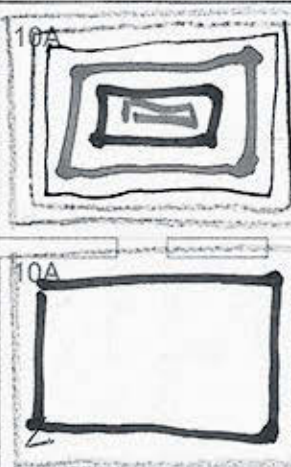
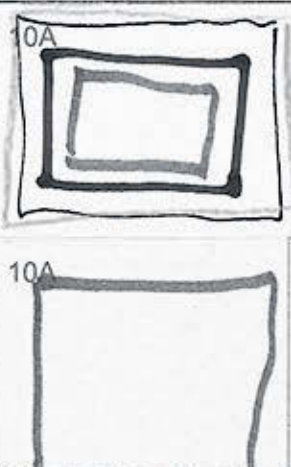
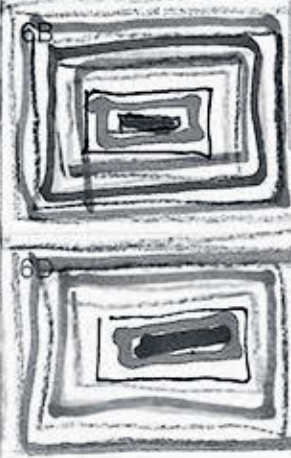
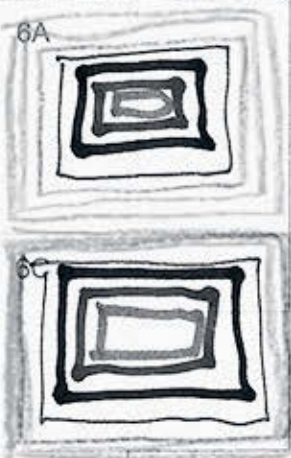
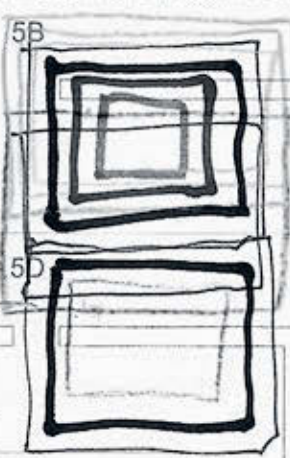
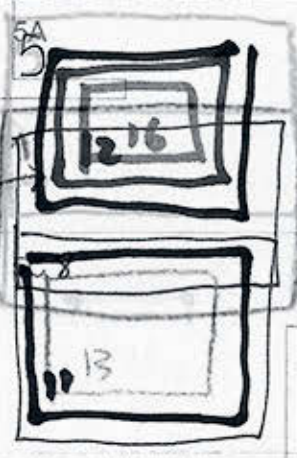
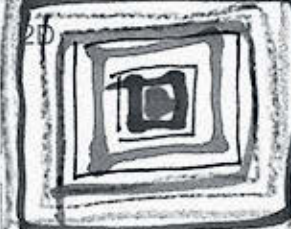
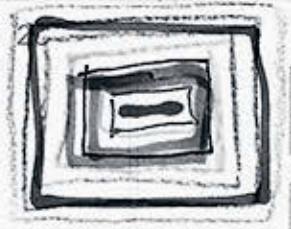
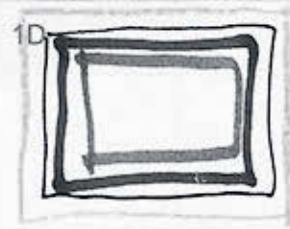
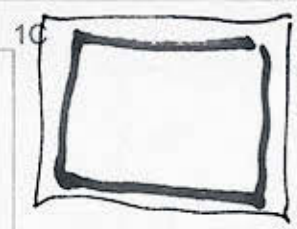
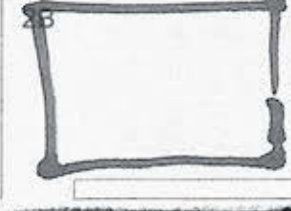
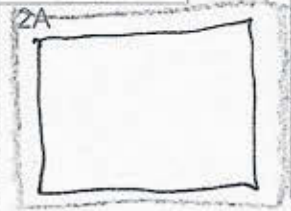
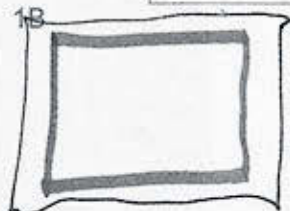
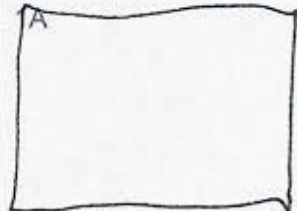
Architects had not considered the egocentric and allocentric functions of spatial reference that occur in the human brain before.

