Constructing the architectural moving drawing: transdisciplinary practices between architecture and artists' film

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Abstract

This thesis establishes original forms of *reading* and *making* architecturally focussed time-based artefacts through the construction of practices which I term “architectural moving drawing”. The subject of this thesis emerges out of my dual-disciplinary grounding in fine art and architecture and explores the resonances I have identified between the tectonic practices of structural film and architectural representation, relating to ideas of an active, engaged viewer who constructs meaning. While there is substantial research covering many aspects of the relationship between cinema and architecture, there is a paucity of work exploring the relationship of artists’ film – in particular with practices emerging from structural filmmaking – to architecture and architectural representation. It is in this gap that I draw together aspects of disciplinary practice, of both making and writing, testing “architectural moving drawing” as a sui generis form, and one which opens up new territory for artists’ film and architectural representation through new transdisciplinary methodologies operating outside the constraints of a *home* discipline, without becoming bound by those of *other* disciplines whose techniques are employed.

By tracing the journey that I draw out through the thesis the reader will also begin to construct the architectural moving drawing through their own perceptual agency. The route will include a mapping of the trajectory of my practice, and a drafting out of the theoretical foundation for the construction of architectural moving drawing. As I tell the story of my previous practice, I will show how a nascent form of architectural moving drawing already exists in this historical work. The thesis will go on to present the processes and artefacts that have been produced during the undertaking of the PhD. This new work is a continuation of my practice-based research working on the principles of a critical, iterative and reflective practice, that translates and anchors the speculative act into a tangible, materially manifest entity.

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I am indebted to Peter Mudie for the original introduction to artists' film, and specifically showing us Snow's *Wavelength* – this was instrumental in the development of my critical practice and recognition of the link between such art practices and architecture. I also very much appreciate the passion and humour that he brought to teaching, and his commitment to fostering a new generation of artists. I would also like to thank the late Ranulph Glanville for the introduction to cybernetics and radical constructivism, including providing a very broad range of references that led me on the path to research how architecture relates to its mediating artefacts.

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Chapter 1

Working in a Space Between

1.1 Introduction

This thesis constitutes a working process, a story being written though the act of its telling. It involves processes of prophecy and memory, of a simultaneous looking forward and backward, while being situated in the transitory present. The thesis itself is a working document, a place to draw together the strands of my practice, to articulate the methodologies of both making and reading that commenced prior to, and further developed during the PhD. This PhD started with an intention to establish a new form of practice output, which I was terming the "architectural moving drawing". In the later stages of the PhD it became clear that I was developing processes or methodologies, rather than artefacts (although completed and uncompleted artefacts result from these processes), and that architectural moving drawing was a practice, rather than an object, a verb, rather than a noun.

The concept of and the term architectural moving drawing threads through my evolving practice over the last twenty-five years, deflecting and deforming in response to my own transdisciplinary journey from artist, to architect, to my current hybrid critical creative practice. What I term architectural moving drawing is a purely hypothetical construction – this thesis intends to institute it as a theoretical proposition, to manifest it as forms of practice of both making and reading, and to indicate how the new methodologies of these practices may contribute to the disciplines from which they have evolved and between and across which they are situated.

The thesis therefore emerges as a response to the following research questions:

- How can a transdisciplinary perspective, grounded in both artists' film and architecture, be used to develop new methodologies for analysing time-based artefacts to undertake readings which focus on an architectural subject?
- How can disciplinary practices from artists' film and architectural representation be combined through a transdisciplinary practice to form new hybrid methodologies for architecturally focussed moving image production?

The work presented in this thesis, and the various strands of making and reading[1] that constitute my practice, fundamentally originates from my own disciplinary background and journey. I am an artist and architect – the research that I have undertaken before, through, alongside, (and after[2]) this thesis is intrinsically linked to my disciplinary position and biography. I studied fine art in an architecture school, going on to produce film and

[1] I consider the "reading", or interpretation and analysis of artefacts, such as films by other artists (or indeed my own), as a form of practice.
[2] While undertaking the work of the PhD, both through writing and practice, new ideas and directions are continually thrown into future possibility. Some of this will find its way into the thesis, but the rest will continue beyond the completion of the PhD.

installation artwork as part of my subsequent architectural studies. I now teach within a school of architecture and am undertaking a PhD in an art school. Working and being grounded (Foster, 1998: 162) in the disciplines of art and architecture allows my work to learn from, and in turn inform each discipline. My critical practice operates in what Elizabeth Grosz terms a "third space […] a position or place outside of both [disciplines], that they can be explored beside each other, as equivalent and interconnected discourses and practices" (2001: xv-xvi). However, from within this transdisciplinary space (as both artist and architect) I work in the *subject* of architecture.[3]

Through my practice I coined the term "architectural moving drawing",[4] initially to describe my architecturally focussed artists' film work, a practice which I am now developing further through this thesis, which in turn consolidates the definition of the term. My practice has long been a hybrid one, employing techniques, media, theory and contexts from both art and architecture. Even as an undergraduate fine art student, I had access to architectural processes and ideas, learnt through the architectural design studio which we undertook alongside our fine art studio.[5] I began (in 2000) using the term "moving drawing"[6] in my own postgraduate architecture studies to refer to my architectural time-based work, which was itself informed by my own previous artists' film practice. Since 2005 I have used this term in my teaching, introducing architecture students to methods for producing time-based representational artefacts. The word "architectural" was added to tie it more explicitly to its architectural subject, particularly in my academic papers, and in my work with students.

My use of the term "architectural moving drawing" for moving image artefacts is a deliberate act and marks a disciplinary shift. Firstly, the term "drawing" obviates the use of the terms "film" or "video", so avoiding such medium specificity, especially as I am working with digital filmmaking technology – as art historian and critic Liz Kotz identifies, in "'digital cinema,' the differential specificity of video vis-à-vis film (and vice versa) all but disappears, as the necessary relations between recording, storage, editing, and release

[3] I will say more about both the definition of "transdisciplinary" that I use, and the notion of architecture as a "subject" as well as discipline, later in this chapter.
[4] Recently, Igea Troiani and Tonia Carless have adopted a similar term – "cinematic architectural drawing" (2020: 323) – for their research on techniques of "cinematic collage" to consider modes of spatial occupation.
[5] The BFA course at the University of Western Australia, in which I was part of the very first cohort of students, was, I believe, a particularly innovative way of teaching fine art, due to its combination of practice and theory. Its integration of aspects of the architecture course offered strong interdisciplinary connections, and this also served to enrich the established architecture course. Firm friendships and collaborations were formed between fine art and architecture students, and I am one of three graduates from our original cohort of 15 students who subsequently went on to become architects.
[6] The term "moving drawing" is more commonly used for drawn animations (Crafton, 1979: 413) such as cartoons and flip books. The term used in relation to architectural animations may have been introduced by my postgraduate architecture studio tutor, Nic Clear in relation to the agenda of the design unit, which was to engage with computer generated animation techniques (Clear, 2005).

formats are eroded. How can video be a medium if it no longer has a central apparatus or machine…?" (Kotz, 2008: 110).[7] Secondly, these terms are connected to forms of production within art practice or the entertainment industry. Avoiding them thereby reduces the necessity to constrain an architecturally oriented moving image practice to the norms of existing practises in these other disciplines. Finally, it connects the practice to the architectural subject and suggests the application of (some) of the constraints and norms of the disciplinary practice of architectural representation. In the use of the word "drawing"[8] this separation of *form* from *use* is paramount – without adopting the title "filmmaker", the architect can use a new form of representational practice that expands their already wide toolkit of "drawing" techniques, for the investigative, developmental, and integrative processes they employ as methodologies in architectural thinking and making. The media itself does not necessarily determine the discipline – wide varieties of media are used across a range of disciplinary practices, and it is the manner and purpose in which they are used that situates them in terms of disciplinarity.

Significantly, the word "drawing" can be used as a noun or a verb, and practises *of* drawing are inherently instilled within the artefact of *a* drawing. But while a drawing artefact requires a process of drawing to be formed, a process of drawing does not always result in an artefact, although it does usually result in something – drawing out, drawing upon, drawing attention, drawing inference, drawing a distinction (Glanville, 1999a; referencing Spencer-Brown, 1969) – nonetheless creates something, even if it is something intangible. It is in these uses of drawing as a verb that my thesis ultimately resides – perhaps fittingly for a practice-based PhD, the "construction" of architectural moving drawing that this thesis therefore takes as its driving objective, is the construction of methodologies of practice – practising meditating artefacts and practising interpretations.

1.2 Methodology

The work of the thesis is to "construct" practices of architectural moving drawing through a series of written and made artefacts, to use textual and practice discourses to set forth, found, and facture these categories of process. In this I subscribe to a "constructivist paradigm" of enquiry (Gray, 1996: 12-13), and, as implied above, the thesis uses an

[7] As neither term "digital video" or "digital film" are adequate, I choose to use the latter when necessary as "film" can also refer to the content and not necessarily indicate the work was shot and filmed on film – in fact "video" feels more medium specific that "film" in the current digital world. While I could use the term "digital cinema" or "movie", both feel inherently connected to narrative cinema, rather than artists' film. However, I recognize that the form of media is significant within many artists' moving image practices.

[8] For architects the term drawing implies specific critical process of use, but which may take a number of technical forms. However, I acknowledge the potentially provocative or contentious nature of using the word "drawing" in such a way.

overarching methodology of practice-led research to construct “hybrid methodologies involving a synthesis of many diverse research methods and techniques … [taking] a pluralist approach and use of a multi-method technique, tailored to the individual project" (Gray, 1996: 14). This performative research practice (Haseman, 2010: 150) uses aspects of *disciplinary* practice, of both making and writing, which are combined to form new *transdisciplinary* methodologies, and which have the potential to extend beyond my own work. Within this practice-led approach, I use a contextually responsive, iterative and reflective process learnt from architectural design (Schön, 1984) combined with that of “working-things-out” in artist filmmaking (Le Grice, 2001a: 164). Filmmaking and architectural design both involve processes of addition, subtraction, altering, layering, and juxtaposition. They take from and react to what is existing, and conclude with the creation of something new, something which is situated and responds to existing physical, social, material, theoretical and historical contexts. As part of my work I not only acknowledge but actively draw upon my own history and experience and celebrate my own agency in the work. As cybernetician and design researcher Ranulph Glanville[9] asserted (in provocatively claiming research to be a *subset* of design):

> The role of observer-as-participant, in making knowledge, abstracting it to theory, theorizing about theory; and in constructing the way we obtain this knowledge, then obtaining it accordingly, is central/ essential/ unavoidable/ inevitable and completely desirable. Without the active participation of this actor, there would be nothing that we would know. At every step, in every action, the observer/participant is actively designing. There is nothing passive, automatic, or without person (agent, scientist, or designer) here. (Glanville, 1999b: 89)

Using analysis of textual and past practice references – both my own work alongside key precedents which have, and which continue to inform my practice – the thesis will go on to define architectural moving drawing through new practice processes undertaken through the duration of the thesis. It will propose ways that architectural moving drawing might contribute to and impact the disciplines from which these new methodologies arise – artists’ film and architectural representation.

While I will discuss in detail the methods used for each project as I present them, my process frequently commences with a response to context, through the use of recorded footage of existing buildings, spaces, and found objects, which then informs the direction of the film, and from which specific architectural content and corresponding film structure are formulated. When working with existing buildings and spaces the recording of the original footage is a response to an existing condition, and at the time of filming, the structure and ultimate intention for the film is not pre-conceived. Techniques of image

[9] Glanville taught me in my postgraduate architecture degree, introducing me to the constructivist paradigm (amongst other ideas), arguably starting me on my interest in the workings of architectural representation.

composition largely derive from architectural photography and drawing. The recorded footage then informs the direction of the film, and its specific architectural content and corresponding film structure. The editing procedure that I employ is a form of adjusting; this is akin to the process of architectural design, of working through many iterations, which could also be described as a form of editing. This editing is “simultaneously generative and reflective" (Gray, 1996: 10), and this “experimental”, iterative process of working with media also resonates with practices of artist filmmakers: “[Snow’s] method is often one of taking an idea like a hypothesis and then testing it out in the artifact” (O'Pray, 2003: 94); "The edit, the cut and the process of cutting, the manipulation of times from a pool of possible moments, reveals itself as the art of the film itself." (Cubitt, 2001: xii).

The performative processes of making in my practice are a significant aspect of my work and stand alongside the final artefacts of the edited film or assembled installation. Artefacts generated through the process, which may or may not find their place within a final work, constitute a form of “sketch”. The physical act of filming, of negotiating my body in a real space, with a camera’s body (Sobchack, 1992: 168), of orchestrating the relationship between camera and building, or camera and object, is a performative act. This performance of the recording is a form of work in its own right, which structures and adjusts my relationship with the space or object that I am filming. The processes of filming involve a level of reflection in action (Schön, 1984), and as such contribute greatly to my own knowledge of the subjects of the filming, but this reflection also impacts the development of the processes themselves, and is therefore critical in the development of my practice.

As part of a critical practice combining practice and theory, writing about my work is yet another form of process – as I am doing through the textual element of this thesis – and is also a fundamental component to my wider methodology. The relationship between practice and theory is central to my intertwined practice and writing – Deleuze’s (Foucault and Deleuze, 1977: 206) notion of “relays” between practice and theory, extended by Jane Rendell (2006: 9-10) to emphasise a symmetrical, reciprocal relationship, describes my integrated, iterative model of critical practice. Critical practice requires an interdependent, non-hierarchical relationship between theory and practice, each informing and influencing the other (Rendell, 2006), (Gray, 1996: 12) – my self-reflective practices of making and writing therefore collectively constitute a form of critical research. Through the writing, I perform a “reading”, itself a strand of architectural moving drawing. The interpretation of existing artists’ film work through an architectural lens, as well as a filmic one, generates new insights into these works, and in presenting them though this transdisciplinary lens, suggests how they could inform practices in both disciplines.

1.3 Structure and Chapter Summaries

The chapters of the thesis will be structured as a series of themed discussions, continually drawing together practice (both my own and that of my key precedents), and the theory which both underpins the practice, and which is developed and enriched by the practice. While a preliminary contextual review is contained within the contexts section of this introductory chapter, most of the contextual foundation for the thesis will be presented within the body of the thesis, drawn into the discussions of each chapter as appropriate.

Chapter 1: Working in a Space Between

This introductory chapter presents the research questions and methodology of the thesis, with a series of sections providing an overview of the key themes and contexts. The chapter articulates my disciplinary position and provides an overview of my historical practice, expounding its developing themes and techniques, and identifying the disciplinary influence in the work. I will use this work to demonstrate that processes of architectural moving drawing have existed within my own practice for quite some time.

Chapter 2: Projective, Prophetic, Analogous Artefacts

This chapter identifies processes of perceptual construction inherent in both structural film and architectural representation and establishes a new, hybrid mode of reading time-based artefacts that have the potential for an architectural interpretation. The chapter will also posit that in architectural representation there is a fundamentally analogical relationship between drawing and building, both imagined and materialised. Using the strategy of practising architectural moving drawing through a process of reading, I undertake an architectural interpretation of Michael Snow's seminal 1967 film, *Wavelength*. In a shift from *reading* to *making*, the chapter concludes with two case study presentations of some of my more recent practice, which have resulted in complete "artefacts" of films and installation.

Chapter 3: Light Matter

This chapter proposes that Walter Benjamin's concepts of distraction and tactility in architectural experience, and Juhani Pallasmaa's ideas of peripheral vision and the hapticity of the gaze, can be used to further explore analogical relationships between the time/space of the filming event and spatial dwelling, the experience of viewing the moving image artefact, and the perceptual construction of a "new" space through the agency of an active viewer or reader. The chapter uses two case study analyses to test these ideas – John Smith's *Leading Light* (1975) and my own *Sunhouse Elevation* / *Sunhouse Azimuth* (2013).

Chapter 4: Practising Models/Modelling Practice

This extended chapter focuses on a trajectory of new work undertaken though the duration of the thesis, using the filming of architectural models, and presenting a series of processes that I have developed through the practice. The chapter builds upon notions of construction in the reading of architectural representation as developed earlier, to extend to the interpretation of filmic imagery generated from architectural models. Questions of resemblance – verisimilitude versus abstraction – will connect with ideas about the "uncanny" (Foster, 1983; Freud, 2003).

Chapter 5: Conclusion

This chapter draws together the threads of the thesis, concluding the story that, for you, the reader, is starting now. It identifies how the research questions have been answered, and where the thesis is ultimately located in relation the fields from which it draws. Indications are given as to how the work might contribute to these fields, and how it might also offer models for reading and making "transdisciplinarily" (Power, 2015).

1.4 Contexts

The subject of this thesis emerges out of the resonances that I have long felt exist between architectural representation and structural film, and these parallels have been fundamental in informing my practices of making and writing, and in establishing the transdisciplinary space in which I work. I aim, in the brief contextual overview that I will provide in this introductory chapter, to introduce each discipline sufficiently to allow a glimpse of these correspondences. The nature of this in-betweenness is a third critical context for the thesis, which demonstrates how practising in a space between allows for disciplinary connections to be sought and found, and techniques used and combined in the making of hybrid artefacts which "are able to communicate with those from a variety of disciplines in a synoptic manner" (Stein, 2007: 99).

1.4.1 Architectural representation

Architecture and architects have a very particular relationship with representational "mediating artefacts" (Pérez Gómez and Pelletier, 1997: 7), a relationship which is interwoven with the projection of ideas and propositions between past, present and future.[10] Architectural theorists Alberto Pérez Gómez and Louise Pelletier (1997: 7) and Robin Evans (1995b) explain that since the Renaissance architectural drawings have been essential tools in the design and communication of spatial propositions, prior to their

[10] An interpretation of (past) precedent in the making of "future" propositions is all performed in the present.

physical construction. Architects' primary medium is drawing, rather than building, and architecture is "dependant on pictures for purposes of construction and dissemination" (Evans, 1989: 21). Drawing techniques employing orthographic architectural projection – where a scheme for a built structure is described using a set of plan, section and elevation drawings – first appeared early in the sixteenth century (Evans, 1989; Evans, 1995b: 107-08). Before this "plan, section, and elevation, considered independently ... can exist, even coexist, without invoking projection at all" (Evans, 1995b: 113).

Pérez-Gómez and Pelletier (1992) critique the instrumentalised use of architectural drawing, identifying a loss in the movement from perspective as a symbolic tool to a scientific one. They challenge the dominance of perspective in architectural representation, just as it has previously been challenged in modern and contemporary art (Goodman, 1969), and argue for more poetic strategies to *express* beyond the precise and accurate locations of material objects. They claim that the scientific use of projection removes the body from space, and suggest that instead, architecture should reflect something of the human condition, to act symbolically, as poetic translation. Like philosopher and art critic Nelson Goodman, Pérez-Gómez and Pelletier imply that projective drawing is a reductive form, which nonetheless purports to "represent" the whole building. Architectural historian and theorist Dalibor Vesely asserted that "that the goal of architecture is human life, while its techniques and instrumental thinking are only means" (Vesely, 2004: 5), arguing that in order to achieve this goal, architecture "must integrate and subordinate the instrumental knowledge and the technical potential of human beings to their praxis" (Vesely, 2004: 5).

Architectural theorist Juhani Pallasmaa's ideas of focused vision versus peripheral vision propose that the latter provides greater spatial immersion (Pallasmaa, 2012). Pallasmaa's notion of haptic, tactile quality of vision supports an engagement with the material qualities of the physical world, and that shadows and darkness provide greater peripheral and tactile experience. These ideas resonate with Walter Benjamin's assertion that architecture is experienced "in a state of disstraction" (Benjamin, 1992: 232), and that "tactile appropriation is accomplished … by noticing the object in incidental fashion" (Benjamin, 1992: 233). Pallasmaa also identified that "lived space" is formed from experience of physical space in combination with a "mental space", claiming this as a commonality in architecture and film (Pallasmaa, 2001: 18-21), asserting that a film director "creates architecture".

Architect and theorist Stephen Holl (2007), in taking a phenomenological approach, highlights spatial and temporal qualities absent from traditional and digital drawing (including CGI animations), and architect and historian Jonathan Hill suggests that when such architectural qualities are not recorded in conventional methods of architectural

representation “they are not designed by the architect” (Hill, 1998b: 137). To expand architecture’s range of representational techniques, Hill proposes appropriation of other disciplinary representational practices. As architect and educator Nic Clear explains, in his argument of the necessity to bring filmmaking techniques into the architect’s toolbox – “ideas of duration and movement can never be adequately expressed in a conventional architectural design process nor represented in the traditional forms of architectural notation” (Clear, 2005: 105). However, time-based architectural representations have generally been limited to CGI animated “flythroughs”, and, as Clear identifies “the function of film considered solely in terms of the ubiquitous fly-through animation, as it often is, is both lazy and reductive” (Clear, 2005: 105, 108). In providing a critique of the “undisciplined practice of the flythrough” Mathanraj Ratinam identifies the “irony about the static nature of a flythrough: the building and even the environment are often still and it is only the camera that roams about a frozen scene in an unedited manner” (Ratinam, 2012: 76-82). In the early days of architectural computer animations narrative cinema was identified as the primary filmic precedent for this technique (Dubrow and Kletzien, 1996: 178) – however, in this thesis I argue that it is techniques borrowed from structural filmmaking which may be most apposite in communicating such temporal qualities of architecture missing from conventional architectural representation. Through the use of *appropriate* filmmaking techniques, architectural moving drawing can allow time to be “drawn”, offering a way to embed this essential fourth dimension of architecture within documents that both record and bring it into existence.

1.4.2 Architecture and Artists’ film

> architecture and film are separate modes of engagement with the world, and that film as an art form can operate in an interpretative manner, to illuminate how we experience, inhabit and understand architecture and our environment… certain ways of seeing through the medium of film and using certain techniques render visible layers of spatiality and temporality that open up the potential for meaning that would otherwise remain latent, subsumed under the immediacy of lived experience… the artifice and artfulness of certain types of films sheds new light on the experience of space and nature of place that architecture is constantly grappling with. (Stara, 2020: 41)

There is a substantial body of research relating cinema and architecture, such as the role of architecture as a dramatic element in narrative cinema; an identification of similarity in scale and complexity of production (Lamster, 2000: 1; Clear, 2005: 108); the investigation of cultures though spaces depicted in films (Penz and Thomas, 2020); the mobility of the architectural or urban inhabitant or flaneur as manifest though film (Bruno, 1997)’; “the filmic properties of architecture and urban environments” (Koeck and Roberts, 2010: 7); and the phenomenological relationship between the pro-filmic spaces of architecture, and the filmic spaces of cinema (Pallasmaa, 2001). As well as exploring architecture as

depicted *within* film, some theorists discuss the influence of cinematic practice upon architecture with the emergence "of architecture that is 'cinematic' – that is, theatrical in effect and thematic in nature" (Lamster, 2000: 2). In *Montage and Architecture* Sergei Eisenstein insists that the supposed visual "spectacle" of architecture, formed from key viewpoints, has informed filmmaking practices, and then future architecture has reciprocally learnt from film (Eisenstein et al., 1989: 117).

However, while my work overlaps with some of the overarching lines of enquiry noted above, it is the dramatic film that is the primary reference for *those* discussions, and yet within this form architectural space usually acts subserviently to the film's focus on human narrative, particularly in mainstream commercial films (Boumeester, 2015: 89)[11]. Gilles Deleuze asserts that "cinema was constituted as such by becoming narrative, by presenting a story, and by rejecting its other possible directions … the 'cinematograph' became 'cinema' by committing itself to a narrative direction" (Deleuze, 1989: 25, 293), but I argue that it is the *alternative* direction of cinematographic practice, that of artists' film, that may offer techniques to allow architecture to be foregrounded. As filmmaker and theorist Nicky Hamlyn explains:

> The more a film becomes preoccupied with space in itself, or with a location as an end in itself, the more likely it is to be an experimental film… Experimental films tend to explore a location, whereas in movies they are invariably treated as a backdrop for drama … Despite the importance of locations, however, their function is normally confined to contributing to the look of a film, or at best help to create a particular ambience or state of mind... The location provides an appropriate background against which the story can unfold. Rarely are we invited to contemplate the location in itself: however striking it appears, we always leave a place when the story moves on to somewhere else. (Hamlyn, 2003: 139)

It is in this *other*, experimental mode of filmmaking practice that my thesis is situated. While several recent papers[12] have begun to discuss the architecture of artists' film – architect and historian Alexandra Stara has discussed films by Elizabeth Price and Rut Blees Luxemburg (Stara, 2020), and architecturally trained historian Panagiota Nigianni has explored works by Patrick Keiller, William Raban and John Smith (Nigianni, 2015) – there is still a paucity of existing work considering the "architectural aspect" (Snow, 2017) of artists' film, especially practices of and emerging from, structural film.

Early forms of cinema evolved into either entertainment or avant-garde art forms (Rees,

[11] This is not to say that people are unimportant in architecture, quite the opposite, and artists' film practices can offer ways to consider issues of people's relationship to and interaction with architecture in a way beyond that of mere "staffage" employed in most normative forms of architectural representation.

[12] I have also published several papers on this subject – Suess (2011b; 2014a; 2018a; 2018b; 2020).

1999: 15-29). The former embraced the illusionistic nature of the medium, finding it a powerful form for storytelling. Out of the latter, artists' film and video developed, engaging with time-based media for forms of art, rather than cinematic, practice. While "cinema" was developing into a form of entertainment, of storytelling, early experimental films "were rooted in the cubist revolution pioneered by Braque and Picasso … New theories of time and perception in art … led artists to try to put "paintings in motion" through the film medium" (Rees, 1999: 10). By the late 1960s in Europe and North America, artists' film, in the genre of structural film, offered a challenge to cinematic representational processes (Rees, 1999). Structural film questioned uses of film to: represent a subjective, first person experience; construct fictional narratives; or offer supposedly transparent "documentation" (O'Pray, 2003: 96-106). Structural film addressed the processes of film's creation – the machines of camera and projector, the material of the film media, the act of editing, the relationship between the spaces of filming and screening, and critically for this thesis and as I will discuss further in Chapter 2, the construction of meaning by an active viewer (Hamlyn, 1996: 220).

The term "structural film" was coined by the American critic of avant-garde film, P. Adams Sitney. Describing North American work, Sitney defined this as "a cinema of structure … and it is that shape which is the primal impression of the film… what content it has is minimal and subsidiary to the outline", and highlighted four characteristics: "fixed camera position …, the flicker effect, loop printing, and rephotography off the screen" (Sitney, 1974b: 407-08). Countering and extending Sitney's reductive definition and term, London-based experimental film-makers Peter Gidal and Malcolm Le Grice placed emphasis on the concerns of the material presence of the medium, introducing the word "materialist" to the form's title. Gidal problematises the narrative and illusionism central to conventional cinema, seeing them both as constructing a passive, unchallenged viewer, with Le Grice identifying that in dramatic cinema the viewer's awareness of the processes of making and screening the film are suppressed in order to prioritise their passive absorption of a supposed "'representation' of reality" (Le Grice, 2001b: 156), preventing their personal construction of meaning (Gidal, 1976: 4). Similarly, media scholar Anne Friedberg uses the term "window shopping" (Friedberg, 1993) to relate "normative cinematic viewing [to] the culture of consumption" (Mondloch, 2010: 110). Gidal and Le Grice saw structural/materialist film as challenging this passivity of the audience: "The mental activation of the viewer is necessary for the procedure of the film's existence" (Gidal, 1976: 2-3), similar to Sitney's emphasis of this active role for the viewer: "It is cinema of the mind rather than the eye" (Sitney, 1974b: 408). Through the minimal use of human protagonists, an attempt to be "non-illusionist" (Gidal, 1976: 1), and use of extended duration (Sitney, 1974b: 412), the viewer is provided with the time to look carefully, to see details and make connections and meaning that are often lost in the pace of narrative cinema. However, I suggest that in the acknowledged desire to eliminate "content"

(specifically in the form of human narrative) from structural film, there was a denial of the architectural qualities and narratives in the rooms, cities and landscape that were often used as the sites for filming, but which were seen as empty of signification (Penley, 1977: 8)[13]. One of the aims of this thesis is to begin to fill this gap, to develop methodologies for making critical, architecturally focussed *readings* of such works.

A number of film artists, from those initially engaged in structural film practices, to those whose work emerges from these practices, have produced films which use footage of built works of architecture, the urban environment, and landscape. Michael Snow's *Wavelength* (1967b) (which I shall discuss further in Chapter 2) and <—> *(Back and Forth)* (1968), respectively take the filmic devices of the zoom and the pan to undertake a form of mapping of the rooms in which they were filmed. Ernie Gehr's *Serene Velocity* (1970), filmed in "a hallway in a classroom building at the State University of New York at Binghamton", uses the tactic of adjusting the zoom lens every four frames, which "moves us back and forth along the hall […to] continually change the particulars of what we see in the hall, and over the film's 23 minutes" (MacDonald, 1990: 12). Film scholar Scott MacDonald draws an analogy between the room of filming and the camera apparatus – "the hallway is to the building what the lens is to the camera; both are long, narrow spaces which provide access to other spaces… the zoom lens is the "hallway" through which light travels from outside the camera into the photosensitive darkness, the corridor through which the spaces outside of the camera pass and reconfigure in the emulsion within the camera" (MacDonald, 1990: 13).

An architectural reading of Peter Gidal's *Hall* (1968a) would suggest that the film concerns threshold, scale, adjacent space, and the artefacts of human inhabitation, as the film cuts from a view from a room out into the adjacent hall, to close-ups of the various objects in the hall. Gidal's restless, hand-held camera of *Room Film 1973* (1973) and *Silent Partner* (1977) makes for a much more fragmented film where (as per the artist's aim) there is not sufficient recognisable "content" to perform such a clear reading. Similar to Gidal's "Room Films", John Du Cane's *Sign* (1974) is "shot entirely in what appears to be the filmmaker's studio: film cans, reels and other cinematographic [material] can sometimes be distinguished amongst the rapid camera movements" (BFI, a). In Moira Sweeney's three-part film *Imaginary* (1989) the first part, "From Today", uses "shots of a cottage window-sill and the view of the coast beyond [which] are slowed to about one fifth of their normal speed" (Hamlyn, 1989; quoted in LUX, 2016). This has something of Gidal's room films, in the quick-cut edits of imagery of objects in the room, the room's windows, and the view of the landscape beyond the windows, but the imagery is more legible, affording some form of spatial reading, albeit still very fragmented. It feels like an agitated dwelling of a

[13] I will discuss the idea of the empty room as empty signifier in Chapter 2.

space/place that should feel more comfortable, its space and light inviting, its rural location bucolic. But the moving camera does not let the viewer rest – we are trapped in the room, frantically looking around, possibly for a means of escape into the countryside beyond. Gill Eatherley's *Pan Film* (1972) "is an extremely simple, short film in two- and three-screen versions, composed of a number of short, slow pans across a room, past a partially open window that gives only a glimpse of the trees outside" (Le Grice, 1977: 143). Roger Hewins's *Windowframe* (1975) "presents a domestic scene with a man and woman, as seen through a window. The crossbars of the window divide it into four sections, which once the initial scene has been established effectively function as four screens, proposing different juxtapositions of the four segments of the original image, almost as in a sliding puzzle. Tensions are created between what we expect to see, and what we do see" (BFI, b). As the film progresses, the various panes become more temporally dislocated, extending to a spatial dislocation later in the film when the top and bottom panes swap position.

In *Circle* (1972) Derek Boshier films London to explore relationships between objects in the built environment, playing with issues of scale and representation – the scale model of an aeroplane turns into that of a real plane; zooming up from a street view to realise we are zooming out of a photograph, then up a real building; a series of still photographs of a street, each one zooming out, are replaced by film imagery of the same street; photographs of rail tracks overlaid with the sound of a train are intercut with the blurred view of the side of a passing train. Ian Breakwell *Repertory* (1973) consists of "a long continuous tracking-shot around the outside of a closed theatre, accompanied by a voice-over in which he imagines (and makes the viewer imagine) a programme of gently surreal stage-tableaux and presentations" (Curtis, 2007: 221-22). Through this visual and aural strategy, the film explores the relationship between interior and exterior, and contrasts these two elements – while the footage is calm, rational, rigorous, unrelenting in its movement across and around the building, the description of the interior theatre space becomes increasingly absurd as the film progresses.

Snow's *La Region Centrale* (1971) applies filmic tectonics to the landscape through the design of a complex device by which to film atop a mountain in Quebec and the resulting three-hour film has "set the conditions for an experience" (de Duve, 1995: 8) in the act of viewing – "With *La Region Centrale* since the subject is, in a way cosmic, I thought it should be long, it should feel like 3000 years or 3 million years, not three hours" (Michael Snow quoted in Totaro and Habib, 2002). Similarly, Chris Welsby's landscape films used filming system as "a way of capturing the fluctuating patterns of movement and light resulting from the Earth's rotation and the tidal pull of the Moon – and the equivalents in daily life caused by human traffic" (Curtis, 2007: 97). This extended to systems for presentation in the gallery, such as his first continuously displayed work *Shore Line*, which

consisted of six rotated projectors “each showing the same fifteen-foot loop of a beach scene, the image joining up to form a seemingly continuous line of breaking waves” (Curtis, 2007: 98). However, “because no two projectors ever run at the same speed, six projectors generate unlimited permutations of image combinations. The installation, like the ocean it portrays, is never static, never repetitive, always moving, always running through new patterns and rhythms” (Welsby, 2007).

Along with Chris Welsby, William Raban was “one of the finest exponents of the genre known as 'Avant-Garde Landscape' film working in this country. However, the breadth and diversity of his work beyond the early landscape films should not be neglected” (Green, 2005) – it is his work that explores more architectural and urban environments that are most relevant to my thesis. In Raban’s *Angles of Incidence* (1973) “the film image is a view through a window, the window-frame providing a constant spatial reference point, as the view beyond is modified by a series of major and minor variations in camera viewpoint” (Curtis, 2007; quoting Raban, 1993). Over time, the repeated imagery becomes so familiar that it begins to abstract and is read as a flat surface rather than three-dimensional space. In the fast cutting between angled views of the window, the image appears to move in the space of the screen, rather than the camera position changing – the windows become a surface, a screen, rather than an object in the world.

Raban and John Smith both use a “quasi-documentary” (Curtis, 2007: 197) format to critique the changing character of London’s east-end (Nigianni, 2015). Smith’s *Hackney Marshes* (1977) was filmed “in one-day … edited in camera, and shot from a spot in the middle of one of 112 football pitches” (BFI, c). Like Smith’s earlier *Leading Light* (1975) (which I shall discuss further in Chapter 3), this film provides a “day in the life” of a particular place, where its urban architectural elements, and the inhabitation of its users demonstrate the significance of the passage of time. Raban described[14] his film *About Now MMX* (2010) as being a critique of the changing city, particularly the social shifts in how areas are occupied and who by, and also to the resulting architectural changes. On seeing the film in 2015, it moved me – to me it felt like a loving portrait of London, complete with sadness and joy. It drew upon what was there, carefully, responsively. It showed the contrasts, in scale, in inhabitation, in wealth.

Emily Richardson’s work “owes much … to Raban’s *Sundial* (1992), *A13* (1994) and *Island Race* (1996) – specifically in the ways in which it defamiliarizes parts of the city” (Newland, 2010: 158). Richardson frequently uses time-lapse imagery where still spaces are made active through constantly changing light, visible only through this increased temporal scale. Night-time urban streets have their stillness exaggerated through the

[14] At Raban’s Professorial Platform presentation – a screening of *About Now MMX* (2010) and discussion; UAL, London College of Communication, 23/03/2015.

minimal movement in these scenes. *Block* (2005), for example, uses footage at a range of speeds, with mostly orthographically framed camera angles. Suki Chan also works with time-lapse, usually with an explicit intention to film light. Chan identifies that she "is drawn to light as a physical phenomenon, and the role it plays in our constantly shifting daily experience of our environment, be it urban or rural" (Chan). Elizabeth Price's *At the House of Mr X* (2007), "talks about something deeply architectural, this elision of space and time that is so difficult to convey otherwise… [it] presents itself as a series of dramatic possibilities and offers us architecture simultaneously as concrete reality and as space of imagination" (Stara, 2020: 45-47).

In Hans Op de Beek's *Staging Silence* films (2009), (2013), (2019), everyday objects become architectural models, the process of transformation revealed through inclusion of the performer's hands. Heinz Emigholz's *Architecture as Autobiography* films perform several representational acts, both of the spaces depicted, and as a form of archiving the architect's portfolio of work (Lyons, 2008: 298-99). Owen Lyons frames this body of work as an extension of Emigholz's earlier work in structural film (Lyons, 2008: 291), suggesting that "we consider his architectural films as not simply recordings of existing spaces but rather as 'expressions' of new spaces themselves" (Lyons, 2008: 292). Ila Bêka & Louise Lemoine's *Living Architectures* project aims to use the medium to produce portraits of "icons of contemporary architecture" (Bêka and Lemoine) that focus on their "human stories" (TAMUarchitecture, 2011), challenging the common portrayal of so called "iconic" buildings. Mark Lewis is interested in foreground and background relationships in film (and painting and cities), particularly where the background is separated from and framed by an architectural element. Lewis sees windows as "films within films" and that "the cinema just learns from the city, it copies it, it copies the world" (Lewis and Mulvey, 2014). Laura Mulvey suggests that the early films of the Lumiere brothers are direct references for Lewis, which can be seen in a number of his film works (Lewis and Mulvey, 2014).

Several contemporary architectural photographers are producing moving image work, making commissioned pieces about significant works of architecture, such as the Architects' Journal's series of short films for the 2019 Stirling Prize,[15] made by architectural photographer Jim Stephenson (Stephenson / Bishop). The background in still photography may enable these "filmmakers" to employ static (or nearly static) camera shots, to allow their imagery to be a form of moving photograph. If the filmmaker's

[15] Nevill Holt Opera by Witherford Watson Mann: https://www.instagram.com/tv/B3J_ZS3hoO6/
Cork House by Matthew Barnett Howland, with Dido Milne and Oliver Wilton: https://www.instagram.com/p/B3FC0f1hBYm/
Macallan Distillery by Rogers Stirk Harbour + Partners: https://www.instagram.com/p/B3FBZGlB0zp/
The Weston by Feilden Fowles: https://www.instagram.com/p/B3HMBRQB5BC/
London Bridge Station by Grimshaw: https://www.instagram.com/p/B3MLGGZhOMW/

previous experience is with architectural photography, particularly in the documentation of a finished building for its architects, the cinematography may owe something to the conventions of architectural photography, such as orthographic views (with drone footage now also providing "plan" views), two-point rather than three-point perspective, and (as in more recent architectural photography) to include examples of human inhabitation. In these "documentary" pieces, the architects' talking heads and voice over dictates how the imagery is read, and is an overly dominant (if none-the-less informative) element – viewed without sound, and skipping over the talking heads (thereby also omitting the cult of the architectural celebrity), the films are stronger in their architectural expression, the slow pace of the imagery beginning to function more like that of structural film, affording the viewer a more active reading process. The time-based artefacts produced as part of this thesis can contribute to these fields of artist and architectural filmmaking, drawing them more closely together, using the transdisciplinary approach of architectural moving drawing to indicate how processes and understanding from each discipline might inform the other.

1.5 A transdisciplinary practice

1.5.1 Practising in a place in-between disciplines

I am grounded[16] in the disciplines of architecture and art, working in a space between (Grosz, 2001), and across (Osborne, 2015) (Rendell, 2013) (Thompson Klein, 2004) these disciplines. I define my research activity as *transdisciplinary* (using Stein's (2007: 99) taxonomy[17] with neither discipline positioned as primary. This enables me to "work [in] and contribute to both [disciplines] and generate unique findings, conceptions, and artifacts as a result of an emergent trans-disciplinary perspective" (Stein, 2007: 99)[18].

As both artist and architect I work from within the *subject* of architecture, acknowledging architectural and interdisciplinary theorist Jane Rendell's positioning of architecture as *subject* as well as *discipline* – "If we define a field of study containing a number of disciplinary approaches but with a shared object of investigation as a recognized subject, then we could define architecture as a subject" (Rendell, 2004: 143). Through the course of my developing practice my disciplinary position has shifted emphasis, with at times a

[16] Art critic and historian Hal Foster emphasises the importance of grounding "in one discipline, preferably two" for interdisciplinary working (Foster, 1998: 162).
[17] Stein's taxonomy was developed from Jantsch's (1972) original hierarchy of forms of disciplinarity, by way of Fischer's *Theory of Cognitive Development* (1980). Design theorists Craig Bremner and Paul Rodgers have borrowed Stein's taxonomy for their study of types of design practice which extend beyond a single discipline (Bremner and Rodgers, 2013).
[18] The terms transdisciplinary and interdisciplinary vary in definition and use between theorists and fields (Rendell, 2004; Linder, 2005), but all assert that activity across, between and outside of disciplinary boundaries enables the generation of new knowledge and processes.

greater focus on one of the two disciplines, but the work has continuously engaged with the subject of architecture, in particular, forming an exploration of the temporal qualities of architecture through the medium of artists' film and video. In the undertaking of the practice, in the processes of making that I employ and in the positioning of myself as practitioner, the concept of transdisciplinarity allows me to operate between disciplines, from a position which mitigates the discomfort I feel when trying to situate my practice within a single discipline. Within this practice I use strategies from my grounding in two disciplines – I operate in-part as both architect and film artist. However, it may be more appropriate to suggest that in the undertaking of this practice, I am neither operating as architect nor as artist, but as a hybrid practitioner, in a “third space” (Grosz, 2001: xv-xvi) between disciplines.

In my practice, two forms of disciplinary shift occur – artists’ film steps towards architecture, and architectural representation steps towards artists’ film. By residing between artists’ film and architectural representation the practice can remain exploratory, taking from and offering to these disciplines, without being *required* to serve either, but also being *allowed* to contribute to both. The artefacts of this practice can be located in either discipline, occupy both simultaneously, or can remain in that “third space” in unique *undisciplined* (Linder, 2005: 13, 15; Bremner and Rodgers, 2013: 12) forms. Where the outputs of the practice and research in different media are disciplinarily situated at any given moment depends towards to whom the research is framed or directed. To disseminate my research, I reframe the outputs to suit the contexts and discourses of each discipline. When my writing is published in architectural publications, it is framed (and contained) as being within architecture. My practice work is screened at experimental film festivals, and so is framed (and contained) as art practice. Occasionally, the work is shown at architecturally focussed screening events[19] alongside work of architects and artist filmmakers alike. In this space, the hybrid nature of the work is preserved.

Within my practice, I am concerned with the qualities and mechanics of space, and with methods for its recording and production. Indeed, the position of the film as mediating artefact, which both records and relates to the other mediating artefacts of architecture, such as room, window, drawing, has always been central to my work. The making of a “drawing” is never, for me, a neutral, objective act, just as the making of a space is always personal, subjective and mediated, both for the architect who designed it, and for the “illegal architects” (Hill, 1998a) who “make” space through use and experience. Over the course of my artists’ film practice, my work has addressed – architectural representations of the user: *Transparency 3* (1993), *Transparency 7* (1994), *Arlene* (1994); utilitarian drawing translated into filmic space: *Map 2b* (1996) and *Standard 3.35* (1999-2000);

[19] These architecturally focussed screening events include several Australian *Expanded Architecture* screenings, and in the Architect’s Journal *Light Shots* competition.

doors/windows as mediating devices: *Carriage* (2017)[20], *12 Frames* (2012) and *Transparency 7* (1994), *60+62 [SunFrostWindRainSnow]* (2010); diurnal and seasonal change and the temporality of light: *60+62 [SunFrostWindRainSnow]* (2010), *Sunhouse Elevation/Sunhouse Azimuth* (2013)[21].