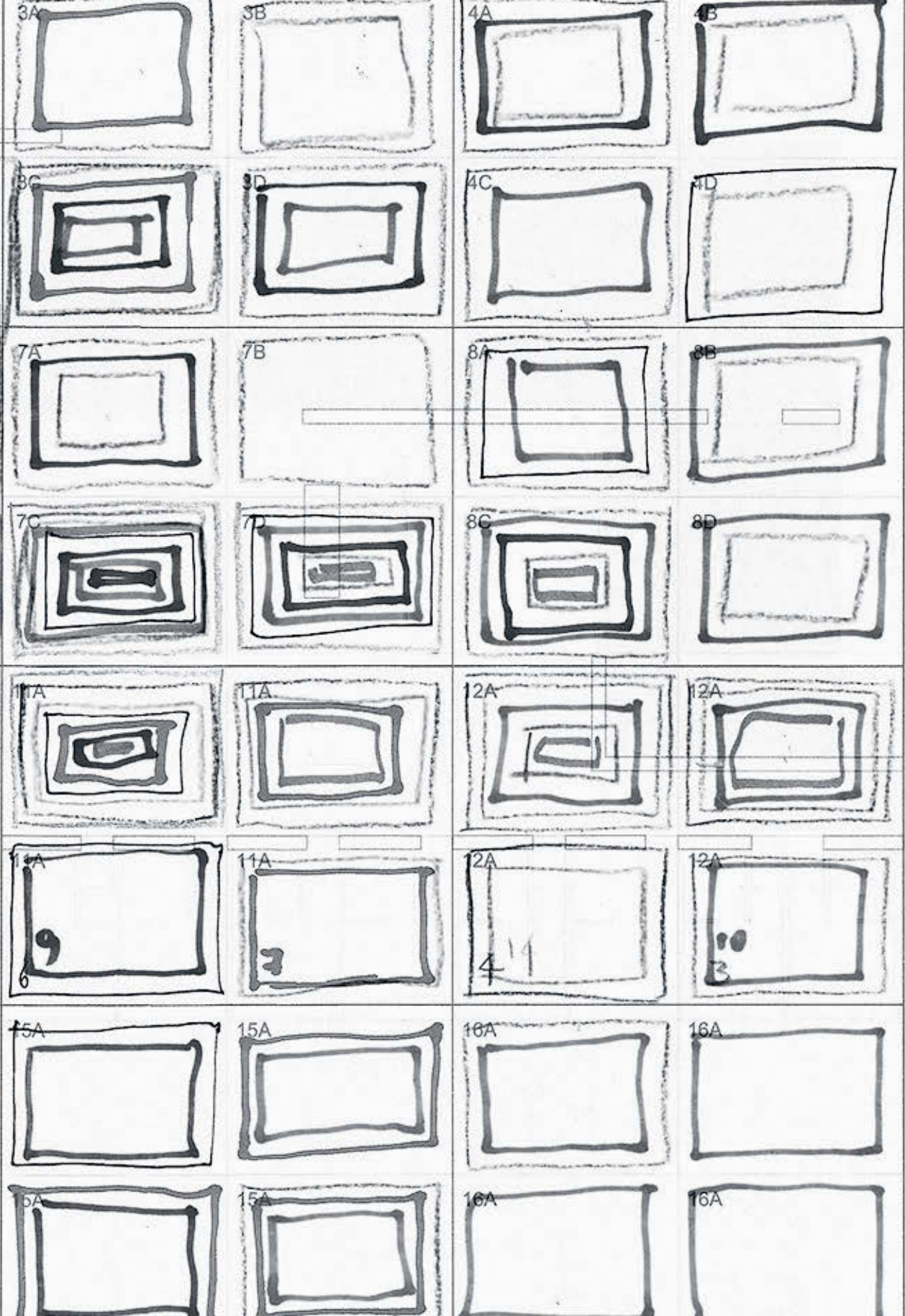
Allocentric spatial referencing requires a sophisticated form of mental manipulation whereby the world is understood by assessing and imagining multiple spatial relationships between objects and is dependent on the ability to retain a mental image of the whole. In egocentric spatial referencing, the brain makes simpler connections, however only between the viewer's position and the observed objects. Studies of aging show a greater preservation of egocentric functions in the brain and a marked decline in the more complex allocentric processes, alongside a weakening of the ability to switch between the two. A loss of allocentric abilities is common to all forms of Alzheimer's disease.