1.5.2 Memory – reflecting on past practice

The following overview of my past practice is selective, focussing on works that are clearly situated in the space between art and architectural representation, and were made with an explicitly architectural subject.[22]

1.5.2.1 *Transparency 3* (1993)

Figure 1-1: "Transparency 3" (1993)
https://vimeo.com/363605284

This early video was undertaken in my second year of art school, the year in which we were introduced to artists' film as a medium and technique for art practice.[23] With my work already taking an architectural direction, I wanted to make a film that expressed something of the transience of the human occupation of space, in particular the lobbies and corridors of the institutional space of the university. I had been working with long exposure photographs of people in space, in which the static architecture remained solid and the moving people became translucent and blurred – I was keen to make a filmic version of this work, and I was familiar with producing overlaid exposures in the darkroom. I shot a length of footage in the lobby of the old UWA Architecture School building, recording the flow of people through the space, and the activities of removing and

[20] This film will be discussed in depth in Chapter 2.
[21] This film will be discussed in depth in Chapter 3.
[22] For more work see https://eleanorsuess.works/practice/moving-image/
[23] Filmmaker, theorist and educator Peter Mudie had arrived at UWA that year and introduced us to avant-garde cinema though "Dusting Off the Other … a historical survey that summarised an aggregated chronology of the film avant-garde … a 14-week program of films in 1993 at the Film and Television Institute (FTI) in Fremantle" (Mudie, 2013), and the accompanying "Dusting Off the Other" (Mudie, 1993) book and seminars at the university.

installing artwork on one of the walls. Using an analogue S-VHS editing suite I overlaid three sections of this footage[24] and cut the sound in and out, so that the noise of this interstitial space fills the image, but then is palpable by its absence.

On re-watching the film more than 25 years after I made it, I was unable to separate my knowledge of the identities of the people who occupy the lobby and the film frame, from the structural nature of the work. While the film was intended to be about the relationship of the space to its users, it reads much more strongly of the performative nature of their inhabitation, and something of the culture of an art school. Through its act of multiple superimposition, it overlays members of the first two cohorts of the BFA course, along with our friends within the architecture course. There is a playfulness in the interaction of the people (students and staff) with one another and with the camera (which as a large S-VHS camera was anything but discrete!), and a collegiate atmosphere, legible still though the layers of source footage. My own occupation of the image is more peripheral – rather than engaging in the activities, or merely passing though, I can be seen hanging around near the edges of the frame, leaning against walls, keeping an eye on the camera.

1.5.2.2 *Arlene* (1994a)

Figure 1-2: "Arlene" (1994)
https://vimeo.com/14905817

This film was made after *Transparency 3*, using footage taken for that film. Of all the people who had passed through the lobby of the old UWA Architecture School building, it was Arlene's[25] passage as captured in the footage that was most individually striking – the unique performance of their journey through the lobby has a strong resonance with the architectural situation of the framed space. In the original footage there were two sections

[24] It emerged that overlaying footage was beyond the capability of the UWA video edit suite, but fortunately Mudie was able to let me use the suite at Curtin University. Such technical limitations of working with analogue video disappeared with the introduction of digital video editing.
[25] Arlene has gone on to be a successful artist, and their self-presentation as well as their ethnic, cultural, and gender identity are significant factors in their practice.

with Arlene – in one they start to cross from right to left (from the entrance of the building[26] into its interior), then turn around mid-crossing and head back toward the exit; in the other Arlene completes their journey from right to left, from exterior to interior. These pieces of footage are used to make a one-minute edit where Arlene's crossing of the lobby is disrupted, they are held in this transitionary space, flicking back and forth in their direction, which is reinforced by their actual change in direction in the footage. At the end of the minute Arlene exits the frame and the space to the left. The edit uses techniques from structural film such as repetition, rapid cutting, and the lack of an identifiable and coherent (human) narrative. It serves to disrupt the continuity of filmed time and space, clearly acknowledging the image and its temporal sequencing as a construction. The viewer must work to apprehend and "read" the film.

The use of the single figure in this otherwise unoccupied space draws attention to the relationship between the "inhabitant" and the space – Arlene's only "action" is to walk, thereby referencing the use of "staffage"[27] in architectural representation. In *Arlene*, the camera angle is set up so that it is almost at a right angle to the wall opposite. The spaces on either side of this lobby are not visible, but the doorway in the facing wall reveals a deep view, bookshelves and filing cabinets showing the space as office.[28] The side walls and down-stand of the ceiling create a simple proscenium "arch", turning the lobby area into a form of stage, upon which Arlene's walk becomes a performance. Arlene's particularity of route and appearance subverts the notion of neutrality within architectural staffage. The edit further emphasises the specificity of this human occupant, perhaps suggesting that all such relationships between architecture and occupant are complex and particular.

1.5.2.3 *Transparency 7* (1994b)

Transparency 7 takes as its core subject the set of automatic sliding doors at the entrance to the School of Architecture, Landscape and Visual Arts at the University of Western Australia. I made this film in the final year of my BFA course, in the newly refurbished building that the School had moved into in that year. Like *Arlene* and *Transparency 3*, which had been filmed in the entrance lobby of the previous School building, this film also

[26] The right-hand side of the frame is identifiable as the entrance of the building as this is the source of natural light.
[27] The term "staffage" was used to refer to landscape paintings "staffed with the anonymous personnel of everyday life" (Ling, 1977: 15). While it is not a word used within architecture the function of the human figure in architecture's mediating artefacts is a complex and politically charged one, and the history of staffage in painting has an appropriate recognition of this complexity. I therefore use the term "staffage" to refer to the population of architectural representation, while acknowledging that this is not the unusual disciplinary term. More common terms for the use of human figures within architectural representation include: "showing inhabitation", "populated drawing".
[28] My recollection of this space is that immediately to the left of that doorway is the photocopier room, where I transferred the DOLA map onto Transtext self-adhesive film for *Map 2b*.

deals with a threshold condition. I recall that I was particularly interested in the qualities of the conditions around these sliding doors, how they operated as a mechanistic threshold device, and how people moved through and past them. Prior to my work recording footage for the piece I recall stating my intention to make a sliding door film, enjoying something of the provocative nature of making a film about this apparently banal subject.

Figure 1-3: "Transparency 7" (1994)
https://vimeo.com/15944088

The film uses ten different, but connected, camera shots: elevational views of the sliding doors, from the exterior and interior respectively; reflections of the camera at three zoom levels; a side view of the sliding door vestibule; and four shots of the door sensors, interior and exterior, at two zoom levels. The interior and exterior elevation shots reference architectural representation through their orthographic camera orientation. As the doors are glass the respective transparency (from the interior) and reflectivity (from the exterior) of this material serves as a form of screen in each view. The reflection of the exterior world in the glass always includes the large S-VHS camera on its tripod, and also frequently shows me, as the filmmaker. In these images a small part of the interior only becomes briefly visible when the doors open to allow a person to pass through. In the interior elevational view, the exterior space beyond the building (as reflected in the exterior view) is clearly visible, and the interior space is mostly out of the frame and in *contre-jour* against the bright exterior.

The edit uses the opening and closing of the doors, as they are traversed by the building's users, as its main structuring device. Elevational shots of the door as it closes cut to the close-ups of the sensors as the door completes its movement. This creates an illusion of continuity of time and space, but the repeated re-use of the ten sections of footage disrupt this construction. The people that are captured within the footage, and within the door lobby, fulfil several functions in the film. At one level the users of the doors function as "staffage", as with the conventional use of the figure in architectural drawing, there to illustrate the scale and function of the architecture, in particular the door as threshold between interior and exterior. However, they also highlight the repeated re-use of the

same clips of footage (as used to reflect the repetition of the doors' movement) as without the human occupants, the moving mechanism of the door would not provide any visual marker to signal this repeat. Additionally, like *Transparency 3*, the identities of the people themselves is not without significance, at least to me as the filmmaker, and to my peers and tutors who all appear in the film.

The film's soundtrack uses some of the sound captured by the camera, the wind blowing across the microphone making a continuous roar. The continuity of this audio track serves to link the edited clips, but also gives the film a claustrophobic quality. The sounds comes to "represent" the space of that lobby, within which the viewer is trapped for the duration of the film.

1.5.2.4 *Map 2b* (1996)

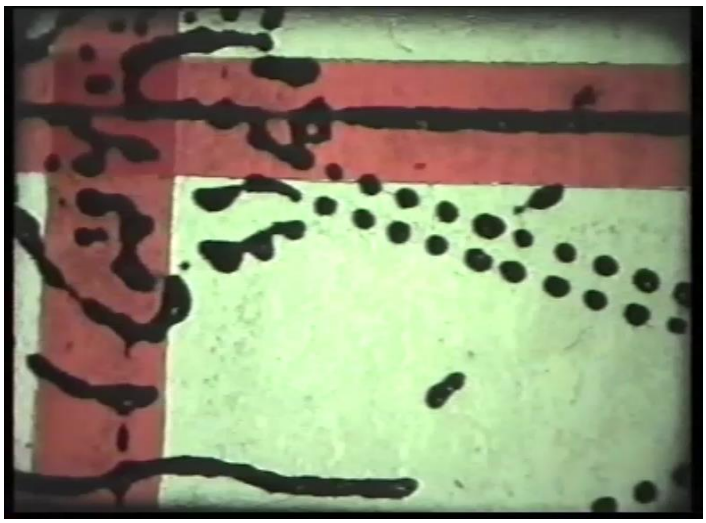

Figure 1-4: "Map 2b" (1996)
https://vimeo.com/14905635

This 16mm handmade film was made as an architecture student, shortly after completing my fine art degree.[29] The purpose of the film was as a piece of site investigation,[30] and in this instance, I wanted to explore the qualities of the topography, as expressed though its cartography. We had been provided with DOLA[31] maps of the site and surrounding area. The site was on a steep incline, adjacent to a 400-hectare inner city conservation reserve. This incline was represented by tight clusters of contour lines, which had the appearance of a stream flowing through the territory of roads and buildings. Meanwhile, the whole space of the map was held and contained by the longitude and latitude grid. I was familiar with making handmade films from my introduction to artists' film several years earlier and used this process to directly turn the DOLA map into a film. While the original map

[29] After finishing my fine art degree, I immediately joined the architecture course. I was able to complete this course with only three semesters of study, due to the modules I had already taken.
[30] Site investigation is a process common at the start of every sited architectural project. It can take many forms, and can refer to research and observation of physical, social, cultural, political, and historical aspects of the local and wider context/s.
[31] DOLA - Department of Land Administration – the equivalent of the British Ordnance Survey

consisted purely of black lines on white paper, I wanted to introduce colour into the film, in part to differentiate the different territories in the map and the city it was an analogue for. After photocopying the DOLA map onto Transtext self-adhesive film, at two different scales, I applied Letrafilm transparent coloured film,[32] using the colour coding from the street directory – yellow represented buildings, green parks, blue water, and red for the gridlines. Cut into strips, the now coloured map was applied to 16mm clear film, and the use of a 16mm projector with optical (rather than magnetic) soundtrack allowed the map imagery to also provide the film's soundtrack.[33] While most of the image generates noise, the gridlines make a repeated tick, particularly when they are at 90 degrees to the film's edge. However, for some of the film I also rotated the map, so that the gridlines would be diagonal – this correspondingly changed the quality of the sound produced by these lines. The two scales of map also impact the soundtrack – at the wider scale of the later part of the film the gridlines are closer together, speeding up their rhythm.

In the resulting film, the map has become a new spatial territory in its own right. Once enlarged by the film projector's lens and lamp, the copied lines and cut coloured film reveal their own material quality. The rhythm of the city can be read though the viewing of the film, but as such is understood in a different way than as seen by skimming the surface of the original map or traversing the site by foot. After making the film I showed the piece to my classmates, and in doing so, I offered the group this additional reading of the site, to add to our collections of photographs, mappings of various sorts, sketches and written observations. While clearly taking the form of an artists' film (and as such this is how it has been more widely exhibited), this work was produced as a form of architectural drawing, a piece of contextual analysis. In this way, it could easily be described as being made through a process of "architectural moving drawing" – made by an architecture student, as part of her architectural studies, for the purposes of architectural site analysis, by using the techniques of artists' handmade film.

1.5.2.5 *Standard 3.35* (1999-2000)

When I returned to my architectural studies for my postgraduate degree at University College London, I worked in a design unit[34] that emphasised digital 3d modelling and rendering, digital video editing and effects as a primary method of working. The work made by the members of the unit was varied in content and technique, and my own

[32] This technique was common at the time in architectural drafting but has since been superseded by digital tools.
[33] As the optical soundtrack proceeds the image by 28 frames (so that it can be processed by a different part of the projector while the image is in the gate) I cut a strip the width of the soundtrack from the map and applied it to correctly correspond to the image.
[34] Architecture design studio is commonly taught in "studio" or "unit" groups which are led by one or several tutors who set projects related to their own interests and expertise. I studied in Unit 15 at the Bartlett, led by Nic Clear, for both years of my Masters.

practice drew upon my earlier experience with artists' video and handmade film. I was keen to use the new digital tools at my disposal to make work that resonated with the handmade films, particularly *Map 2b*, and with the structural film influenced editing techniques I had developed on films such as *Arlene* and *Transparency 7*. *Standard 3.35* (1999-2000) was the work I made during my postgraduate studies that is most clearly influenced by that earlier work, and which was the most hybrid in its status of architectural drawing *and* art film. The premise of the work was, as with *Map 2b*, to explore the qualities of a functional, technical form of drawing, and in doing so translate it into a new spatial condition when read by an active, engaged viewer.

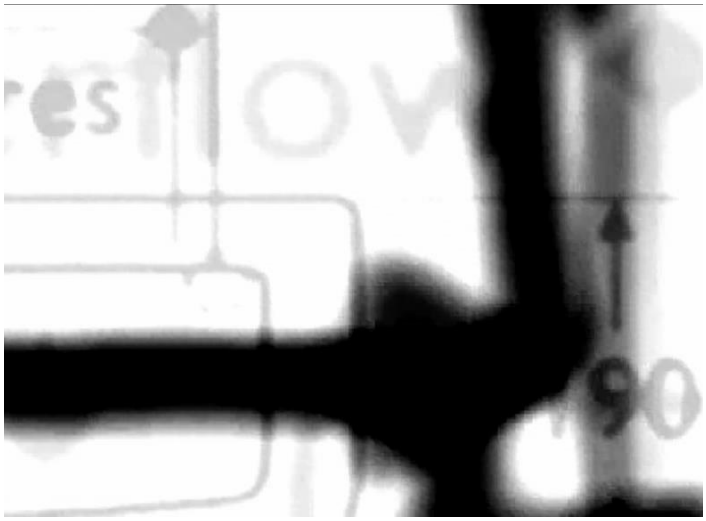

Figure 1-5: "Standard 3.35" (1999-2000)
https://vimeo.com/14988560

The piece is made using a page from the Ideal Standard sanitaryware catalogue[35] – "Standard 3.35" was a basic specification WC (toilet), simple and recognisable in its form. I scanned in the catalogue page at a high resolution, and then transferred the scan to a rectangular object in modelling and animation software 3d Studio Max. I set up a series of virtual cameras in the software to track across the drawing of the toilet, "filming" the drawing at a number of scales – in the widest the form of the toilet starts to become recognisable (at least by someone familiar with such drawings),[36] and in the closest I wanted to obtain an effect similar to that of *Map 2b*, where each frame showed a different, but contiguous piece of drawing. I then edited the rendered footage from these virtual cameras in Adobe Premiere, starting and ending at the closest camera scale – the film begins and concludes with a single pixel of fluctuating greys (artificially produced though a digital effect), a tactic intended to emphasise the digital nature of the film despite its references to handmade film. I used multiple video tracks to layer the footage, the lines abstracting and interfering with one another where they overlapped. The resulting imagery

[35] This product specification document was a reference tool in the architectural office I had been working in for three years between my undergraduate and postgraduate studies. It provided technical drawings of toilets, basins, baths and showers so that they could be included on the architectural drawings and specifications for bathrooms.
[36] Non-architects that I have shown the film to have not necessarily noticed that this is a film of a drawing of a toilet.

loses the sense of flat drawn lines and becomes an abstract space, and the soundtrack, made from a series of recordings of the movements of various objects across the surface of paper, references the movement across the surface of a drawing, but also, like the imagery has a spatial depth.

1.5.2.6 *60+62 [SunFrostWindRainSnow]* (2010)

Figure 1-6: "60+62 [SunFrostWindRainSnow]" (2010) https://vimeo.com/14988044

Over several months in the winter and spring of early 2010 I recorded footage from the window next to my desk in my study. The view of the houses opposite (the 60 and 62 of the film's title) was one that was part of the experience of dwelling in that space, of working at that desk, and marked time through the imprint of the seasons upon the houses' elevations and roofs. Filming over this period provided me with footage that covered several seasonal conditions, each of which manifested the passing of time in its own particular way.

The film commences with an image of closed venetian blinds, then fades to one with the blinds open, revealing the view to the houses opposite. This signals that the viewer (and filmmaker with their camera) are located inside another house, and at various points in the film we return to those views of the closed and open blinds, seeing sunlight passing across this object, highlighting that time is also passing within the room in which we reside. The sections of footage through the window are not presented in the chronological (and therefore seasonal) order in which they were shot, rather they are organised by diurnal time, dispersing seasonal time throughout the film, and so compressing the sequential change of several months into one short timeframe. Realtime imagery of water drops on the window emphasises the surface of the windowpane, the ultimate divider between exterior and interior, the houses opposite and a passer-by a mere background blur. A build-up of snow on one of the roofs exaggerates the undulating surface of the roof tiles, the change in the day's light reflected in the colour of the snow. A dusting of frost on the roofs melts away as the warm rays of the sun pass across its surface. The shadow of an unseen telegraph pole crawls across the houses' elevations, closely followed by the shadow of the house in which we, the viewer and filmmaker reside.

While the seasonal change may be the primary “subject” of the film (and is what the film’s title suggests) it is subservient to another structuring device, and one which is more akin to lived time – arraying the seasonal time throughout the film, in order to privilege diurnal time, communicates the architectural condition of dwelling, and the concomitant process of memory and prediction that are part of that experience. This use of “gathered” footage shot over an extended timeframe, was a precursor to the *Sunhouse Elevation / Sunhouse Azimuth* (2013) film, which I shall discuss further in Chapter 3.

1.5.2.7 *12 Frames* (2012a)

The film restructures a 6 minute, 48 second, and 24 frame single piece of footage of a 12-paned window in a house in Austinmer, New South Wales, Australia, into an alternative piece of time and space of the same length and proportion. The film explores the architectural element of the window – as a threshold between interior and exterior, a frame for a view, a divider and connector of space, and also as an organiser of the exterior worlds it frames.

Figure 1-7: “12 Frames” (2012) https://vimeo.com/41540902

Recorded while staying at the house of friends, I filmed this footage as a response to a strong architectural condition of threshold, the grid of the window’s mullions and transoms dividing the view into a series of frames. I enjoyed the relationship between interior and exterior – the half-basement studio room, with its guest bed positioned by the window into the expansive garden, populated by my hosts’ chickens. Without knowing how I wanted to use this condition in a film, I shot the windows in an orthographic, elevational view, leaving the camera recording while I participated in the activities of the household.

Back in London, I reviewed the footage, finding the window grid to be a strong defining feature of the footage, as it was in the experience of looking out of that window into the garden. Coincidentally, the proportion of each window pane corresponded to the 16:9 proportions of HD digital video resolution – like Hewins’s *Windowframe* (1975), each pane becomes a miniature screen (corresponding to the overall proportions of the screen of the film) with its own independent view of the outside world. This condition provided the film’s

structure and form – its tectonic language originating in the tectonic language of the architecture. The film commences with an un-manipulated section of footage, then fades to black all elements of the interior room and the painted metal window elements. Twelve frames of imagery showing the view to the back garden remain, then begin to drop out and in until only single frames of view are visible at a time. As individual frames appear and disappear the action each contains gradually becomes asynchronous with respect to those around them, disrupting both spatial and temporal continuity. The rhythm of the disappearance, appearance, and reappearance of individual frames at times denies a focus on the content of each framed view, while sometimes holding the fragments displayed on each small screen, allowing them to be considered more carefully. The twelve frames then fade to white, exposing the black and white image matte used to digitally separate the window pane views from the space of the room. The film concludes with a return of the complete image, time and space restored.

1.5.2.8 Approach (2012b)

Figure 1-8: "Approach" (2012)
https://vimeo.com/56424575

This film uses a triptych format to widen the spatiality[37] of a single, vertically oriented, piece of footage shot from a train window as the train flows through the changing urban condition upon its approach to East Croydon station. Each of the three panes starts a fraction of a second after the other, the temporal offset of footage taken from a moving vantage point allowing a different slice of space to be seen in each. The vertical black lines dividing the triptych panes act like window mullions splitting the view out of a single window – rather than separating the imagery they serve to unify it as a single view. However, the parallax in the view prevents the simultaneous alignment of both fore- and back-ground. As the train goes into a tunnel, severing the view of the urban landscape beyond, the film begins to run each of the triptych panes at a different speed – upon exiting the tunnel the previously unified view is fragmented. Just prior to another train passing, the three panes become aligned once more, and then small slippages reoccur before the train arrives at the station, and the inclusion of people on the platform expose the film's underlying tectonic strategy for what it is.

[37] This works in a similar manner to Chris Welsby's *Shore Line* (1975).

1.5.2.9 Lumiere films

In addition to making edited pieces, I have identified the “lumiere film” or “remoscope”[38] format as being appropriate for an architecturally focussed moving image practice.[39] The self-imposed constraints of this format (60 seconds maximum; fixed camera; no audio, zoom, edit, or effects) support an engagement by practitioners from other disciplines – the lumiere film allows architects to “sketch” time, employing techniques of extended duration to engender sustained observation. The lumiere film shares many similarities with structural film. Like structural film, lumiere films employ “extended duration”, through their employment of a single, held view, even though that duration is limited to one minute. The lack of effects or editing result in a pure example of “real time/space” (Le Grice, 2001b), with a literal equivalence in filming time and viewing time. In the watching of a lumiere film, the previously unnoticed minute of moving space becomes an artefact to be studied, to be referred to as a design develops, just as are other more traditional kinds of sketch.

The following sample of work from my developing practice of lumiere filmmaking use the 60-second duration to draw out the active viewer’s consideration of a particular temporal, spatial condition, to reveal otherwise hidden variations and contrasts in speeds and accelerations within the depicted spaces.

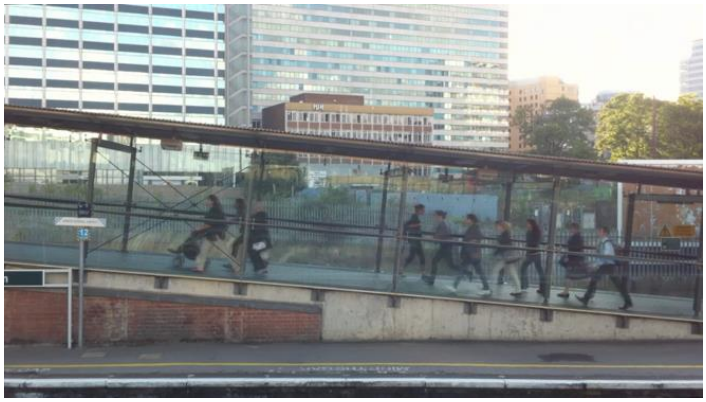

Figure 1-9: “East Croydon Ramp” (2011a)
https://vimeo.com/123125901

East Croydon Ramp (2011) explores the space and time of a railway platform; as a train departs, as people rush for their connection, and in doing so reveals how they interact with this spatial condition of circulatory design. The speeding train smearing streaks of colour across the frame gives way to deep views across platforms; the fast-moving train passengers contrast with the fixed architectural forms which structure their movement.

[38] Lumiere films or Remoscopes are based on the work of the Lumiere brothers, which by necessity were constrained in the same way as Lumiere films. Remoscopes emerged in 2005 through the Japanese media art collective “remo” (2009) who ran a series of monthly screenings and film-making workshops. In 2007 Andreas Haugstrup Pedersen and Brittany Shoot adopted this form of filmmaking, publishing their “Lumiere Manifesto” (2007), renaming the “Remoscope” as “Lumiere Film”.
[39] As part of my teaching practice, I have, over the last ten years, been introducing architecture students to this technique.

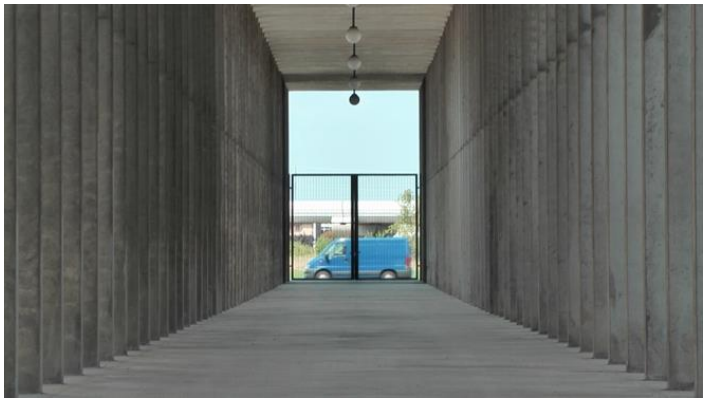

Figure 1-10: "San Cataldo Cemetery 1" (2011c)
https://vimeo.com/28316722

San Cataldo Cemetery 1 (2011) relates Italian architect Aldo Rossi's solemn, still, and monumental space to the everyday activity beyond. The slowly changing light that moves across the rows of San Cataldo's columns contrasts with the speeding cars and motorcycles passing on the road at the end of this grand and formal space.

Figure 1-11: "Venice Wall" (2015b)
https://vimeo.com/123128921

Venice Wall (2015) presents the dancing quality of Venetian light as reflected from the canals; the coloured rendered walls receiving this light exist in varying states of dilapidation. This slowly eroding material condition which defines the character of this city, is animated by the play of the reflected light.

Figure 1-12: "Dunwich Fishing" (2014b)
https://vimeo.com/90390893

Dunwich Fishing (2014) explores the edge of the unmade town of Dunwich, which over the last 800 years has almost entirely disappeared into the sea. Upturned hulls and ramshackle fishing huts containing industrial machinery for winching fishing boats. These

permanent artefacts suggest a local, small scale fishing industry. In contrast, an individual shore angler carries their portable tools of a personal industry, finding a place on the pebbled beach, looking out to the sea in which the lost town lies buried.

1.6 Conclusion

This chapter started by showing how the origins of architectural moving drawing are rooted in my own disciplinary journey and went on to indicate the connective insights and made outputs this transdisciplinary position had already begun to generate. It charted the thesis ground by identifying its disciplinary progenitors, while recognizing other interdisciplinary film and architecture scholarship. From this extant territory, the chapter formed the niche in which this research project dwells, and by outlining how the strands of the thesis will progress it has drawn out the plan for how this space will be filled.

From this foundation, it is now time to begin the proper work of constructing architectural moving drawing – the next chapter starts this journey with another form of construction, that of perceptual worldmaking in the acts of reading architectural representation and viewing structural film.

Chapter 2

Projective, Prophetic, Analogous Artefacts

2.1 Introduction

> What connects thinking to imagination, imagination to drawing, drawing to building, and buildings to our eyes is projection in one guise or another, or processes that we have chosen to model on projection. (Evans, 1995a: xxxi)

> viewing a [structural/ materialist] film is at once viewing a film and viewing the 'coming into presence' of the film, i.e. the system of consciousness that produces the work, that is produced by and in it... The mental activation of the viewer is necessary for the procedure of the film's existence (Gidal, 1976: 2-3).

> Representation invokes things apart from us, using language as a window on another world… a world is declared in to existence. (Morse, 1990: 156, 159)

This chapter demonstrates that processes of perceptual construction are inherent to the functioning of both structural film and architectural representation. In doing so, it takes forms of constructive reading from both disciplinary practices, to establish a process of "transdisciplinary reading" (Power, 2015) of time-based artefacts that have the potential for an architectural interpretation. Philosopher and cultural critic Nina Power argues that "transdisciplinarity needs to supplement its conceptual and political remit with a theory of reading, such that reading across disciplines simultaneously becomes a question of reading beyond disciplinary boundaries […and] such an alternative account is one that seeks to indicate the possibility of a truly innovative understanding of a text" (Power, 2015: 109, 124). While specifically referring to *written* texts, Power's assertion of the value of "reading transdisciplinarily" can equally apply to other cultural artefacts, and this chapter serves to show how transdisciplinary reading is a form of practising architectural moving drawing. Through this new reading practice, a viewer undertakes several parallel forms of construction – the construction of meaning, the construction of architecture, and the construction of the moving image artefact as an architectural moving drawing.

The chapter explores the relationship between referent and representational artefact in both structural film and architectural representation, considering how the apparently opposing conditions of absence and presence, analogical and actual, relate to both. For architects, treating the prospective (but unbuilt) buildings in their drawings, models and words as if they were real requires a form of worldmaking (Frascari, 2007: 4; Goodman, 1978: 6), whereby the prophecy (Frascari and Braham, 1994: 263) of the drawing acts as a form of memory of that as yet, non-existent, and absent building. The chapter will posit that in architectural representation there is a fundamentally analogical relationship between drawing and building, both imagined and materialised.

In considering the place of the referent in structural film, this chapter reflects upon the frequent use of everyday spaces, devoid of human occupants, for the filming of footage, in a desire to eliminate narrative and illusory content. It speculates that within these

practices, such “empty” (Sitney, 1974a: 407, 419) rooms are used to symbolise an emptiness of signification (Penley, 1977: 8) – the lack of “content” of the *room* exemplifying a lack of representational content (Gidal, 1976: 1) for the *film*. Using the strategy of practising architectural moving drawing through a process of reading, I undertake an interpretation of Michael Snow’s seminal 1967 film, *Wavelength*, drawing upon its architectural content, to transform the “empty” room from a container in which other, filmic, subjects can be explored, into *the* subject of enquiry. Through my explicit architectural focus in the consideration of such works I perform a deliberate reversal of the “empty” signifier, so undermining the principles of structural (or at least materialist) filmmaking. In this I hope to make it clear that my project is not to recuperate structural film practice, but rather to appropriate what is useful from this practice for another purpose.

In a shift from *reading* to *making*, the chapter concludes with two case study presentations of some of my more recent practice which have resulted in complete “artefacts” of films and screen-reliant installation. My film *Carriage* demonstrates the iterative process by which quick, and intuitively gathered footage can be used to explore and express something of the nature of an original, and uncanny experience, and find its analogue in the viewing of a film. My ongoing *Factory Wall* project demonstrates modes of practising architectural moving drawing through transdisciplinary performative processes of both making *and* reading. This introduction to my studio practice, through which I combine processes from disciplinary practice, begins to suggest the performative and exploratory nature of the work, which will be developed further in Chapter 4.

2.2 Making representations

Before I go any further, I need to acknowledge that “representation” is an exceptionally complex beast. The word itself can mean very distinct things in different fields, and even within the visually oriented disciplines of art and architecture the word serves very *dissimilar* purposes. In art, the term representation[40] relates back to the development of practices of pictorial resemblance, which are informed by the social and visual culture and graphic technology of the times in which they are made (Gombrich, 2002). The very notion that art should be dependent on a process of visual resemblance was fundamentally challenged in modern art, and contemporary art practice continues an uneasy relationship with the concept of “representation”. Within architecture, at least since the renaissance, the term is bound to the function of the mediating artefacts through which an architect designs a building and by which they instruct its construction. In architecture,

[40] I also acknowledge that there are other uses of the term “representation” within art and architecture beyond pictorial resemblance, including the political notions of representation. However, these uses of the term are beyond the scope of this thesis.

representation is a tool (potentially still a poetic and symbolic one) for the making of art (a work of architecture), rather than *being* the artwork itself. The architectural drawing is a workhorse – it works (through its author and readers) to bring into being something that doesn't yet exist. If you break its representational power you deny the power of its labour, its work. In architecture, the role of representational practice is not one of passivity of viewer, rather it is the opposite – it is one of reader activated knowledge creation.

In both artists' film and architecture's mediating artefacts it is the representational processes linking image and referent through the interpretive act of the viewer or reader, that allow for connections between these disciplinary practices to be found in the transdisciplinary reading and making methodologies of architectural moving drawing. Structural film, in its drive towards a materialist, anti-illusionistic practice, works to limit the act of signification within its artefacts. Conversely, architectural representation fundamentally relies upon processes of materialising the referent, continually attempting to strengthen the connection between drawing and building. However, in both of these seemingly opposing acts, of the respective denial and promotion of signification in structural film and architectural representation, a series of powerful semiotic relationships occur, and once the constructive agency of the viewer is brought into consideration parallels and alignments can be found and drawn out.

2.2.1 Analogous divinations: projective worldmaking through the artefacts of architectural representation

This next section is structured via a series of quotations to lead the reader on a journey of interconnecting ideas around the relationship between drawing and building. This journey culminates in the conclusion that the model of analogy is particularly relevant for understanding the complex connections which link drawing to built or unbuilt buildings, and to the perceptual making of architecture through the interpretation of its representational artefacts. This building of an idea through key references is intended as an analogical process to the ideas of conceptual construction that I present in this chapter. The quotations, a form of warp, are brought into a continuous whole through the use of the weft of accompanying text.

2.2.1.1 Future Projections

> Architecture is based on geometric acts of prediction which are used to evoke future constructions… architectural projections are attempts to make the future constructions available and usable. They are quite literally "self-fulfilling" prophecies. As such, they are both a class of geometric procedures and acts of imagination; the one making the others visible. (Frascari and Braham, 1994: 262, 263)

Marco Frascari is one of a number of architectural theorists who specifically identify the future facing nature of architectural design processes and the “mediating artefacts” (Pérez Gómez and Pelletier, 1997: 7) – which include, but are not limited to, drawings, models, words – through which these design processes occur. The fundamentally intertwined relationship between drawing and building in architectural thinking (on which I shall shortly elaborate) is revealed in the term “architectural projections”, which can mean both projective drawing techniques (such as orthographic and perspectival projection), and the buildings that they project into their future.

> architecture … is brought into existence through drawing. The subject matter (the building or space) will exist after the drawing, not before it… which may be called the principle of reversed directionality … Drawing in architecture is not done after nature, but prior to construction; it is not so much produced by reflection on the reality outside the drawing, as productive of a reality that will end up outside the drawing. (Evans, 1997: 165)

In his oft-quoted paper, “Translations from Drawing to Building” (1997), Robin Evans remarks upon what he terms “reversed directionality” to describe the relationship between architectural representation and the built work of architecture. Evans identifies that in architectural representation drawing necessarily pre-exists building, as opposed to other more commonplace uses of representation – where the subject of a drawing exists before the drawing is made, and the drawing may be some form of proof of the object’s existence in the world.

> Orthographic projection is not in the slightest degree mysterious, and yet its employment in architecture raises many imponderable questions, the most pressing of which have to do with the enigma of how architectural ideas are given definition prior to being constructed. If we think in terms of art, this anterior definition of the object, whereby all significant decisions are normally taken before the thing itself is even begun, is peculiar to architecture… Architects do not make buildings; they make drawings of buildings. (Evans, 1989: 21)

Evans notes how he came to this understanding of the “anterior definition of the object” in architectural representation while teaching in an art college, and realised that architects almost never worked “directly with the object of their thought, always working at it through some intervening medium”, as compared to “painters and sculptors, who might spend some time on preliminary sketches and maquettes, all ended up working on the thing itself which, naturally, absorbed most of their attention and effort” (Evans, 1997: 156).

> every prediction affects the future it foretells in some fashion. Even the most mundane extrapolation is, in part, hopefully magical. Architecture is no exception; it involves deeply mantic procedures through which its constructions are imagined. (Frascari and Braham, 1994: 263)

Frascari uses the phrases “prophecy”, “divinatory” and “mantic” to refer to a drawing’s relationship to the building that sits in its future. Like all forms of prediction, the prophetic drawing goes on to influence the building that it prophesies.

> The architect makes visible the invisible through the figures of geometry… In projective divination, plans and sections are neither facsimiles nor symbols nor models; they represent architecture through their methods, involving the project in a poetic manner. In this graphic poesis lies the enigmatic nature of design as a projection. (Frascari and Braham, 1994: 264)

Frascari uses such redolent terms to introduce the notion of “magic” into the process of translating drawing to building. Emphasising the non-rational nature of such translations, Frascari borrows the idea of magic to indicate how one thing (a drawing, model, etc) can affect something else (a building) in such a powerful way. Drawing upon James Frazer’s “The Golden Bough”, Frascari indicates that magic functions through the application of analogical processes upon its intended target.

> magic operates analogically according to ‘two fundamental principles: first, that like produces like, effect resembling cause; second that things which have once been in contact continue ever afterwards to act on each other’. (Frascari and Braham, 1994: 262; quoting Frazer, 1959: 59)

2.2.1.2 Unbuilt buildings

> Architecture's relationship with its representations is peculiar, powerful and absolutely critical. Architecture is driven by belief in the nature of the real and the physical: the specific qualities of one thing – its material, form, arrangement, substance, detail – over another. It is absolutely rooted in the idea of 'the thing itself'. Yet it is discussed, illustrated, explained – even defined – almost entirely through its representations. (Rattenbury, 2002: xxi)

Kester Rattenbury highlights the apparent paradox that architecture, whose physical, material manifestation is so fundamental to its nature, is conceived and understood primarily through its representational artefacts. Rattenbury explicitly identifies the phenomena that architects discuss their as-yet unbuilt buildings as if they were real. I assert that this *treating as real* (Frascari, 2007: 4) involves a knowing suspension of perceptual disbelief and is a form of willing something into existence. This “belief” in the drawn building as building, not drawing, is a necessary process for architectural poesis.[41]

> The culture of treating unbuilt, imaginary designs as architecture is essential to the design process as taught and used in the Western world. You design by

[41] It is worth noting that the architect “treating as real” is nothing to do with photorealism – in fact, photorealistic images are normally produced after the main aspects of the design process have been completed. Photorealistic renderings are there to help others believe in the potential for realisation of the proposal. Architects don’t need that image for this – our non-realistic imagery, and our processes of constructive creation through the acts of proposition have already done this.

> means of representing a non-existent project. This is instilled in architectural students when imaginary projects are discussed in the studio as though they were real buildings, and it never leaves the culture. (Rattenbury, 2002: xxi-xxii)

> the drawings for Mies van der Rohe's unbuilt Brick Country House] are talked about as a significant piece of architectural work, and uninhibitedly compared to other architectural works, built or not…. the experiential qualities of the building are invoked through the drawings… one is confronted with a work that exists in a very different medium – marks on a paper – and still generates an aesthetic experience that is architectural. … [Although] it is certainly nothing like the kind of experience derived from actually visiting a building. (Bafna, 2008: 543-44)

Sonit Bafna observes something similar, and uses the example of Mies's unbuilt Brick Country House, a project "represented" thorugh just two drawings, showing how this work of architecture, while never being materially realised, is non-the-less treated (almost) as if it is. Bafna highlights a particular form of engagement with the building artefact, invoked through the reading of drawings, and suggests that there is an experiential nature to this engagement, and which I assert could be considered analogical, rather than literally similar to the experiential engagement with a physically manifest building.

> When reading a drawing in the imaginative mode, we do not construct a mental image of the building, whose experience then is judged; rather we perceptually engage with the actual artefact by adopting a specific mode of attention. (Bafna, 2008: 546)

2.2.1.3 Worldmaking

Frascari sees this treating as real as a necessary consequence of the architectural practice of working "in an imagined future".

> Architects are bound to treat as real that which exists only in an imagined future, and to specify the ways in which the foreseen things can be made to exist. In doing so they must predict the future nature of an artifact and that it will work as expected. In other words, the drawing process is a cosmopoiesis that can help to invent better futures and make potential worlds. A set of architectural drawings always corresponds to an infinite set of built possibilities… Cosmospoiesis, or world-making, 'always starts from a world already at hand; the making is remaking'. Architects carry out their communal or diverse styles of making in drawing by way of a sequence of operations based on composition and decomposition, weighting, ordering, deletion and supplementation, and deformation. By tracing drawings, architects perform an act of world-making: a cosmographic expression that is also the root to future cosmospoiesis. (Frascari, 2007: 4; quoting Goodman, 1978: 22)

Frascari introduces the notion of world-making at work in the constructive processes of architectural representation. Quoting Nelson Goodman's "Ways of Worldmaking" (1978: 22), Frascari asserts that through drawing, architects engage in processes of

cosmospoiesis, but that this form of creation is built upon what is already there, what has come before. In this, Frascari identifies the importance of the past, as well as the present, and the future, in the constructive processes of architecture.

> if worlds are as much made as found, so also knowing is as much remaking as reporting… Discovering laws involves drafting them. Recognizing patterns is very much a matter of inventing and imposing them. Comprehension and creation go together. (Goodman, 1978: 22)

As part of his discussion of the many ways that "worldmaking" occurs, Nelson Goodman continually emphasises the importance of "comprehension", of the active, and constructive, role for the interpreter, reader or viewer.

> Projections – the invisible lines that relate pictures to things – are always directional. Drawings arrest and freeze these vectors, but even in this fixed state, projected information can be mobilized by the imagination of the observer. (Evans, 1989: 19)

For Robin Evans, a constructive process occurs through the active "imagination" of the reader or viewer of architectural drawings. Evans's model is based on the power of projections, and he asserts that the processes of projection at work within architectural drawing[42] relate to the working of the architectural imagination. Evans emphasises that despite the seemingly rational system of drawing projection, the processes of translation between drawing and imagined building or constructed edifice makes this journey anything but straightforward.

> As soon as we have an observer with a capacity to imagine … then the line between the design drawing and the finished article seems to be composed of a series of eddies and circuits rather than a single vector…some aspects of the imagination are sufficiently similar to projection to be compared with it, or even confused with it. The observer's imagination, itself comparable to projection, complicates the simple two-way traffic between things and their pictures, causing unpredictable diversions and re-routings. (Evans, 1989: 20)

> Projective drawings are the 'use' of a building, not a literal representation. The recognition of divination as reading and writing undermines the negative vision, giving projection a twofold character which bounds the world of imagining. (Frascari and Braham, 1994: 264)

Frascari, while primarily presenting divinatory construction as pertaining to a future building, also acknowledges the creative processes of reading drawings. Like Evans, he sees projection as a fundamental aspect of reading and drawing representations, through

[42] Such as orthographic projection, perspectival projection, isometric and axonometric projection – I will discuss these more in Chapter 4.

which architecture is proposed. Frascari and Evans's constructive processes in the reading of drawing, in the making of worlds though the act of reading accords with Bafna and Rattenbury's perceptual suspension of disbelief that architects demonstrate in their relationship with drawing.