In *Losing Myself*, a collaborative investigation of dementia and architecture, Yeoryia Manolopoulou and Níall McLaughlin developed a kind of performance drawing that synthesizes both allocentric and egocentric representation. This novel drawing method fosters a deeper understanding of how architecture is experienced, and how we might approach its design. 'Performing' the architectural plan simultaneously creates temporal and empathetic connections between the space of building as experienced in time by different occupants and the space of drawing produced by multiple authors.

Keywords

Performance Drawing, Allocentric and Egocentric Representation, Architecture, Spatial Cognition





The Passage of Time

Atul Gawande's seminal book, *Being Mortal*, on the modern experience of aging and dying, begins with the words of the warrior Karna in *Mahābhārata*: 'I see it now – this world is swiftly passing' (Gawande 2014). This evocative phrase powerfully describes the passage of time and the fleeting nature of experience. How can our practices of spatial representation capture this fluid condition to better inform the ways in which we approach architectural design? How can we begin to find a mode of drawing that incorporates transience, subjectivity and the complex neurobiological and emotional processes that differ in each individual? Central to this challenge is to question the capacity of drawing to describe, or not, the overlapping and temporal shifts of spatial perception and interaction.

This chapter returns to the research of *Losing Myself*, a project I co-developed with Níall McLaughlin between 2015 and 2016, exploring dementia, spatial cognition, drawing and architecture. Our work formed the Irish Pavilion for the 15th International Architecture Exhibition at the Venice Biennale and an associated website that documented related research processes and findings. *Losing Myself* examined how the ability to situate oneself in and navigate through space – two human capacities that are central to the experience of architecture – become significantly impaired by Alzheimer's. The project took the Orchard Centre, a respite facility completed in 2009 by Níall McLaughlin Architects for the Alzheimer's Society of Ireland, as a starting point. The Orchard Centre was to be a test case for future developments, both in its successes and its failures. Conceived as a garden building, it was designed to create a sense of ease, freedom and wonder amongst the occupants and to minimize the potential for confusion. We revisited the building seven years after it was built to understand how it was used and might have changed through occupation. In parallel, we spoke with people with personal experiences of dementia as well as experts in medicine, health policy, neuroscience,

anthropology and psychology. Based on our observations and interdisciplinary research, our intention was to understand and redraw the Orchard Centre from the diverse perspectives of the individuals who experience the building, rather than from the single viewpoint of the architect who designed it.