> As a means of rationalizing vision and space, projective geometry underpins perspectival rendering, cartography, and architecture. Yet the concept of projection can imply a relation in both space and time, and the term carries old figural resonances of changing and transmutation, as well as scheming and planning. Like light, projection carries inherent capacities for distortion and illusion as well as rational correspondence (by extension, the psychoanalytic concept implies a confusion between inside and outside, between interior psychic life and external reality)… By their nature, projected images elicit fantasy: we see things that are not there. And they elicit specific forms of spectatorship, engendering a psychic mobility paradoxically dependent on physical immobility. (Kotz, 2008: 102)

In looking at the role of projection within video installation, art historian Liz Kotz draws a parallel in notions of projection in architectural drawing practices and the projected light in video installations, identifying a perceptual and experiential dialectic in the viewing of such projections.

2.2.1.4 Analogous instruments | analogous artefacts

> There are two types of instruments employed by architects in their reading and writing of past constructions and prefiguring of future constructions. As magical procedures, these instruments act through analogies based on metaphor and metonymy. The metonymic instruments are the square and the compass, which are the same as those used by carpenters and builders in construction. The metaphorical instruments are divided into two categories. On one side we have the graphic lines derived from the chalk-lines and metric markings used to lay out the building. On the other hand we have the parallel bar or T-square which establishes the rectilinear ordering developed from the plumb-lines or grid-lines with which the building is laid out… Using these analogous instruments, the opportunity for a project is developed. This is not simply a spatial procedure, but a mantic operation requiring careful timing and specific opportunities. (Frascari and Braham, 1994: 264-65)

Frascari introduces the notion of analogy in architectural representation by identifying the relationships between the instruments of drawing and those of building. He proposes that in some instances drawing relates to building though the use of the same form of tool of construction, and as such this is an analogical relationship of metonymy as there is a direct, contiguous connection. The metaphorical relationship is based on the analogical, and indirect use of tools to establish order in both drawing and building.

With the advent of digital drawing there are fewer opportunities for such metonymic analogical relationships between drawing and building[43]. However, the indirect, *metaphorical* analogical relationship which can be seen in the parallels between lines on a drawing and lines in a building continues to extend out to a range of ways in which indirect, non-contiguous analogy links drawing and building.

Cognitive scientist Douglas Hofstadter (2001: 500) argues that analogy is at the core of cognition.

> every concept we have is essentially nothing but a tightly packaged bundle of analogies… The triggering of prior mental categories by some kind of input – whether sensory or more abstract – is, I insist, an act of analogy-making. Why is this? Because whenever a set of incoming stimuli activates one or more mental categories, some amount of slippage must occur (no instance of a category ever being precisely identical to a prior instance)…
> The process of inexact matching between prior categories and new things being perceived (whether those 'things' are physical objects or bite-size events or grand sagas) is analogy-making par excellence… it is the mental mapping onto each other of two entities – one old and sound asleep in the recesses of long-term memory, the other new and gaily dancing on the mind's center stage – that in fact differ from each other in a myriad of ways. (Hofstadter, 2001: 500-03)

Hofstadter's notion of analogy as the primary mechanism for understanding is based on the linking of new input to a past memory. This process is at work in the reading of architectural drawings – by connecting to (drawing an analogy with) the viewer's previous experience of both drawn and built architecture the viewer is able to project the building in the drawing. This perceived building then has an analogical relationship with the drawing, with the memory of previous buildings, *and* with a version of the building that may exist in the drawing's future.

> we realize something constructive when we see. We do not merely illustrate or copy what is given, but give birth to something that would not otherwise exist. Seeing is about being struck that something is, or can be, connected to something else. (Stafford, 2001: 138)

In considering how the visual arts may contribute to the study of consciousness in cognitive science, art historian Barbara Maria Stafford articulates the active, constructive process in seeing, and the acts of connection that seeing entails. Stafford emphasises "the ways of seeing sameness-in-difference" (Stafford, 2001: xvi) at work in processes of visual analogy. This notion of difference is critical to any analogical model, and all semiotic processes – a sign is only a sign if it is not the same as the thing it is signifying.

[43] Although rapid prototyping models and CAD/CAM could be an equivalent form of metonymy.

> Analogon, then, is the proportion of similarity that exists between two or more apparently dissimilar things … analogy is the vision of ordered relationships articulated as similarity-in-difference…. Analogues retain their individual intensity while being focused, interpreted, and related to other distinctive analogues and the prime analog. (Stafford, 2001: 8-9)

> Art, instead of representing the world, could now be a model for it, functioning as analogy rather than imitation. In addition artists could explore regions of perceptual experience which could only be the product of the special nature of the medium in question, in no way available in the world except as created through art. (Le Grice, 1977: 16)

Understanding and celebrating the difference between pro-filmic and filmic experience, Le Grice proposes that analogy is a useful model for the ways in which these experiences are non-the-less related.

> the experience at projection [can] become an analog or be used as a metaphor for … the 'shooting' TIME/SPACE. (Le Grice, 2001b: 157)

2.2.1.5 Analogous, abductive signs

> An argument from analogy operates by identifying similarities between two ‘domains’, and then inferring that the target domain has an attribute of the source domain. Analogies are widely recognized as playing an important heuristic role, as aids to discovery. (Bartha, 2013)

In logic, analogy is used as a formal tool for learning something about a thing by relating it to something else with which it has some similarities and inferring that other similarities will also exist. Philosopher and logician C. S. Peirce identified that analogy functions though “the three primary forms of inference … a mixture of induction and abduction, and a tincture of deduction” (McJohn, 2007: 209). Peirce’s “abduction” is critical to analogy and is based on “processes of thought capable of producing no conclusion more definite than a conjecture” (Peirce and Eisele, 1976: 319) and “deals with very partial premises; premises which are more or less sufficient but not necessary for the conclusion in that inference” (Zambelli, 2016). As opposed to deduction and induction, abduction is much more of a “best guess” (Peirce, 2013).

> Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea … if we are ever to learn anything or to understand a phenomena at all, it must be by abduction that this is to be brought about. (Peirce, 1998: 171)

In his essay “Semiotica Ab Edendo” (1986) Frascari links Peirce’s notion of abduction within analogy to his use of analogy within the functioning of visual signs.

> Pierce … deals with the inferential and iconic creation of images, an act which brings together realities which are more or less remote… He adds a novel type of inference, 'abduction', to the traditional typology of induction and deduction. Abduction is concerned with the reasoning necessary for adopting hypotheses or new ideas … abduction is a highly productive procedure. New understandings are continually generated (Frascari, 1986: 7)

The Peircean strand of semiotics (the working of signs) considered visual signs as part of the wider field of semiotics, in contrast to linguist Ferdinand de Saussure whose semiotic theory related only to *linguistic* signs. Peirce identified that visual representation involves processes of analogy, and that iconic (functioning through resemblance) signs operate analogically.

> the diagrammatic sign or icon … exhibits a similarity or analogy to the subject of discourse (C. S. Peirce quoted in Dipert, 1996: 388)

A fundamental difference between Saussurean and Peircean semiotics is the inclusion of the "object" or "referent" in the latter (Chandler, 2007: 29). For Saussure, the abstraction at play in linguistic signs gave less relevance to the potentially material artefact of the thing which the sign denoted. However, in the field of *visual* signs, especially those used within prospective design processes, the existence (or not) of the referent *is* particularly germane.

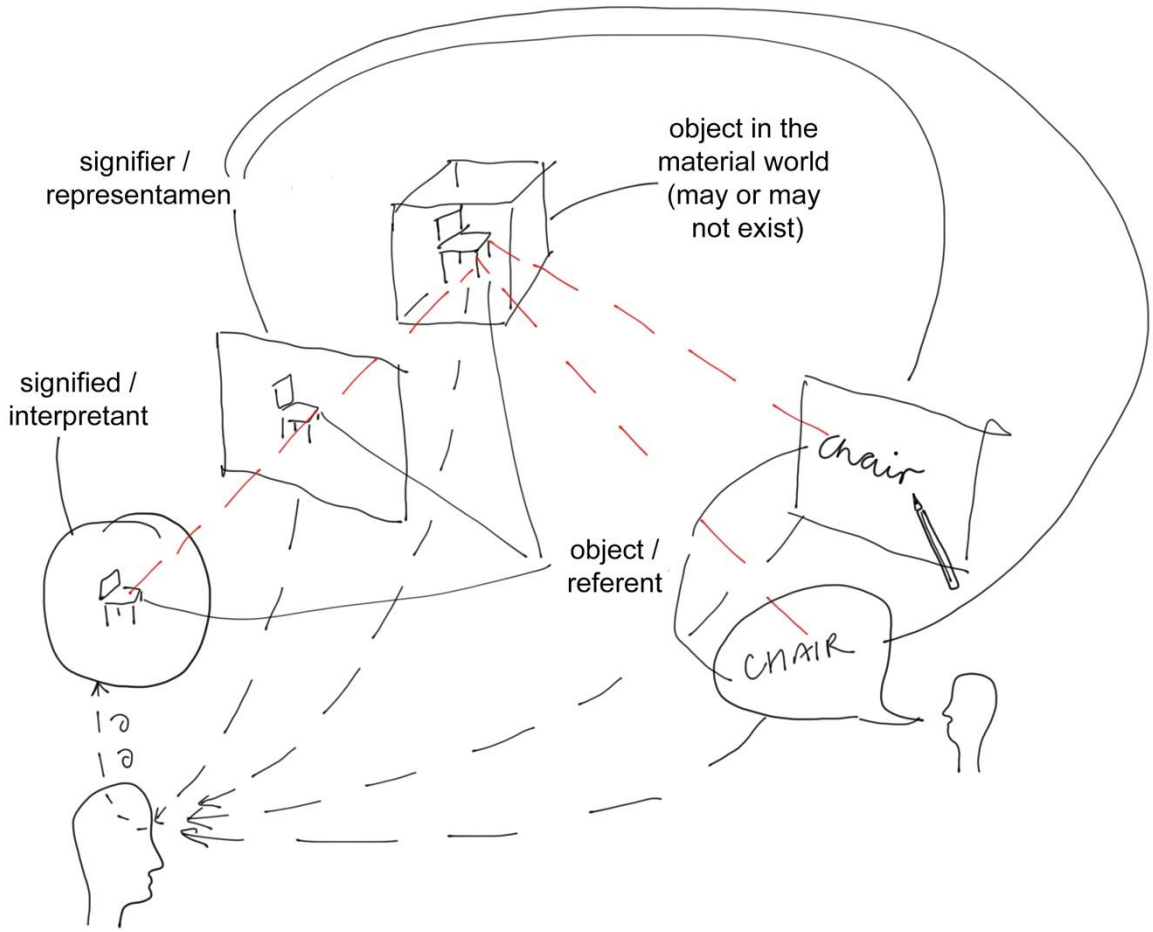

Figure 2-1: Analogical processes linking versions of the referent

The above diagram attempts to indicate how signs, in a range of forms, from the spoken or written word, to the visual sign such as a drawing, relate to the referent object and to its perception in the mind of the viewer/reader/listener. A crucial aspect of both Peircean and Saussurean semiotics is the making of meaning of a sign by a person (an active agent), and Peirce considered this perceived sign to then be a second level of sign. All these "versions" of the object/referent are linked though analogical processes to create understanding or meaning in the interpretation of the sign, and all the versions of the referent in the above diagram are at play within architectural representation.

Social anthropologist Alfred Gell adds the fourth component of the "artist", the author of the representational artefact. However, such a maker was still implicit within Peirce's schema and Dipert (1996: 374) identifies that signs can only function if they have been constructed and their constructedness is in some way visible.

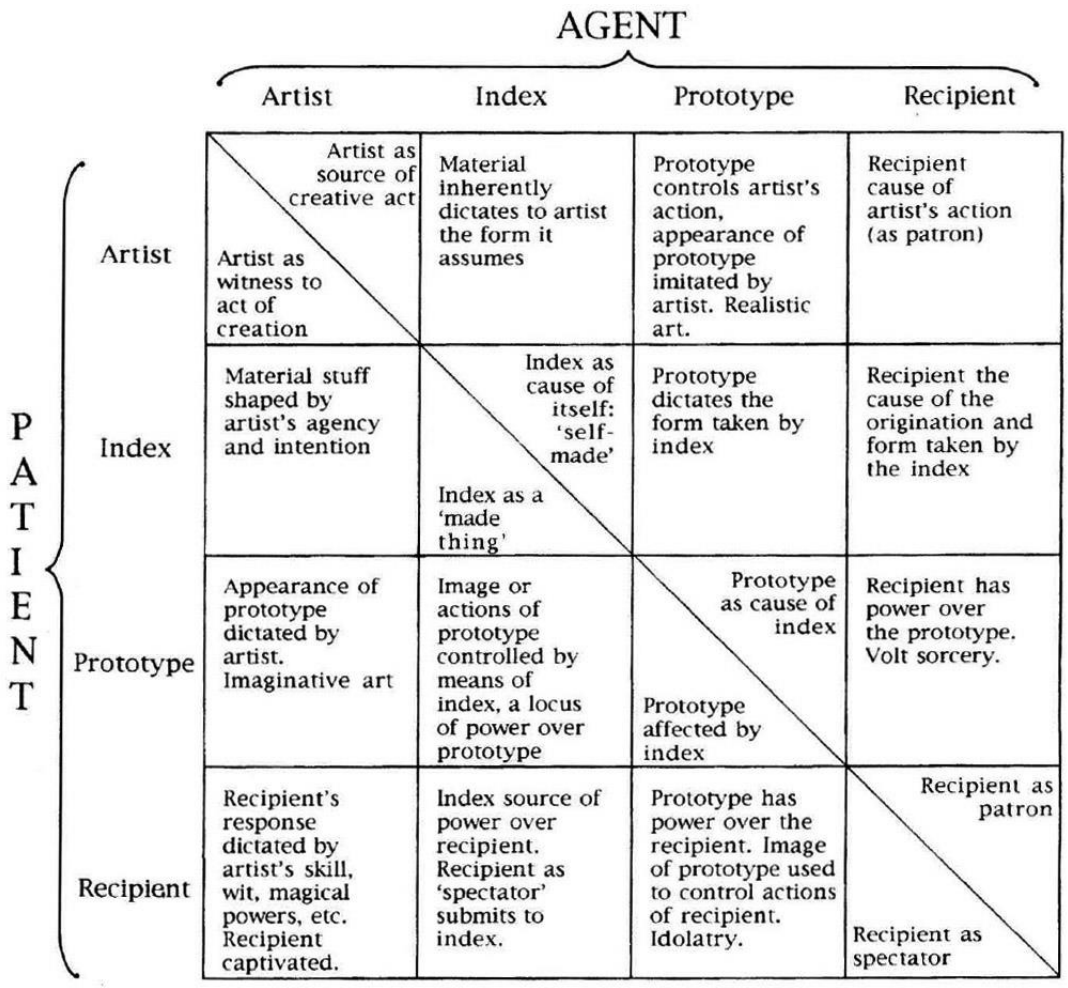

Figure 2-2: "The Art Nexus" (Gell, 1998: 29)

Gell uses the word "index" instead of "sign" for the representational artefact. Gell then uses the word "prototype" as a substitute for Peirce's "object" or referent. For Gell, the artist is one element in this matrix and can either be the "active" agent or the "receiving" patient – the artist can be also impacted and influenced by the other agents in the matrix.

This reciprocity of influence is resonant with Glanville's (1997: 38) assertion that architectural drawings speak back to their authors.

2.2.1.6 Architectural representation as analogy

This journey though the mantic operation of architectural representation, the perceptual construction of an unbuilt building, and the heuristic function of analogy working to generate new understanding through connective processes of sameness in difference, leads to my assertion that architectural representation functions through processes of analogy. This assertion in itself is not an original insight – Frascari had already identified the metonymic and metaphoric analogical tools linking the making of drawings and the making of buildings; Peirce, in his model of visual (and other) signs, had already articulated the relationship between material signifier, perceived signified, and referent as fundamentally analogical; and Le Grice had analogically linked pro-filmic and filmic experience. However, despite the prior existence of this idea in many fragmented forms, the notion of architectural representation *as* analogy is not a common one within architectural discourse. I suggest that framing the relationship between building and drawing in this way may be more useful and ultimately liberating than other conceptions, such as simulation, which then often leads to an assumption that photorealistic rendering or BIM models[44] are the "best" forms for such representation to take. In fact, these are very narrow forms of attempting to know the building in advance, and thus potentially limit the very prophetic process which architectural representation should enable. To reduce a building, in all its material, temporal, experiential qualities to these limited tools of divination is to risk a reduction in relevance of the complexity and richness of not only architectural objects, but also architectural ideas, physically manifest or not.

Understanding the drawing (of/for a building) as having an analogical relationship with a building (real or imagined), rather than using ideas such as simulation, allows each thing to be considered in terms of their difference as much as their similarity. Difference can be seen as an opportunity, allowing for things such as the uncanny (which I shall discuss later in this chapter), for translation and interpretation, for the "eddies and circuits … between the design drawing and the finished article" (Evans, 1989: 20) to occur – in fact it allows for this non-linear relationship to be celebrated. Analogy also helps to never lose sight of the built building – it is always there, a future possibility, with which the drawing maintains continuous threads of connection. One could argue that without this future building there is no architecture in the drawings.

[44] In fact, all that a CGI rendering simulates is a photograph of a building – a photograph is not a building and is not a simulation of a building. A Building Information Modelling (BIM) model contains a set of information about a building – again, that collection of data is not the building. And yet in both of these examples there is a concern with verisimilitude, with an attempt (however futile) to get ever closer to, and ultimately control, the materialised edifice that may (or may not) exist in these documents' future.

The metaphorical analogy between drawing, building, perception of both unbuilt and buildings, and the memory of previous buildings, simultaneously (like all metaphor) asserts that these things *are* one another[45], while allowing for them to be different to one another in many respects. This paradoxical but highly productive nature of metaphor, working through the process of analogy, allows for celebration of difference, though analogical connection between drawing and building. In this, "magical" divinatory processes, on the route from drawing to building, and a potential lack of complete, rational, instrumental control are opportunities, rather than problems. As in Peirce's tripartite system of inference, the loss of the "security" of having full knowledge of something (as found in deductive reasoning), is offset by the creative bounty of "uberty" as found in abductive inference (McJohn, 2007: 193).

2.2.2 An Empty Space and an Empty Signifier

> The early structural film was especially concerned with the relation between the form of a work and its subject-matter, often theorised as a cinematic relation – and disjunction – between signifiers and signifieds. (Rees, 1999: 80)

> empty spaces, without characters or movement … are interiors emptied of their occupants… An empty space owes its importance above all to the absence of a possible content … empty spaces, interiors or exteriors, constitute purely optical (and sound) situations (Deleuze, 1989: 16-17)

Unlike architecture, film is, in most of its forms, a representational art and "intrinsically 'realist' in its mechanical photographic reproduction of reality" (O'Pray, 2003: 6). While architectural representation looked to move beyond its semi-diagrammatic or symbolic tools of orthographic projection (which have been critiqued as instrumentalist (Pérez-Gómez and Pelletier, 1992; Vesely, 2004)), to further develop perspectival imagery for means by which to "visualise" the unbuilt building[46], structural film sought to challenge and undermine cinematic representational processes (Rees, 1999). Gidal problematised narrative and illusionism and their requirement for, in fact their creation of, a passive, unchallenged viewer (Gidal, 1976: 4). Le Grice identified that in commercial cinema, the viewer's awareness of the processes of making and screening the film are suppressed in order to prioritise their passive absorption of a supposed "'representation' of reality" (Le Grice, 2001b: 156), preventing their personal construction of meaning (Gidal, 1976: 4). Like architectural representation, film offers the viewer a continual series of fragments – each frame is a fragment, as is each sequence in a montage. Canadian structural filmmaker Michael Snow describes film as utilising "prophecy and memory" (Snow, 1967a: 40), implying a simultaneous looking back and projecting forward, joining these

[45] Unlike simile which only suggest that two things are *alike*, but not the same.
[46] CGI imagery is the result of one strand of such a development of perspectival imagery utilising resemblance.

fragmented parts from within an ever moving present. In particular, structural film explores the relationship between the film and its viewer, and in this relates to the role of the active viewer in the reading of architectural drawings. In defining structural film, Sitney asserted that in this form “apperceptive strategies come to the fore. It is cinema of the mind rather than the eye” (Sitney, 1974a: 407, 408). While London Film-makers Cooperative film-makers Peter Gidal and Malcolm Le Grice produced their own title and interpretation of what they preferred to call “materialist film”, they shared with Sitney a requirement for an active viewer.

Sitney suggests that Andy Warhol’s film work in the early 1960s with extended duration was a precursor to the emergence of structural film, although his position as a pop artist was “spiritually at the opposite pole from the structural film-makers” (Sitney, 1974a: 411). Sitney argues that Warhol “was the first film-maker to try to make films which would outlast a viewer’s initial state of perception. By sheer dint of waiting, the persistent viewer would alter his experience before the sameness of the cinematic image… [Warhol] made films that challenged the viewer's ability to endure emptiness or sameness” (Sitney, 1974a: 412). Film critic Chris Fujiwara, discussing viewer “boredom” in the use of extended duration within Italian cinema of the 1950s-1970s quotes Tarkovsky: “If you extend the normal length of a shot, first you get bored; but if you extend it further still you become interested in it; and if you extend it even more a new quality, a new intensity of attention is born” (Tarkovsky, 1999: 6). Fujiwara is interested in “what happens if this intensity isn't attained, and the viewer remains stuck at the stage of waiting”, suggesting that this provokes conscious reflection in the viewer of their own physical location, and its relationship to that of the image on the screen (Fujiwara 2007: 242-43). Likewise, cinema and media theorist Vivian Sobchack uses philosopher of science and technology Don Ihde’s (1975) concept of “echo focus” to describe an awareness in the viewer of the “instrument-mediated perception” (Sobchack, 1992: 178) in the experience of the cinematic projection, identifying that the lived body of the spectator is crucial in the process of viewing film. This awareness in the viewer of the cinematic event, of the space of the cinema and the function of the mechanisms of film, and of their own role in the “making” of meaning, in the making of the film itself, is a primary mode of *construction* that takes place within structural film.

The everyday, and its appropriateness as a filmic subject can be found in the earliest cinematic works, with the Lumiere brothers’ use of the new technology of (silent) film to record everyday events (Rees, 1999: 15-16). Soviet filmmaker Dziga Vertov saw the filming of everyday life as an antidote to bourgeois propaganda (Le Grice, 1977: 55). Michael O’Pray explains the “shocked incredulity” of the “seeming banality” (O'Pray, 2003: 85) of the work in the reception of Warhol’s films: “while a painting of a mundane object had been perfectly acceptable since the impressionists of the nineteenth century …

filming an object over a lengthy period of time without any attempt at film construction or story or even drama was anathema" (O'Pray, 2003: 86). Within structural film, itself influenced by such predecessors, everyday spaces, devoid of human occupants, were often used for the filming of footage, in a desire to eliminate narrative, illusory content. These spaces are often referred to as "empty" (Sitney, 1974a: 407, 419), and where the space of filming is acknowledged, it is frequently described as "banal" or "mundane" (O'Pray, 2003: 94). Film theorist Constance Penley explains "the first tactic of the structural/materialist film is the emptying from the cinematic signifier all semantic, associative, symbolic, representational significance" (Penley, 1977: 8). Peter Gidal's room films – *Hall* (1968a), *Room Film 1973* (1973), *Condition of Illusion* (1975), *Silent Partner* (1977) – utilise strategies of fast camera movement, quick cuts, close detail, to try to remove the legibility of the imagery. In this, Gidal is going beyond the normal tactic of removing content and human action from the rooms in an aid to eliminate connotative meaning – in a denial of a coherent reading of the room and its elements he is also removing denotative content from the film. Other room film works, such as Michael Snow's *Wavelength* (1967b) and <—> *(Back and Forth)* (1968), Ernie Gehr's *Serene Velocity* (1970), Gill Eatherley's *Pan Film* (1972), and John Smith's *Leading Light* (1975) afford varying degrees of greater legibility of the image, but still empty the room of human action, thereby eliminating any narrative content[47], and allowing the rooms to be read as "empty". I assert that this lack of "content" of the *room* exemplifies a suppression of representational content for the *film*. The filmed space is denied, its own tectonic and temporal qualities discarded for a singular concern for the material of the film artefact and the processes of its production. The empty room becomes the setting for the inquiry of the structural film, a container in which other, filmic, subjects can be explored.

For an architect viewer of such films it is not possible for imagery of an "empty" room, or an "everyday" part of the city to be without a *referential* subject. For an architect, a film of a room offers content which their habit of looking consumes. With extended duration this opportunity for sustained observation increases – the very technique by which narrative content is purportedly diminished affords another kind of story to appear, that of architectural narrative. This was something I first experienced before I began to study architecture, while I was in the second year of my fine art degree. Initially apprehensive of watching Michael Snow's *Wavelength* (a 45-minute zoom across a room did not sound like an enjoyable viewing experience to someone new to avant-garde filmmaking), I unexpectedly found myself mesmerised. While appreciative of the *filmic* subject, I was particularly struck by the *architectural* experience of viewing the film. This film has heavily influenced my practice in the years since, and I have undertaken architectural analyses of the film for several publications. What follows is largely based on this previously published

[47] Of course, *Wavelength* does contain "four human events", which I discuss further later in this chapter.

work and marks my first act of direct appropriation of structural film for architectural purposes. As such this is the first example of the mode of practising architectural moving drawing through the act of *reading*.

2.3 Reading *Wavelength*

Michael Snow's 1967 film *Wavelength*[48] is a formative work within the history of structural film and has been influential in the subsequent evolution of artists' film practices (MacDonald, 1985: 34). It employs predominantly "representational" footage, along with abstract elements such as flashes of screen-filled pure colour, to construct an artwork whose intention is to express the form, structure and media of the film artefact, and highlight the processes of the viewer in watching the film. Snow had started with the idea of the zoom, and the corresponding form of the cone of light from the projector (Snow et al., 1967: 41) – the space of the room and the street beyond the windows was not the intended primary subject. In the following analysis of *Wavelength*, I will attempt to show how an *architectural* reading of the film might draw out the relationship between interior and exterior space. Building upon previous detailed filmic analyses (Legge, 2009; Wees, 1981; Michelson, 1971), I will show how the supposed "non-subject" of space in many artists' film work can provide complex and rich content, demonstrating how a work of structural film may *also* operate as a form of *architectural representation*.

> The film is a continuous zoom which takes 45 minutes to go from its widest field to its smallest and final field. It was shot with a fixed camera from one end of an 80 foot loft, shooting the other end, a row of windows and the street… The room (and the zoom) are interrupted by 4 human events including a death. (Snow, 1967a: 40)

Snow refers to the film as "utilizing … prophecy and memory" (Snow, 1967a: 40), looking back and forward simultaneously, implying a role for the viewer in actively constructing the whole out of these temporal fragments. The zoom invites the viewer to consider the space at an ever-increasing scale, achieved through a continually narrowing of field of view. I suggest that through these processes of "prophecy and memory", the observer's "activating imagination" constructs the whole space (of the interior room and the exterior beyond) though these durationally dispersed scales, in a process similar to reading a set of architectural drawings. The row of windows at the far end of the room constitute the primary architectural interface between interior and exterior, and from the first shot *Wavelength* addresses the relationship between the space on either side of these windows. Through both (limited) human and architectural narrative the film records the constantly changing connection between the interior room and the aural and spatial landscape beyond.

[48] *Wavelength* stills are photographs of projections of the film and © Michael Snow, 1967.

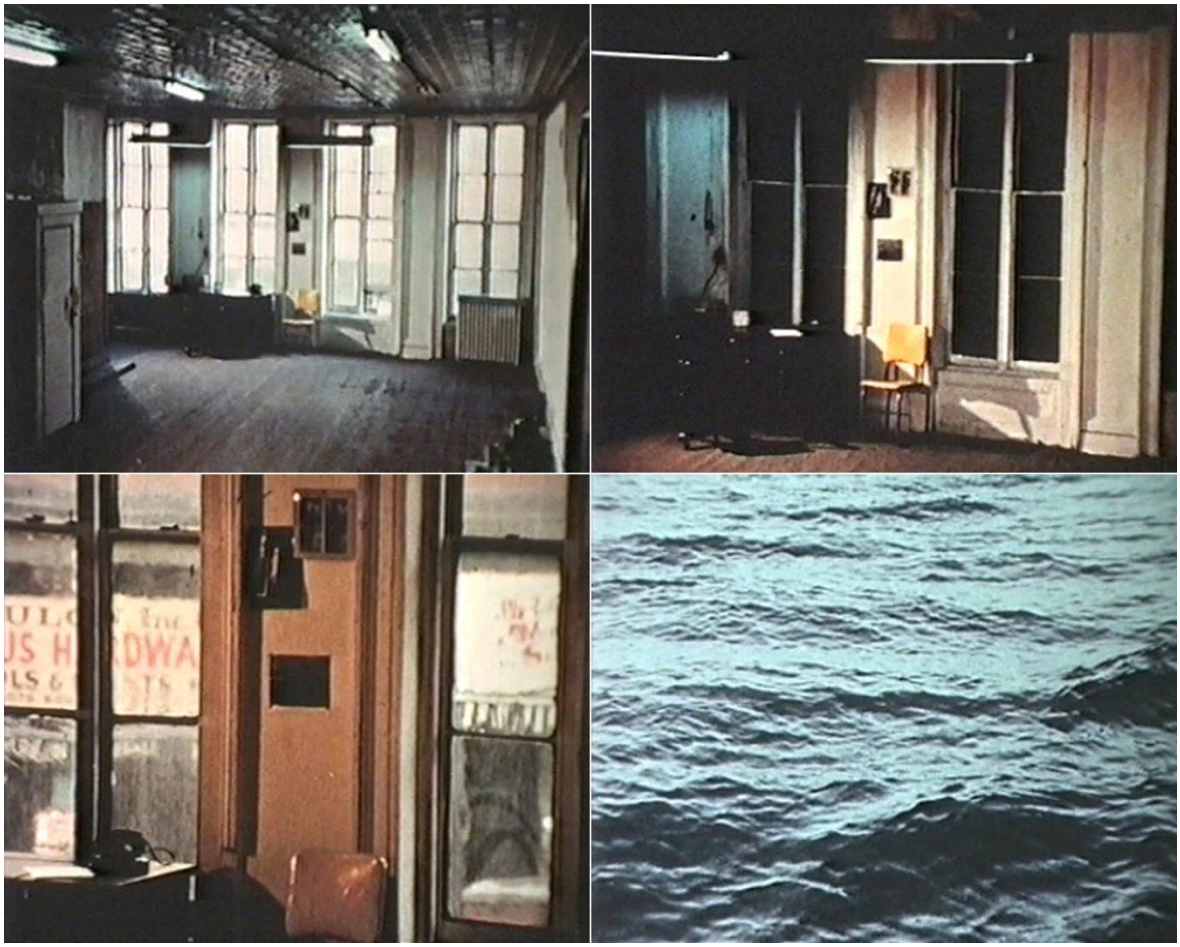

Figure 2-3: "Wavelength" – the zoom, start to finish

For most of the film the loft room is devoid of human protagonists: Snow's "4 human events" are each very brief and interspersed across the full duration of the film. Snow acknowledges "There is the implication of a story in the sense of human affairs" (Snow et al., 1967: 42), that the viewer may construct a "narrative" linking each of these events. However, Snow's intention is that "everything else is also an event, though of another kind" (Legge, 2009: 5), and that there is not a hierarchy of the human and non-human events: "The image of the yellow chair has as much "value" in its own world as the girl closing the window" (Snow et al., 1967: 44). The "empty" room is as important as the brief moments of human occupation – composer Steve Reich observed that in *Wavelength,* when "the people leave – the room is by itself. What does a room feel when no one is there?" (Yalkut, 1968: 51). The "human events" consist of: a woman and two men bring in and position a bookshelf; the woman returns with a friend and they listen to the Beatles's *Strawberry Fields for Ever* (1967)[49] on the radio and close one window; it is night-time and sounds of someone breaking into the building and approaching footsteps precede a male "intruder" entering and collapsing, after which the camera zoom hides him from view; with a later return to night-time a third woman enters, sees the "dead" man on the floor, makes a phone call, asking for help, and leaves.

[49] As the film was shot the year before the release of *Strawberry Fields* this was added in the film's editing (Legge 2009: 24).

Figure 2-4: "Wavelength" – "4 human events"

The first human event takes place at the commencement of the film, and like the viewers of the film, these people have arrived from another place – the woman's coat and scarf implying they have entered from outside. These occupants confirm the scale of the room, the depth of the space is revealed as the foreshortened view is traversed, and the figures demonstrate the generosity of ceiling height. The women's gaze though the windows links interior to exterior, which is then severed by the window's closure and loss of the street's sound. The music apparently emanating from the radio is broadcast from a space beyond, and the song itself was created and recorded in yet another space and time. The intruder's initial incursion from the exterior is communicated through sound, and his "departure" occurs both through his apparent death, and through his removal from view due to the camera's relentless zoom. However, the fourth event – which makes a connection "back in time and space" (Snow et al., 1967: 42) – demonstrates that the intruder has not departed in body: the telephone call reminds the viewer of his presence and also connects the room to the world beyond, a reversal of the earlier intrusion. Each of these events change the perceived "speed" of the space of the room by the presence and actions of the protagonists. The room is "slow" when it is devoid of human occupants – change within the space is largely imperceptible, beyond the continually stepping, hand-cranked camera zoom. The viewer begins to experience boredom (Fujiwara, 2007: 242-43), shifting their focus to the glimpses of movement of flapping awnings, passing vehicles

and pedestrians in the faster space of the street. This boredom also encourages the viewer to become more aware of their own position, of their body, their act of viewing, the space of the cinema and the mechanistics of the screening (Sobchack, 1992: 180-81).[50] At these times, the attention of the viewer flows from the real, interior space of the cinema in which their own body is located, through the intermediate space of the depicted interior in the film, to the suggested space of the film's exterior. Despite their limited activity, the introduction of people to the film's interior space speed it up through their acts of inhabitation, and their linking of interior and exterior. Their movement through this space, and interactions with each other and the room, are engaging. Time no longer feels drawn out, boredom is alleviated and as such this (limited) human narrative causes the viewer to lose the sense of their own position – the flow through the interior stops, the viewer residing with the protagonists, within the loft space.

The duration of the film is not equal to the duration of the filmed room – the forty-five minutes of footage were shot over the period of a week, day and night, allowing the film to communicate a variety of changing spatiotemporal relationships. In particular, the alternating presence and absence of daylight impacts the reading of the relationship between interior and exterior. The daylight in the room is always mediated by the external conditions – the movement of passing vehicles is echoed in the reflected light on the shiny surface of the tin ceiling, projecting an interior version of the movements of the street. The sunlight reflecting off the opposite building's facade provides the room with much of its daylight – the artificial light struggles to expose the details of the room against this *contre-jour*. As the zoom tightens, the view of this brightly lit exterior elevation is magnified, the building signage opposite becomes legible, again drawing the viewer's attention to the exterior. The shift from day to night (and back again) changes the spatial operation of the windows – during the day the glass is transparent, the moving outside world projected onto its panes (Wees, 1981: 80), at night the windows become opaque black rectangles, severing the connection between interior and exterior. At night the light within the room is brighter – the artificial illumination generates sharper shadows, cleaner colours, and accentuates architectural details. This exposure of the interior through the change in light, coupled with the loss of the exterior world as a point of focus, shifts the viewer's attention, serving to intensify the interior, speeding it up.

A photograph of vast ocean waves (the wavelength metaphor made literal) which has occupied the centre of the frame for the entirety of the film, now becomes central to the film's conclusion, acting as yet another "window" to an exterior space. The camera zooms inwards past the edges of the photograph, transforming it from a photographic artefact on a wall in a room, to an image which fills the screen, transporting the viewer out of the

[50] Fujiwara and Sobchak use the term "boredom" not a criticism, but as a counterpoint to the non-reflective absorption the viewer experiences in fast paced, narrative cinema.

space of the room into a different exterior world. However, the static image of this perpetually moving surface arrests time, the multitude of spatial speeds presented in the film become fixed in this one moment. The zoom into this photograph of waves is the mechanism by which the viewer exits the room and the film: their journey back to their own reality flowing though the timeless world of the frozen waves.

I argue that in the viewing of this film, and in the manner instructed by the artist (projected in a cinema) a propositional act of spatial construction takes place, that in the active reading of this film, architecture is created in the mind of the viewer. But it is not the actual room, as filmed by Snow in 1966, that the viewer (re)constructs. *Wavelength* is not a simulation of a spatial experience of that room, at that point in time – it is instead *analogical* to that original space, similar, related, but different. It is a *new* space, in a *new* time, constituted as much by the space of the room on the audience's side of the picture plane, as that flat image on the screen, and the projected illusion of space beyond it. Just as with conventional architectural drawing, architecture also resides within this architectural moving drawing, and through a process of mental activation whilst "reading" the film, architecture is constructed by the viewer. Additionally, "the theoretical or bored spectator" (Sobchack, 1992: 181) has an awareness of the mechanism of the film's projection, the film provoking conscious reflection in the viewer of their own physical location, and its relationship to that of the image on the screen (Fujiwara, 2007: 242-43). In Snow's 3-hour film *La Region Centrale* (1971) a similar process occurs – shortly after experiencing a recent theatrical screening of this film, I was struck by the clarity of its experiential nature (de Duve, 1995). It was as if I, along with the entire audience, was encamped in a constructed place, formed from the conjunction of the mountaintop in the film and the space of the cinema. Afterwards I felt as though I had emerged from this propositional place, having made a momentous journey. As Snow himself identifies (1994), his work has always been concerned with the relationship of viewer to artwork, particularly in the active, reflective, construction of meaning by that viewer. In a theatrical screening of *Wavelength* the projected image on the screen, the pyramid of projected light, and the audience all constitute the work: "The space starts at the camera's (spectator's) eye, is in the air, then is on the screen, then is within the screen (the mind)" (Snow, 1967a: 40). Snow asserts that only in such a theatrical screening is the artwork complete, that "its being a film is integral to its meanings" (Legge 2012) – Snow has never released *Wavelength* on DVD. I would assert that the relationship between interior and exterior in *Wavelength* includes the interior of the cinema (de Duve, 1995: 34), the exterior space of the viewer's own journey to that cinema, and the interior and exterior spaces represented in Snow's 1966 loft room, all as communicated to the viewer through their active reading of the film. The propositional construction of a new, analogical space occurs through these experiential acts, made anew at each screening of the film, and in the experience of each individual viewer, and then ultimately, to reside in the memory.

2.4 *Carriage* – an uncanny analogy

> "[The uncanny] disturbs any straightforward sense of what is inside and what is outside. [It] has to do with a strangeness of framing and borders, an experience of liminality." (Royle, 2003: 2)

> "*film* is uncanny … [it] is in its essence a world of doubles." (Royle, 2003: 77, 78)

In March 2015, travelling at night on a train from London Victoria to East Croydon, I saw another train on parallel tracks – the surrounding urban landscape receded into pools and points of light, leaving the adjacent train's windows as apertures into this alternate small world. The compelling quality of this pro-filmic experience, which I would later identify as being fundamentally "uncanny" in nature, prompted me to film this view. At the point of filming there was no specific strategy to this process – from previous projects I understood that I would respond to the imagery in the footage in the editing stage, and that through this iterative and reflective process the working method and form of the film would emerge. The resulting 02:56 length single-take clip records the two trains' adjacent relationship on their approach and departure from Clapham Junction station, and was filmed using a technique I had developed in previous work – holding the camera against the window kept it steady and avoided reflections; recording for a long time allowed the unexpected or unanticipated to come into screen, and then depart; keeping quiet while filming allowed the sounds of the place of filming to be captured; and aligning the camera with the frame of the window allowed the imagery to be orthographic in composition, the parallel situation of the trains providing parallel projection in the footage capture. My films *Parallel* (2015a), *Carriage* (2017a), and it's shorter version *Parallel Carriage* (2017b)[51], were iterations of an attempt to edit this piece of footage which recorded the trains' nocturnal parallel dance, to explore ways of using the imagery to express something of that original experience, to make something which might, in some way be analogical to it.

At the start of editing, I began by reviewing the footage for qualities that could inform how it might be transformed into a film. The first attempt resulted in *Parallel* (2015a), a film that predominantly focused on the transition into and out of Clapham Junction, using this moment as a primary structuring device. The film zoomed into the footage of the train windows, and slowed it down, before returning to normal footage as the train enters the station. In this edit, considerable time is given to the space of the almost deserted station (a contrast to the full train) – in this space the parallel train is illuminated, its bright colours and branding overpowering the view of the windows into its carriages. The film again zooms in to the windows, trying to find a connection to those interior spaces, but ultimately fails as the image becomes obscured by the grain of the footage. In a moment of

[51] *Carriage* and *Parallel Carriage* have been screened at a number of international film festivals.

serendipity, the adjacent train departs the station at the same time as our train, and as they re-submerge back into the dark of night the film again zooms in to a grouping of windows and slows almost to a standstill. The film then releases the other train, zooming out and speeding up, as those other carriages find a different set of tracks to follow. The final imagery is of a dark world illuminated by points of light of unseen buildings.

Figure 2-5: "Parallel" (2015a) https://vimeo.com/127403919

On re-watching *Parallel* sometime after making it, I observed the most compelling section to be the zoom in to the windows. In these shots the people in the carriages were more individually distinct, and the slowed down footage held these moments, and then allowed them to slip away. I identified the experience of watching these segments as being "uncanny", and that this related to the fundamentally uncanny nature of the original, pro-filmic experience, the uncanny thereby being the strongest analogical link between both.

Figure 2-6: "Carriage" process work - extracted windows

In the original, pro-filmic experience of viewing another train at night, that other carriage across the darkness feels both real (it is known to be real), but also unreal (Foster, 1983: 2004) – the rectangular windows take on the impression of screens, the internal space of the carriage flattened onto their surface, the occupants of that moving room become like characters on small television screens whose sound has been muted. It is a space so like the familiar one in which the viewer/filmmaker sits herself, but is fundamentally unreachable, unfamiliar, and ultimately unknowable. As such, the space of the other carriage is an “uncanny” double (Freud, 2003) (Jentsch, 1997) of the space in which the observer bodily inhabits.

A new film, *Carriage* (2017a), therefore focused on individual windows, expanding the techniques previously used to extract the carriage windows. The reading of the windows as screens is emphasised by their filmic treatment – they are enlarged and slowed down, simultaneously brought closer by the zoom, but placed at a distance by their extreme slowness, and by the blurring that occurs in the imagery. The frame-blending tool that was used to slow down the footage generated some strange artefacts in interpolating the footage, but these served to further “defamiliarize” the image, ultimately contributing to its uncanny affect.