Egocentric and Allocentric Representation

There are many ways of understanding spatial cognition, but one useful neurobiological concept, particularly for the purposes of discussing aging and dementia, is the distinction between egocentric and allocentric representation (Ekstrom et al. 2014). The first suggests a way of perceiving the world that is centered on the perspective of the individual. My body, in its exact position, is the point from which I construct a spatial understanding of the world in front of me. Using visual landmarks, I navigate a place by moving from one point to the next. This self-to-object method of comprehending and representing our surroundings develops first in children and is a facility that we retain into old age. Allocentric representation, on the other hand, relies on a more complex set of cognitive processes that enable the viewer to recognize relational coordinates between objects. Within an allocentric frame of reference, the viewer comprehends the world synthetically by assessing object-to-object relationships without having to physically shift their body to different locations. A part of a building would be understood with respect to its other parts.

These two modes of spatial referencing interact in the human mind to situate the body in space. Crucially, these mechanisms of spatial cognition are severely compromised by Alzheimer's disease, which attacks the physical tissue of the brain, progressively degrading its synaptic connections and eroding the individual's ability to plan, navigate and remember. As neuropsychologist Sebastian Crutch explains, a loss of allocentric understanding is common to all forms of Alzheimer's disease. This is because dementia attacks the matrix of

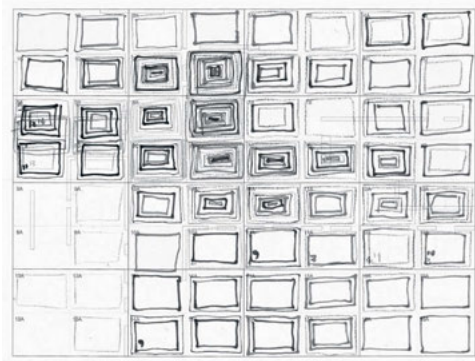


Figure 1. The score for redrawing the plan according to its patterns of inhabitation. Different frame sequences represent representations of the experiences of different inhabitants as they would move from room to room. Overlapping frames indicate areas of social interaction.

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cell connections in the brain, often eroding the learned, more manifold cognitive processes first. The allocentric model of representation is more complex than the egocentric, which is why it tends to deteriorate first (Crutch 2016).

The problem for architects, then, is that our primary methods of conceiving and representing space through the architectural plan are mainly allocentric: they are based on a totalizing, map-like view, disconnected from the circumstantial self-dependent ways in which we live in the world. As architects, we develop our skills through drawing plans, carefully considering object-to-object relationships between rooms, walls and other physical features. If our occupant's dementia is causing their allocentric abilities to fade, a further degree of separation between representation and experience, and between design and occupation, is introduced.

In architecture, we tend to draw and imagine buildings from privileged or non-existing viewpoints; we often represent versions of spaces that no inhabitant can ever experience. We use perspective projection to compose viewer-centered images and parallel projection to construct more object-centered representations. A perspective drawing implies a fixed spectator and projects objects onto the picture plane in such a way that