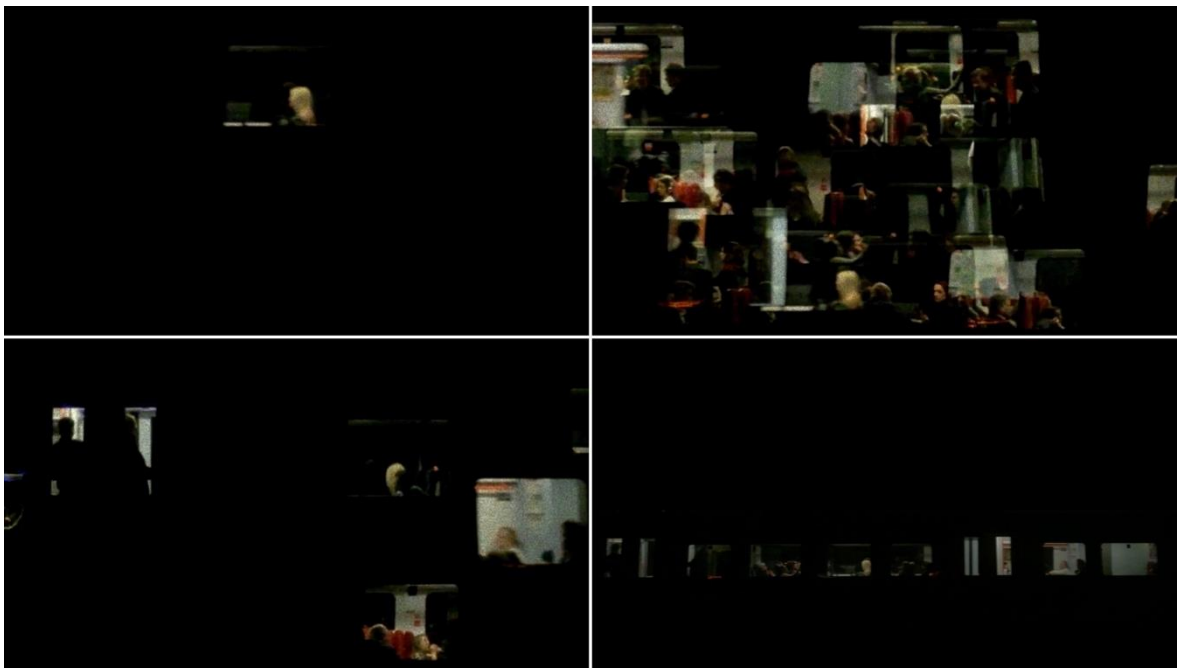

Figure 2-7: “Carriage” (2017a) *https://vimeo.com/197686717*

Informed by the use of repetition in structural film, and understanding that repetition can also be “a source of the sense of the uncanny” (Freud, 2003: 143), I built up the intensity of the film, reusing clips of individual windows to start from a black screen across which moved individual windows, to a visual cacophony comprised of a jumbled overlay where windows have lost any sense of spatial coherence and completely transformed to screens. The overlaying of the windows as the film progresses emphasises their

distinctness, their separation from each other, the edges of each window acting like the filmic frame, the point at which the world stops, but which is assumed to keep on going (Metz, 1975: 56-57). The spaces seen through each window/screen become layered, the repetition allowing individual "characters" to be recognised – without any provided narrative structure the half-formed images of the inhabitants of those other carriages take on their own narrative interpretation.

Through the layering of the 28 superimposed tracks of visual imagery the related soundtracks from that footage also became overlaid. Slowed down, the sounds produced in the carriage in which the filmmaker/viewer is located (snippets of conversation, rattles of the train, and automated announcements) become an abstract roar – overlaid, these form a soundscape which heightens the uncanny affect upon the viewer. To conclude the film, I used the original footage of the whole train (with its surrounding space masked) as a coda. This exposes the methods that the film uses and undermines the illusory processes at work within the previous portion of the film. In this final clip, the separate views through each window are connected, the train carriage presenting the unified space in which all the unknown, but now familiar, characters reside.

Figure 2-8: "Parallel Carriage" (2017b) https://vimeo.com/197703963

Immediately after completing *Carriage*, I produced a shortened version (working to a 2-minute time limit[52]) *Parallel Carriage* (2017b). The shorter edit required a different approach to the footage – the slow build-up used in *Carriage* was not possible and it was not feasible to use the original footage of the whole train as a coda. Instead I selected just

[52] The film was initially edited as a response to a call for a film festival (for work shot with smartphones) which limited films to a maximum of two minutes.

three of the extracted windows, ones where the sense of individual narratives of the carriages inhabitants was strongest and combined them with the footage of the whole train, slowed to approximately 50% of real time.

Taking the fundamentally cinematic experience of train journeys, which predates cinema itself (Schwarzer, 2004: 32, 55), *Carriage* amplifies the filmic aspects of that experience, offering a parallel, yet different, experience in the viewing of the film. This analogical experience is based on the quality of "duration as a material experience" (Le Grice, 2001a: 166) in both viewing of film and of the ready-made film as found in the world (Lewis and Mulvey, 2014). In the drawn-out experience of viewing *Carriage*, and even in the brief duration of watching *Parallel Carriage*, I would assert that the viewer experiences something *analogical* to that original uncanny experience. In the carriage of the train, and in the seat in the cinema, you are held in one place, projecting your attention to another world. That sense of a doubling of immersion and emersion, of being there and not there, here and not here, simultaneously, analogically links both spatial and filmic experience. The film manifested strategies for the manipulation of visual and aural material to produce an analogous condition in the viewing of the film, that goes beyond issues of simple resemblance. The transformation of the raw footage allowed it to resonate more strongly with the original spatial experience to which it relates.

Finally, as already mentioned in Chapter 1, much of my practice uses imagery devoid of human figures in order to keep the focus upon the architectural subject. The original *Parallel* edit gave the primary focus to the space of the train station – however, the process of reflection on this first edit revealed the footage of the people in the adjacent train carriage to be powerful and pivotal to the experience and the film. In this, the human figures and the way in which they are used in the editing became critical in understanding the notions of the uncanny in both pro-filmic and filmic events. The film is still fundamentally an exploration of a spatial experience, but one where the view of other people becomes a defining aspect. The device of the architectural element of the window, filmed orthographically becomes the primary device through which the film is structured, in turn taking cues from the language of structural film practice.

2.5 Factory Wall Timescales

In September 2018 I moved into my first studio, and this change in the site of working has had a considerable impact upon the processes, outcomes and subjects of my work.[53] Since taking residency in the new Art House studio complex in West Croydon I have been developing a body of work that explores the continually changing qualities of the adjacent

[53] My current practice filming models has been developed in my studio – discussed in Chapter 4.

factory wall, and the condition and experience of dwelling and working in a space dominated by such a view. The windows on two sides, admitting the direct sunlight required for much of my work, and affording views of surrounding factory walls, were the primary reason for selecting this specific room. On first sight of this space and the views framed by its windows I knew that it would become a site for new work – I filmed the room, its windows and their view throughout the first week of occupation, starting on the day I took possession of the studio,[54] and then intermittently ever since.

2.5.1 Factory Wall Timescales [1]

Figure 2-9: Submission for the 40° Celsius exhibition

The first part of this ongoing project emerged from a call for work for *40° Celsius*, an inaugural exhibition in November 2018 to mark the opening of the Art House studio

[54] This was also the first day that tenants of the studio complex could move in, so marked the commencement of occupation of the ASC Art House complex.

complex. The image above – a production photograph and still from footage shot on my seventh day in the studio – formed my submission for the exhibition. Once my piece had been accepted[55] I recommenced filming to supplement the footage I already had taken and began to consider how the growing collection of footage could coalesce into a work for display. The opportunity to use analogue cathode ray tube (CRT) box monitors (provided by the studio company) generated the impetus to reconsider what had originally been conceived of as a "film"[56] as a spatial "screen-reliant installation" (Mondloch, 2010: 2) instead. This provided a fruitful expansion of the project, to include the nature of the "screen", and its relationship to its analogical, architectural precursor – the window (Friedberg, 2006) – as a core aspect of the work:

> Media scholars Anne Friedberg and Lev Manovich … emphasize our cultural tendency to view flat pictorial surfaces from canvases to computer screens as 'windows onto other worlds' and note how the Renaissance model of perspectival illusionism (outlined in Alberti's 1435 treatise "Della Pittura") has conditioned Western perceptions of spaces on flat surfaces ever since. (Mondloch, 2010: 63)

From an early proposal to disperse the monitors throughout the various spaces of the exhibition, whose connection into any form of coherent whole would entail the journeying of the viewer though these spaces, the final piece occupied the whole of one of the unoccupied studios, an inner room whose windows looked out onto the gantry walkway. My initial response to the objects of the variously sized screens was one of nostalgia – their substantial physical and material presence embodied their history of use in gallery-based video-art installations. As Friedberg identified, at the end of the 1960s "video entered the art world as a sculptural, time-based extension of painting […and] gallery-based 'installation' assumed a different configuration of spectator and screen" (Friedberg, 2006: 214), bringing with it the elevation of the everyday object of the television to the status of artwork, and "the use of the television set itself as sculptural object" (Morse, 1990: 161). Art historian Kate Mondloch notes that "screen-reliant installations, in contrast to mainstream narrative cinema, privilege the material apparatus: the viewer's experience with these works foregrounds not only the space between the viewer and screen, but also the space of the (usually overlooked) technological media object itself" (Mondloch, 2010: 64). However, Rosalind Krauss, writing just prior to the large-scale emergence of *digital* video, had already explained that unlike other sculptural and installation work, the issue of medium in these screen, and later video projection technologies, meant that "even if video had a distinct technical support – its own apparatus, so to speak … it proclaimed the end of medium-specificity … we inhabit a post-medium condition" (Krauss, 2000: 31-32). With

[55] Tabish Khan, art critic and visual arts editor for *The Londonist*, had selected the works for inclusion in the *40° Celsius* exhibition.
[56] At this point there was no "film" as such, just a series of pieces of footage, one of which held the single frame that had been selected for exhibition.

the advent of new digital technologies of moving imagery which are completely independent of a base substrate medium, with no primary, inherent technology for display, the necessity to turn binary code into light for receipt by the eye of the viewer, requires the consideration of how it is most appropriate to perform the materialisation of the image for display.

Figure 2-10: "Factory Wall Timescales" – installation view

The sculptural and evocative box monitors were the main spatial structuring device for the installation, and were placed in a simple arrangement on the floor of the room, orthogonally aligning to the walls of the room and to each other, their media players[57] housed in basic black card boxes, mimicking the predominately black boxes of the

[57] The digital to analogue conversion was effortlessly handled by the media players with their supplied digital to analogue RCA cables.

screens themselves, with the cable covers managing the power leads forming strong black lines across the studio floor. A cluster of three screens demarcated a centralised viewing zone, but the floor mounted position[58] took them out from an easy viewing height for the viewer, and instead suggested a direct conversation taking place between the three screens. It also connected their evident weight to the concrete floor that supported them, and without a base (other than the floor of the room itself) the "non-art" object of the screens were not raised to the level of artwork – sitting on the floor these technological artefacts of display were located within the space of the room, and were not provided the opportunity to "stand apart [… and] create an aura of distance and dignity around the favored object" (Burnham, 1967: 47). A fourth floor-located monitor faced outwards, turning its back to the room, exposing its technical apparatus, and presenting its face to the walkway beyond the room's windows. As Mondloch identifies, "whereas cinema viewers are conventionally expected to disregard actual space and time for the duration of the film, [… screen-reliant installations] insistently push their viewers to be mindful of the material exhibition space (as experienced in "real" time)" (Mondloch, 2010: 64).

The only plinth in the installation was placed immediately inside the door, holding the smallest monitor (deeper than the screen was wide), upon which a digital video projector was perched – the elevated display of this timeline of video-art "screen" technology greeted the viewer upon their entrance to the room. The use of digital projection in addition to the box monitors referenced practices that emerged in the 1990s (Kotz, 2008: 101-02) with the increasing accessibility of video projection technology[59], but also provided a counterpoint to the material presence of the monitors – with no monitor there was "only the visitor's body and perceptual system in relation to an image projection system, an interrelationship embodied in ghostly images, nothing but light" (Morse, 1990: 162). Art historian and critic Liz Kotz sees video projection as "freeing video from its historical containment in the monitor or TV set … monitors are awkward, badly designed, and a constant reminder of the medium's links to broadcast television, domestic furniture, and all the degraded industrial uses of video technology" (Kotz, 2008: 101). However, art historian Helen Westgeest leavens Kotz's interpretation of the limitations of the monitor, identifying that "the cubical television set inspired some video artists not only to use these boxes to create video sculptures or furniture but to use these spatial objects as architectural building blocks" (Westgeest, 2015: 89). I would assert that the significant evolution of the domestic television set[60], and the now ubiquitous use of digital projection

[58] The initial reason for placing the monitors directly the floor was a lack of plinths.
[59] Video projection had been available several decades earlier and had already been used by artists such as Keith Sonnier and Peter Campus in the 1970s, but in the 1990s "the technical improvements that have led directly to the development of low-cost, high-resolution and ultra-bright video and data projectors have contributed to a revolution in the presentation of video in the gallery and elsewhere" (Meigh-Andrews, 2006: 303-09).
[60] Television technology is now increasingly dematerialised, including the use of "home cinema" projectors. The projector used for this installation was one marketed as part of a home

in the art gallery, these bulky, industrial screens evoke a nostalgia for past gallery practice. In addition to the physical size and weight of the monitor, the low resolution, grainy, sometimes flickering small image, along with the quality of the light emitting from its internally projected image, gives a screen quality and size palpably different to a contemporary projected screen. A space with both a contemporary digitally projected screen and the antiquated monitors emphasises the nature of the screens as artefacts (however material or dematerialised they might be) which each hold fragments of moving imagery.

Figure 2-11: "Factory Wall Timescales" – real-time clip projected onto wall
https://vimeo.com/314968224

While four of the five box monitors displayed time-lapse footage, the large wall projection showed the real-time clip whose still had been submitted for exhibition selection. This had been filmed when I had a visitor to the studio and recorded the play of sunlight on the factory wall after it had passed diagonally though the windows of my corner studio.

Figure 2-12: "Factory Wall Timescales" – children playing with projection

entertainment system, and so is itself a replacement for a physical domestic television.

These projected rhomboids of light held the shadows of our bodies as we moved within the room of the studio[61], creating an impromptu ready-made film upon the factory wall (Lewis and Mulvey, 2014), and with minimal editing[62] this "film" of projected light was then re-projected onto the gallery wall. Kotz highlights that in a video installation using projected screens the mobile viewer may occupy the space through which the rays of light, like rays of projective geometry, travel, and in doing so "viewers' bodies may temporarily block the projected images, throwing shadows onto the wall" (Kotz, 2008: 104). During the private view of the exhibition, children performed an impromptu demonstration of this potential for an additional layer of shadow play by deliberately casting shadows of their hands transformed into animal shapes in the light of the projector, overlaying these with the shadows within the footage.

Figure 2-13: "Factory Wall Timescales" – time-lapse clips with studio action
https://vimeo.com/314966334 *https://vimeo.com/314967896*

Figure 2-14: "Factory Wall Timescales" – time-lapse clips shot from window
https://vimeo.com/315051920 *https://vimeo.com/314966618*

The nature of projection required the immaterial, projected screen to be positioned in the darker end of the room, while the monitors could be spread out in the room and present themselves as objects for display in the "shopfront" windows of the studio/gallery. The time-lapse clips on four of the monitors showed imagery from within my studio (just down the corridor from the room of display), including overlaid "ghosts" of me surveying the studio and beginning to install furniture – in these the studio windows become frames onto

[61] As we became aware of our shadows projected in this way, I started recording, and we each "performed" movements, some deliberate, some the informal gestures of conversation.
[62] Shot in real-time, the clip retained this 1:1 speed when our shadows were visible in the windows, and increased speed and inverted its colours in the "unpopulated" sections of the footage.

the moving projection of light on the factory wall beyond, where the shadows of the building in which the studio is located animate this dilapidated facade. Other clips were shot directly against the window panes, cutting the frame and the interior space of the studio out of the shot, providing an unobstructed view of the factory wall at a range of different scales – in these the heavy material frame of the box monitor becomes a form of substitute window frame for the view of the factory wall. As with Bruce Nauman's *Wall Floor Positions* (1968),[63] the screen of the solid box monitor becomes a type of window into the volume of the box itself, shrinking the "real" views though the studio windows down to small worlds inside the monitors. Each of these "films" had a simple title which identified when the footage had been taken. The fifth monitor showed live-streamed footage from my studio window, linking the various timescales on the small and large screens with real-time. The films on each screen were different lengths, providing the viewer with a continually changing spatial montage of imagery, whose active constructive role would piece together a reading from these fragments:

> Video installation, however, remains a form that unfolds in time – the time a visitor requires to complete a trajectory inspecting objects and monitors, the time a video track or a poetic juxtaposition of tracks requires to play out, or the time for a track to wander across a field of monitors, and, one might add, the time for reflection in the subject her- or himself, that is, for the experience of a transformation to occur. (Morse, 1990: 166)

Figure 2-15: "Factory Wall Timescales" – installation view

The use of screens in this work is a direct reference to the primary subject within the imagery on those screens – that of the architectural element of the window, the device for framing a view, and for separation of interior to exterior – and "the screen's material configurations actively define its relationship to its site and to subjects" (Mondloch, 2010: 4).

[63] In *Wall Floor Positions* (1968) "Nauman not only positions his legs and arms in various ways on the floor and toward the wall to investigate the environment of his body, but through limiting his movements to the frame of the video camera he seems to investigate the inner space of the television cube, while the wall in the back becomes the rear wall of the cube … Nauman perhaps rather looks like a small moving sculpture locked up in a box, forced to adapt his body's positions to the inner size of the cube." (Westgeest, 2015: 86-87)

> In a curious amalgamation of gallery-based spatial experimentation and political aesthetics, this model of spectatorship proposes that viewers be both "here" (embodied subjects in the material exhibition space) and "there" (observers looking onto screen spaces) in the here and now. In so doing, this new double spatial dynamic, staged as a bodily encounter in real time, radically reinterprets the conventional ways that technological screen interfaces have been described and experienced. (Mondloch, 2010: 62)

Representations of time, as well as space, are at the core of this work. Various timeframes and scales are embodied in the mode of presentation – the analogue box monitors, themselves artefacts of a now historical mode of moving image presentation, evoke a past tense though their physical qualities and the imagery displayed on their low resolution cathode ray tube screens; the contemporary digital projector turned a wall into a large material-less screen displaying real-time pre-recorded footage; the live stream, continually inhabiting the present, and despite the physical proximity of gallery to studio, first travelled in a material-less form to the internet before coming back down to inhabit the mass of the monitor. The visitor, through their perceptual agency and bodily inhabitation (Mondloch, 2010: 20-39) constructs an *analogical* version of the view of the factory wall as experienced from dwelling in my studio, navigating between the screens, the different time frames and time scales. This spatial construction provides a kinaesthetic form of viewer engagement through "a kind of learning not with the mind alone, but with the body itself… to explore physically more than one tense – reference to the past and future can coexist with the present" (Morse, 1990: 158, 159). In my own performance as artist installing the work (Morse, 1990: 154), I repeatedly travelled backward and forward from studio to gallery, transporting equipment and tools, moving between the real space of the studio and its view of the factory wall, to the re-constructed (similar, but different) version of that view within the room of the gallery. If the installation was itself situated in the present, I am now located in its future, inhabiting the studio still, seeing that view continue to change, and continuing to record it over days, weeks, and months.

2.5.2 *Factory Wall Timescales [2]* and *[3]*

> You do have to compose differently for individual visitors coming and going in their own time, than you do for an audience that you know is going to assemble at one moment to watch your piece all the way through. It's a completely different process from the point of view of making. (Anthony McCall in Turvey et al., 2003: 90)

Several versions of a short film formed the next stage for this project, which attempted to produce a filmic montage of the timescales that had been presented as a spatial montage in the exhibition.[64] The architectural elements structuring the elevation of the factory wall

[64] These edits used two of the pieces of footage shown in the *40° Celsius* installation, and others that had been shot in the week leading up to the exhibition.

became more definitive structuring elements within these films. The footage frequently established a central horizontal axis around the historic threshold of interior to exterior of a building now absent from the site of the studio complex – the white painted bricks marking what was once an interior wall. In some clips one or other of the two trees in the studio complex's small garden also served to form a central vertical axis. These axes became the primary structuring device of *Factory Wall Timescales [2], a* split screen film (completed in March 2019), at times juxtaposing different timeframes, timescales, and spatial scales. The film uses the early morning emergence of the back-lit window into the working factory space as its point of departure – the mullions and transoms dividing the illuminated window panes and the factory's industrial staircase forming a diagonal back-projected silhouette on the window's rectangles of light are the defining feature of the otherwise dark wall at the start and end of each day. The day's emerging light eventually reveals the wider context for the window, whose backlighting subsequently fades. Other sections of footage from the depth of night expose a life of the wall not previously registered – lit only by the oblique light of the adjacent carpark, the wall loses its colour, the trees become silhouetted, and their shadows project counter to their day-time sunlight's orientation. The grainy, low-light footage also reveals a nocturnal inhabitation of the vertical wall surface as an indistinct shadow scurries over the white background.

Figure 2-16: "Factory Wall Timescales [2]" (2019) https://vimeo.com/327605144

The "shadow performance" real-time clip that had been projected onto the gallery wall for the installation was used as a defining point in the film, placing myself, as the inhabitant of the studio, into the frame. My silhouette walks into the window of light, and appears to ponder the view beyond, looking towards the time-lapse shadow of the studio building upon the factory wall as clouds pass rapidly overhead, while the eerie nocturnal world lies adjacent. As these other spaces fade into the darkness of night, my shadow departs the

frame. The film uses as a coda a time-lapse sequence of the factory wall recorded over a period of 80 days, while I was in Australia for Christmas, away from my studio. Compressed to one minute, the footage flickers through the days, each passing in less than a second, flashes of sunlight, raindrops, and the light in the factory window marking the passage of time. The camera records the view in my absence, bearing witness to the view of the wall, taking my place as the dweller of the studio.