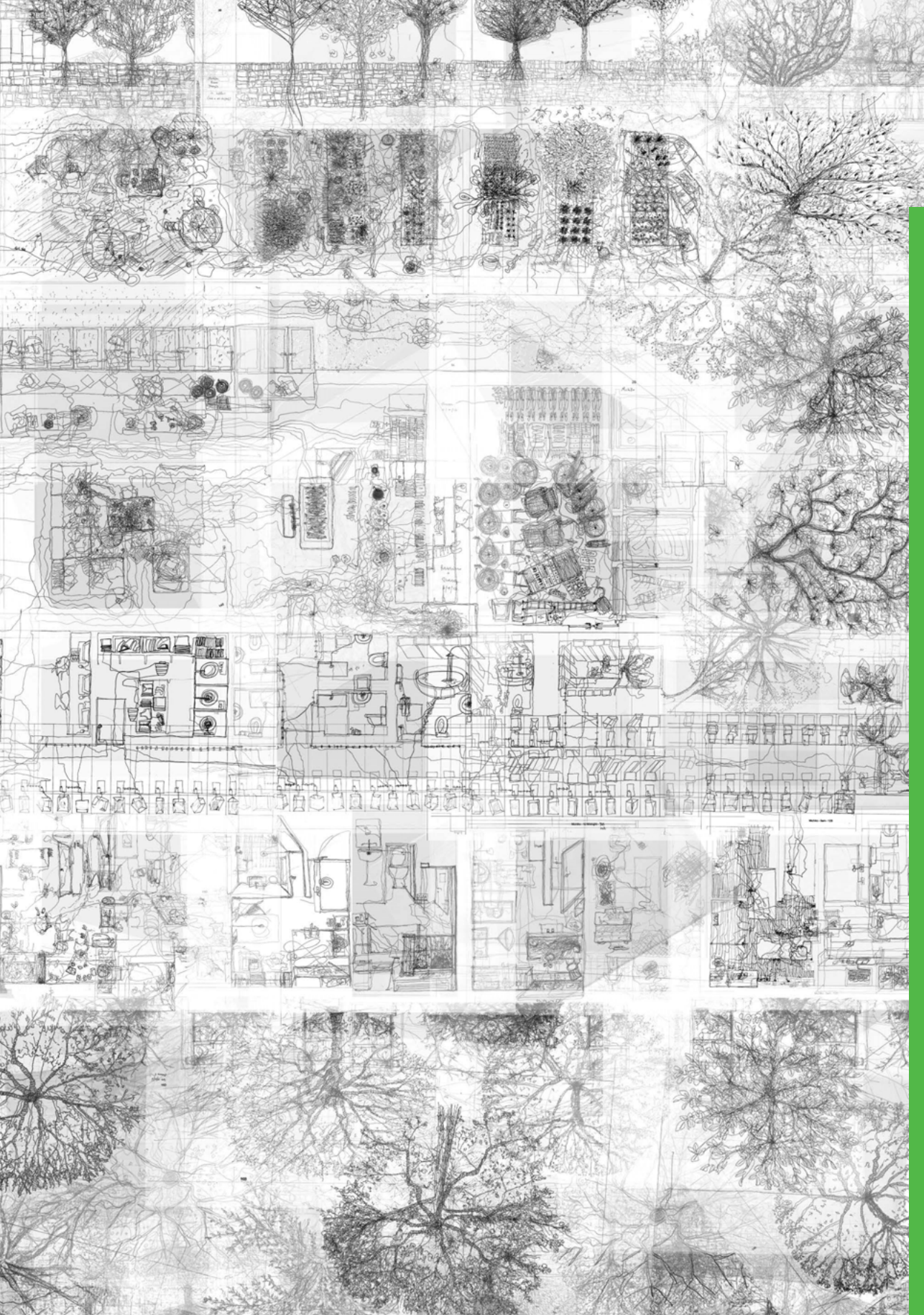
they appear to have spatial depth. This representation achieves a pictorial realism that we grasp intuitively. Parallel projection, on the other hand, lacks the correspondence between spectator and scene. In an axonometric drawing, for instance, objects appear 'floating' in an endless abstract space that has no direction or depth. Choosing one or the other way of drawing signals whether we are interested in a self-to-object pictorial conception of space that emphasizes subjectivity or an object-to-object notion of space that builds spatial interconnections. The first alludes to an egocentric representation; the second assumes an ambiguity about the viewer's position and thus an allocentric representation. Each type of drawing is useful in its own way, but the distinction made between the two falls short of acknowledging that human spatial cognition tends to involve a combination of the two forms of representation rather than purely the one or the other.



Figure 2. A drafter drawing a bedroom in the company of family photographs. Her drawing action is recorded by a video camera installed below the glass-top desk.

© Níall McLaughlin





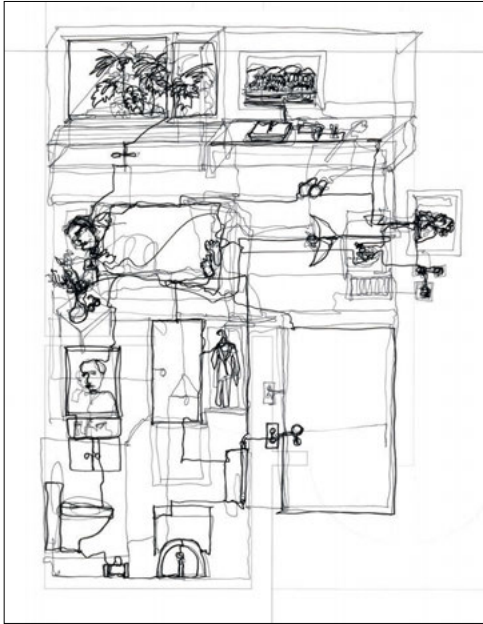


Figure 3. Drawing through a continuous single line while imagining the wonderings of a person's mind, starting from the person lying on the bed and extending out into the world of their room.

© Scan of completed drawing by Michiko Sumi

The Drawing Room

While the plan's allocentric nature shows the building as a complete and stable object, can we challenge this by also incorporating partial and temporal representations with egocentric characteristics? In *Losing Myself*, we experimented with drawing performatively and socially to bridge this gap: to synthesize both allocentric and egocentric representation. We created a dedicated drawing room in which sixteen architects were called to redraw the Orchard Centre open-endedly, reflecting on how the building might be experienced temporally and socially rather than how it looks as a fixed object.

The longest wall of our drawing room was filled with copies from personal photo albums, brought in by the drafters, and prints from our research: drawings and photographs of the Orchard Centre, images of synapses strangely similar to tree branches, garden paintings, and self-portraits



Figure 4. Four drafters drawing together while performing a social situation in the breakfast room.

© Drawing by Yeoryia Manolopoulou, Niall McLaughlin, Michiko Sumi and Simon Tonks

of the artist William Utermohlen produced after he was diagnosed with Alzheimer's (Crutch et al. 2001). Four bespoke glass-topped drawing boards were made, holding video cameras below them in a fixed position. Drawings were typically made on tracing paper carefully positioned on the glass with the camera running below to capture the drawing process. Hundreds of tracing sheets with faintly drawn parts of the floor plan were pre-organized in a pile, along with reference coordinates that would determine their location on the overall plan. A drafter would take a trace, mentally locate themselves in a particular part of the building, and draw for a maximum of 29 minutes, almost always in a continuous line, until the camera would automatically stop recording.

James Daykin, one of our drafters, recalls:

By the time I entered the room, other drawers had made many tests and finished, recorded drawings were in production: the methodology was being refined. Yet there were still many questions and a kind of

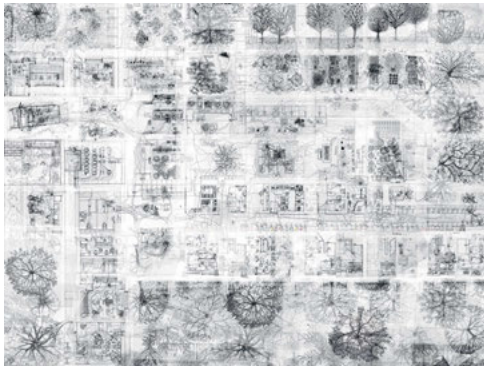


Figure 5. A single still of the new performed plan of the entire building. Hundreds of filmed drawings are stitched together to make an animated composite of allocentric and egocentric line structures.

© Yeoryia Manolopoulou and Niall McLaughlin

energetic tension in imagining the outcome. This manifested itself in the room as a kind of organized uncertainty: we know the process, but not fully where we'll arrive. These conditions were perhaps just part of how we might try to understand [a person living with dementia's] condition. The not-knowing and the unlearning of established process. With a carpet of used tracing paper lining the floor, shoeless I walked the room and explored the work (Daykin 2016).

Each drafter would draw while imagining the experiences of an inhabitant of the Orchard Centre. Exactly where and when they would imagine being while drawing was determined by a drawing score that delineated how sixteen occupants would potentially move through the building, daily and seasonally: Morning / Spring 6am–12pm; Afternoon / Summer 12pm–6pm; Evening / Autumn 6pm–12am; and Night / Winter 12am–6am (Manolopoulou and McLaughlin 2016a).

In the score, each drafter (and corresponding inhabitant) is signified with a color frame that shows their sequential locations in the building and, accordingly, the redrawing of its plan. For example, a drafter would draw on a sheet how they would wake up in their bedroom, then on another sheet how they would visit the bathroom

or breakfast room, then on another one how they would work in the garden, and so on. Each drafter would draw in fragments of the plan because, unlike the architect, they could not use allocentric processing to hold the totality of the building in their minds.

Lines of Inhabitation

The video cameras recorded each drawing as it was made: how each drafter would take hand, pen and line across the sheet of tracing paper to describe mainly egocentric wanderings. Their lines were unbroken and largely non-pictorial: they stood for the occupants' threads of consciousness, their physical and mental navigation in the building rather than what they saw perspectively. During free, continuous, hand drawing—taking a 'line on a walk' (Klee 1925: 16) in Paul Klee's words—we travel in time and enter a state of altered experience that is both actual and representational, mixing events, hesitations and errors of the now with remembered or planned actions.

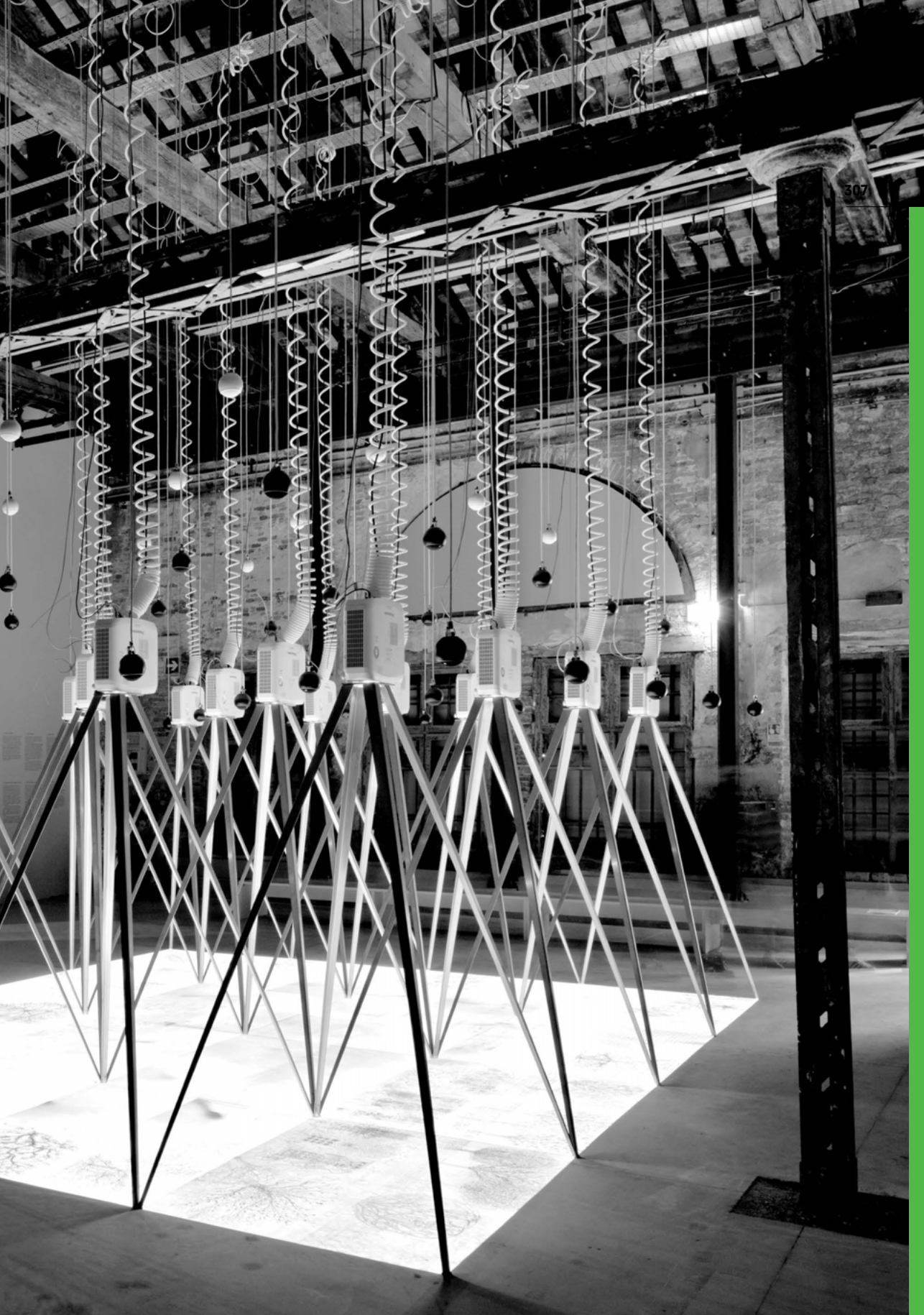
The resulting drawings vividly conveyed inhabitation among blossoming gardens, which were drawn separately to describe the seasons. Sole authored drawings referred to single occupancy: for instance, a drafter would draw alone to represent someone resting in their private bedroom. Sometimes drafters would 'revisit' rooms first drawn by someone else, adding extra density to the occupation of the plan. Going back into another person's drawing was like entering someone else's room after they had just left. Social drawings, produced by many hands and pens drawing on the same sheet simultaneously, were also developed to describe the public areas of the building. They reached a crescendo in representing the music room with the piano being played with multiple pens in hand by one drafter while four further drafters were drawing as if they were dancing to an Irish tune. In all cases drawings were video recorded as actions rather than as static artefacts.

After weeks of drafting, hundreds of layers of drawn sheets accumulated on the floor of our



Figure 6. View of the installation of *Losing Myself*, showing the drawing projection on the floor. The Irish Pavilion, 15th International Architecture Exhibition, La Biennale di Venezia, 2016.

Photograph by Nick Kane. © Yeoryia Manolopoulou and Níall McLaughlin.



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drawing room. Following our score, we carefully positioned each one next to and on top of the other in order to show the building's social inhabitation spatially and temporally. In a mirrored activity, hundreds of video recordings were digitally edited, assembled and montaged to match our score and the spatiotemporal arrangement we had made on the floor. The final composite film showed the entire building redrawn and animated from the perspectives of its sixteen imaginary occupants.

Later, we digitally overlaid hexagonal color matrices across parts of the animated plan to represent the occupants' internal mapping mechanisms – which have been shown to use specialized place cells and grid cells within the brain – to signal their location in the building (Moser 2014). Although the representation of fixed walls and other physical boundaries of the building were largely absent from the individual hand drawings, in the assembled overall drawing the density of the lines of inhabitation revealed a ghost image of the floor plan, correctly reminding us that egocentric and allocentric representations are, in fact, intertwined.

Sixteen Minutes

The *Losing Myself* installation for the 2016 Venice Biennale incorporated sixteen synchronized projectors, displaying a composite moving drawing across a floor area of 6.2m × 4.6m to represent a redrawn plan of the Orchard Centre (70.3m × 62.4m). A matrix of 64 speakers hanging on three levels in between the projectors played local, regional and global sounds to complement the drawing projection. Familiar snippets of Irish life across an annual cycle were layered upon the daily soundscape of the building and the actual present time sounds of the drawing process itself. One year and one day were collapsed into a sixteen-minute performance of light and sound. The result was a totally immersive and phantasmagorical multimedia installation that contrasted the architect's intentions for a building with vivid and empathetic representations of potential subsequent experiences. (Manolopoulou and McLaughlin 2016b)

Losing Myself highlights the limitations of the architectural plan as a static, sole-authored, allocentric medium, enhancing it with egocentric, dynamic details of the complexity and confusions of human experience. A combination of allocentric and egocentric drawing in architecture will not answer fully difficult questions about how we should design with dementia in mind, but it can help us better understand the workings of the human mind that are vital to our experience of architecture. We are far from representing reliably how we remember, imagine and navigate space but by drawing both egocentrically and allocentrically, alone and with others for extended periods of time, we come closer to making architectural practice a performative form of inhabitation in its own right.

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