Factory Wall Timescales [3] (completed in July 2019), is a shorter version of this film[65] and uses the split screen technique more intensely, moving from a full frame, to half and quarter frame, juxtaposing three and then four views. This strategy undermines the extended duration of the clips, encouraging the viewer to look between the offered views, piecing together a version of the space of the wall from the disparate fragments. The split screen in both edits undertakes a task similar to that of the individual monitors in the *40° Celsius* installation, fragmenting the image in space, as well as in time. It requires the viewer to choose what to look at, at any one time, to control their own focus, and ultimately their own construction of the work, and their sense of the space that was filmed.

Figure 2-17: "Factory Wall Timescales [3]" (2019) https://vimeo.com/345513236

The project to make work which explores the factory wall, its ever-changing character, and its impact upon and relationship to the space of the studio, and the actions undertaken within that space, is ongoing. Part of this project is being explored though the filming of a model of the studio space, as discussed in Chapter 4.

[65] Made to comply with the 5-minute time limit of a particular film festival.

2.6 Conclusion

This chapter established a parallel in the acts of perceptual construction that are performed by an active viewer and reader in structural film and architecture's mediating artefacts respectively. It considered how architectural representation and artists' film might each operate through analogical relationships between drawing/building, and filmic/pro-filmic' and it also identified the processes of projective geometry in architectural representation, and their relationship to projection in avant-garde filmmaking and "screen-reliant installation art" (Mondloch, 2010: xii). Using these transdisciplinary understandings, this chapter has presented two ways of practising architectural moving drawing, through processes of *reading* and *making*.

The groundwork for the hybrid reading of *Wavelength* was established via the identification of the similarities in reading both architectural representation and structural film, and the constructive operations fundamental to both. The mode of reading a work of artists' film as if it were an architectural drawing offers a way to explore the original work with a new disciplinary perspective.[66] I believe that it is my transdisciplinary position, grounded in both artists' film and architecture, that allowed me to undertake this analysis of the film, to understand, at a fundamental level, how to read a structural film, but also how to allow the techniques of the film to afford a reading of the architectural content of the imagery. By doing so it reveals how the filmic strategies employed in that work perhaps uniquely enable a spatiotemporal communication that is more elusive in traditional techniques of architectural representation. As such, these techniques of transdisciplinary *reading* have in part informed my own developing techniques of transdisciplinary *making*. In particular, an understanding of the significant role of the row of windows in *Wavelength* – their act of separating and connecting interior to exterior, and their function as screens with the images of the world beyond flattened onto their surfaces – has influenced my repeated use of the architectural element of the window in the works discussed in this and other chapters.

The next chapter will present further examples of this dual action of reading and making via the methods of architectural moving drawing, to undertake an analysis of another structural film precedent, and present my own related work, both of which continue the connection to the architectural element of the window.

[66] The value in this was confirmed in the unsolicited feedback I received from Michael Snow when communicating with him for permission to use images from *Wavelength* for a recent book chapter. I sent him the essay, which is largely as presented earlier in this chapter, and in addition to allowing the use of the images, he commented that "Your text is one of the very best examinations of 'Wavelength' that has been written. As you obviously know, a lot has been written about the film but the 'architectural' aspect has never before been so well treated. Thank you." (Snow, 2017).

Chapter 3

Light Matter

3.1 Introduction

> [Walter] Benjamin's interest in the workings of a habitual distracted look … offers a range of possibilities for understanding a certain dimension of bodily encounter and/or experience which is related to the simple inhabitation of urban space. In so doing, it works to highlight the complex and vital inter subjectivity of these encounters; … fleeting, ephemeral moments and the accretions of habit. To think about Benjamin's distracted habitual look also counsels the respect of a certain ordinariness (Latham, 1999: 470).

> With the 'optical unconscious,' Benjamin readmits dimensions of temporality and historicity into his vision of the cinema… The material fissure between a consciously and an "unconsciously permeated space" opens up a temporal gap for the viewer, a disjunction that may trigger recollection, and with it promises of reciprocity and intersubjectivity. (Hansen, 1987: 217)

The previous chapter identified correspondences in theories of the active viewer of both structural film and architectural representation and used this and other *disciplinary* understandings of the respective fields to establish a mode of architectural moving drawing in a *transdisciplinary* practice of reading a moving-image artefact. Notions of analogy in the relationships between drawing and building, and the filmic and profilmic, were explored in this process of *reading* and extended into related processes of *making*.

This chapter extends that work and further develops ideas introduced in Chapter 2 around viewer "boredom", drawing in Walter Benjamin's discussion of distraction, tactility and the optical unconscious in film and architecture, and exploring the relationship of spatial dwelling to filmic techniques of extended duration. Taking sunlight as an active agent, with an inherent temporality and profound affect upon how we experience and understand space, this chapter explores its role in establishing an analogical relationship between filmic and spatial experience through the transdisciplinary reading of John Smith's early film, *Leading Light* (1975), and the transdisciplinary making (and reading) of my own film *Sunhouse Elevation/Sunhouse Azimuth* (2013).

3.2 Benjamin's distraction

Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction* has been highly influential for film (Hansen, 1987: 179) and architectural theorists respectively. However, in the latter's appropriation of Benjamin's relation of distraction and tactility to architectural experience the factor of the "mass audience" in Benjamin's argument is frequently overlooked. In the movement of the work of art away from the unique original Benjamin looked to the spatial mode in which one such new art form – cinema – was viewed. In trying to understand the cinematic audience's relationship to the new media of

film, Benjamin considered the difference in scale of cinema's audience as compared to that within the art gallery, and sought to explain the new relationship using one that has endured for millennia – that of the artwork of an architectural edifice.

> Distraction and concentration [*Zerstreuung und Sammlung*] form an antithesis, which may be formulated as follows. A person who concentrates before a work of art is absorbed by it; he enters into the work, just as, according to legend, a Chinese painter entered his completed painting while beholding it. By contrast, the distracted masses absorb the work of art into themselves. This is most obvious with regard to buildings. Architecture has always offered the prototype of an artwork that is received in a state of distraction and through the collective. (Benjamin, 2006: 268) [67]

Benjamin's use of architecture for this analogy with film was predicated on the understanding that architecture was the only form of art prior to the advent of mechanical or technological reproduction that could be experienced by a collective audience[68] – as architect and theorist Stan Allen noted: "architecture's historical condition of reception in a state of distraction anticipates the collective apperception of works of art after mechanical reproduction" (Allen, 1995: 48). As Benjamin was seeking to explain the relationship of a mass audience, rather than a singular viewer or inhabitant to an artwork his notion of distraction is initially predicated on such a collective viewing condition. Described as a "matrix", Benjamin suggested an interconnected, linked nature to the structure and behaviour of this collectivity, where "the reactions of individuals, which together make up the massive reaction of the audience, determined by the imminent concentration of reactions into a mass. No sooner are these reactions manifest than they regulate one another" (Benjamin, 2006: 264). Philosopher Andrew Benjamin identified this matrix as a "network", and asserted that "the mass is not reducible to the sum total of the individuals who comprise it … [rather,] the mass individual … is both dispersed across, though also articulated within, this matrix" (Benjamin, 2005: 163). For Walter Benjamin, it was this matrix, or network of the mass individual which collectively, through their interconnected nature, *absorbed* the cinematic work of art, as the same collectivity *absorbed* architecture through their distracted occupation. The singular viewer is able to have "concentrated attention", before an *original* and singular work of art, such as a painting or "a famous

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[67] This seminal text, whose original German tile is "Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit" is also referred to in its English translations as "The Work of Art in the Epoch of its Technical Reproducibility" and "The Work of Art in the Age of its Technological Reproducibility". Benjamin published three versions of the text – see Caygill (1998: 94), and there are several English translations – unless otherwise noted, I will be referring to Michael Jennings's translation of the third version of Benjamin's essay, published under the title *The Work of Art in the Age of its Technological Reproducibility* (Benjamin, 2006). This translation attempts to use un-gendered language, and I consider it to have greater clarity than the Harry Zohn translation (as published in *Illuminations* (Benjamin, 1992)), but which is more often cited in the work of architectural theorists. In order to avoid confusion between the several translation of the essay's title, I will use Miriam Hansen's tactic of referring to it as the "Artwork Essay" (Hansen, 1987).

[68] Benjamin does also identify the "epic poem" (Benjamin, 2006: 264) as being the other historic form which has a mass audience.

building" (Benjamin, 2006: 268), and thus be *absorbed by*, *entering into*, the art artefact. According to Benjamin, only the *individual* can perform the necessary *concentration* to *be absorbed* in such a way, whereas the viewer/inhabitant as part of a collective, mass audience can only consume,[69] and so *absorb* the artefact of their (distracted) attention.

However, the model of cinema that Benjamin's argument applies to is not necessarily that found in artists film, particularly structural film.

> "Let us compare the screen [*Leinwand*] on which a film unfolds with the canvas [*Leinwand*] of a painting. The painting invites the viewer to contemplation; before it, he can give himself up to his train of associations. Before a film image, he cannot do so. No sooner has he seen it than it has already changed. It cannot be fixed on… the train of associations in the person contemplating these images is immediately interrupted by new images." (Benjamin, 2006: 267)

The extended duration, and with it the time to contemplate, used in structural film supports a viewer relationship closer to that of more traditional art forms. A viewer of structural film, and likely most artists' film, also understands that they are viewing an artwork, and not narrative cinema – whether the viewing experience is singular or collective, as a work of art such film "demands concentration from the spectator" (Benjamin, 2006: 268). Yet, the aim of the structural film is not to *absorb* the viewer (in the way Benjamin suggests a work of art does), but rather that their *concentration* leads to an understanding of the act of viewing and the time/space of that process. In this, being "distracted" by one's viewing environment – a by-product of extended duration – is still a form of attention, but one which is "simultaneously directed and dispersed" (Allen, 1995: 48).

While Benjamin noted that architecture has always offered the possibility for a "simultaneous collective reception" (Benjamin, 2006: 264), this mass audience for the built environment is only one mode of human experience of architecture, and is more limited to the scales of architecture in which it is physically possible for a multitude of people to collectively, simultaneously inhabit. The collective mass inhabits the city[70] and the interiors of large civic, institutional and cultural buildings, but spatial experience is a continuum

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[69] In Zohn's translation of Benjamin's Artwork Essay the architecture and distraction quote introduces this idea of "consumption" – "Architecture has always represented the prototype of a work of art the reception of which is *consummated* by a collectivity in a state of distraction" (Benjamin, 1992: 232, my emphasis). In Jennings's translation consumption is less explicit "Architecture has always offered the prototype of an artwork that is received in a state of distraction and through the collective" (Benjamin, 2006: 268). Film and architecture theorist Giuliana Bruno takes Zohn's "consummated" as the starting point for a discussion of film "consuming space" (Bruno, 1997: 20). In this Bruno also omits Benjamin's focus on the "collectivity" or mass audience that is doing the consuming and sees the consumption of space as being by an individual user of that space, rather than the collective.

[70] Benjamin's concept of the distracted mass occupying/experiencing architecture is used by architectural theorists discussing the urban realm. Architectural theorist Charles Rice (2007) and urban geographer Alan Latham (1999) each explore Benjamin's work on distraction with a focus on the urban environment, and in relation to the experience and navigation of the contemporary city.

from that of the mass collective through to that of a singular individual. In the inhabitant's experience of smaller interiors, suburban space, rural and natural spaces the behaviour of a collective audience becomes less relevant.

Although Benjamin insisted that the experience of the mass audience (of film and architecture) could *only* be a distracted one, when he moved on to connect the idea of distraction with that of *tactile* experience, and the role of *habit* in the human interaction with architecture, the notion of distraction goes beyond that as something only experienced by the collective audience. In introducing habit, what Benjamin described could be either an individual or collective experience of architecture. Habits of spatial use are formed through an interaction of agents – the individual person and the physical environment in which they dwell are but two. Other people, and other social, cultural, political, financial, etc. factors contribute to the formation, performance, and evolution of habit. The scale and function of space in which an occupant's habits of use are formed impacts upon the scale of the collective mass who may use that space and hence, through their inevitable network of interactions, impact those habits. At this point the individual experience emerges (while not excluding the possibility for that individual being part of a collective), and Benjamin's "distraction" moves from the necessarily distracting state of a mass grouping, to the individual's relationship with their architectural surroundings.

> Buildings are received in a twofold manner: by use and by perception. Or better: tactilely and optically. Such reception cannot be understood in terms of the concentrated attention of a traveller before a famous building. On the tactile side there is no counterpart to what contemplation is on the optical side. Tactile reception comes about not so much by way of attention as by way of habit. The latter largely determines even the optical reception of architecture, which spontaneously takes the form of casual noticing, rather than attentive observation. As regards architecture, habit determines to a large extent even optical reception. Under certain circumstances, this form of reception shaped by architecture acquires canonical value. For the tasks which face the human apparatus of perception at historical turning points cannot be performed solely by optical means – that is, by way of contemplation. They are mastered gradually – taking their cue from tactile reception – through habit. (Benjamin, 2006: 268)

Touch is initially set up in opposition to sight, a version of the distraction/concentration binary – habit is then shown to inform both tactile *and* visual reception. Benjamin asserted that concentration is limited to the optical, and while visual experience can be distracted or contemplative, there is no equivalent of "attentive observation/rapt attention" in tactile experience. Experience formed through habit, through "incidental" (Benjamin, 1992: 233) or "casual" noticing, is another form of distracted experience, of "reception in distraction" (Benjamin, 2006: 269), and can exist either within or without the mass collective.

The interpretations of Benjamin's notion of distraction and tactile optical reception, which emphasises dwelling, habit, and the everyday, are pertinent to practices of reading and making in architectural moving drawing. The following discussion of John Smith's *Leading Light* (1975) and my own *Sunhouse Elevation/Sunhouse Azimuth* (2013) takes Benjamin's concepts of distraction, along with architect and theorist Juhani Pallasmaa's related concept of peripheral vision, and their shared optical tactility, and considers their implications for the relationship between extended periods of dwelling and viewing, in the making and reading practices of architectural moving drawing. I will also discuss how the films both manifest examples what Benjamin described as the "optical unconscious" (Benjamin, 2006: 266) to demonstrate how everyday, background conditions can be explored using time-based practices. Through these case studies, the notions of analogy presented in Chapter 2 will be further developed in relation to how such distracted, peripheral, and tactile spatial experience may find an analogical condition through the reading of a time-based artefact.

3.3 *Leading Light* and *Sunhouse Elevation/Sunhouse Azimuth*

> Architecture is the masterly, correct and magnificent play of masses brought together in light. Our eyes are made to see forms in light; light and shade reveal these forms (Le Corbusier, 1986: 29)

In 1975 British artist filmmaker John Smith made a film of his student attic bedsit. Nearly forty years later I made a film of my own South London Victorian terraced house. Both Smith's *Leading Light* and my own film *Sunhouse Elevation/Sunhouse Azimuth* are constructed out of footage of the movement of sunlight in the artists' homes, the places in which they (we) dwelt.[71]

3.3.1 Leading Light

> Leading *Light* is a 'document' of Smith's immediate world, sieved through the structuring devices of location, time and light. It is a study of light as it moves through a lived-in attic room over the course of a day (O'Pray, 2005).

John Smith's structural film *Leading Light* (1975) is an artwork (made by an artist) with an explicit architectural subject. Smith's film is a simple and beautiful study of the power of light in the defining of material and spatial qualities. This architectural subject formed the provocation for making the film and provided its form – light plays a leading role in this structural film – (immaterial) light is the primary device through which all spatial qualities are made manifest, it is the film's main subject, and it is a fundamental tectonic component of both the space depicted and the film artefact.

[71] This section has been published largely as presented here as a chapter in the recent *Architecture Filmmaking* book (Suess, 2020). *Leading Light* stills © John Smith, 1975.

Figure 3-1: "Leading Light" stills

Leading Light starts with a shot of a corner of a window. The window is established as the source of light, of sunlight in particular. Smith explained: "Over this period the light fell upon the various objects present in the room – hence the sun, through its movement, dictated roughly what was recorded onto the film" (Smith, 1978: 81). The separate rectangular panes of the window are apparent in the shape of the sunlight, two projected parallelograms, deforming as they dwell on the various three-dimensional surfaces of the room and its furniture. The bright sunlight contrasts with the surrounding dimly lit room. The room is defined by the objects and surfaces within it, revealed by the sliding sunlight, while all else recedes into the shadows. Juhani Pallasmaa asserted that such "deep shadows and darkness are essential, because they dim the sharpness of vision, make depth and distance ambiguous, and invite unconscious peripheral vision and tactile fantasy" (Pallasmaa, 2012: 50). As clouds pass across the sun the quality of light varies, sharp shadows become soft edged, the high contrast temporarily diminishes, giving a glimpse of the wider space of the room. Shadows flicker as trees outside come between the sun and the windows. Sunlight is reflected from the perspex top of the record player, creating another projection of light onto the wall – for this moment, the previously silent film acquires sound, folk music accompanying the shadows of the dancing trees. A ghostly, indistinct figure, the only human to inhabit this room, puts a record onto the turntable. Sunlight activates the materials it touches – the hard, curved, painted forms of the chess pieces shine, their colours bright; the carpet acquires a rich texture, the armchair's upholstery a deep hue; the plastic cover of the record player and the glass of the jar of dried flowers obtain fluidity as they respectively reflect and refract light on to the white walls. Oblique evening light reveals the grain of the wood-chip wallpaper, golden light tinting the paper a warm shade, shadows of the flowers patterning it. The everydayness of the room, the space in which one would dwell (in which the filmmaker did dwell), emerges though these moments of light interacting with surface, of an embodied sensuousness (Taussig, 1992: 141). Through their agency, these activated objects

engage the viewer in a form of dialogue, returning the gaze (Latham, 1999: 466), the viewers “senses … bound to their object” (Taussig, 1992: 142).

Once the sun has finished its journey around the room its low golden light fades to blackness. A series of camera shots looking back to the window retraces the sun’s diurnal journey across the sky, its brightness forming lens flares in the camera’s mechanical eye. Upon the setting of the sun a central bare light bulb replaces the diminishing natural light, initiating a simple horizontal camera pan around the room, a movement which is mechanistic, and, like the light, artificial. The even illumination reveals the whole of the room understood previously only in fragments. The space feels dramatically reduced in size – a formerly mysterious room filled with rich textures, forms, and colours has become ordinary, the simple difference in lighting source initiating a fundamental transformation in how the room is formed in the mind of the film’s viewer.

3.3.2 *Sunhouse Elevation/Sunhouse Azimuth*

In 2013 I completed a film titled *Sunhouse Elevation/Sunhouse Azimuth*, which was edited from a series of clips I had filmed of sunlight as it moved through my home. I was not aware of *Leading Light* when I began collecting footage for *Sunhouse*, but by the editing stage I had seen Smith’s film and had produced an early form of the analysis of *Leading Light* presented here. Within this precedent study I had made the connection to Benjamin’s distraction, and Pallasmaa’s peripheral vision, and their shared optical tactility, and these ideas informed the process of editing the *Sunhouse* films. Smith and I started from the same point – noticing something, a quality, that was inherently temporal, in the spaces in which we lived, and a desire to record and explore this quality through film. From that point our processes and intentions diverged. While Smith found the sunlight “beautiful” (Smith, 1978: 81), as an experimental, and at the time, structural, filmmaker, he also saw the structure of a film in the passage of sunlight. His piece is predominantly about film, its structure and material, rather than the qualities of that which is being filmed. However, my interest in Smith’s film was *primarily* regarding its architectural content, how space is read through the viewing of the film, and *secondarily* how this informs the film’s structure. While *Leading Light* was a precedent for the subject and structure of my film, *Sunhouse* goes beyond Smith’s piece by moving from a single room to a whole house.

Sunhouse Elevation/Sunhouse Azimuth is in fact not one but a pair of films, collectively constituting a single work dealing with the progress of the sun through the rooms of my home. I would also categorise this work as an architectural moving drawing – it communicates the interaction of spatial, material, and temporal qualities of light within a specific building, and was made with this intention. The process of making this work started from a fascination with the quality of sunlight as it moved though, and so changed, the spaces in my home. In this domestic space the sun was a co-occupier of the house –

we dwelt in the rooms, each interacting with the space, and with each other. In the film the human inhabitants of the house are absent, although our bodies are implied by the furniture, and my body is implied as the presence of the filmmaker/cinematographer behind the camera. Vivian Sobchack discusses the “embodiment relationship” (1992: 181) between the machines of camera and projector, with the respective lived-bodies of filmmaker and viewer. She suggests that these machines constitute components of what she terms the “film’s body”, and that this “body” inhabits the filmed space. Therefore, my body, as filmmaker, and the viewer’s body are also present in that space.

The shooting of the footage was a responsive process of observing and recording and is a fundamental stage of the work’s production. The footage was not shot on a single day, rather it was collected over a period of years (from March 2010 to May 2012), always in the months surrounding the vernal equinox, at the emergence of the sun from the long, dark, English winter. The process of filming became about collecting, hunting, these welcome moments of sunlight in rooms. I would record footage whenever I came across sunlight occupying a room and observed and anticipated how it interacted with each space, and how that interaction changed over time. In shooting the film’s footage, I used techniques of image composition from architectural photography and drawing. The camera shots were carefully framed, with attention paid to alignment of verticals and horizontals, and where possible the camera was positioned orthographically to the space. A range of scales were used, from the close-up or detail, to wider views – this strategy of scale is one derived not only from architectural drawing but also film. Scale is also used in relation to time as well as space – the clips used in the film are both time-lapse and real-time, each temporal scale exploring different qualities of the sunlight and its interaction with the space, to reveal something of the “optical unconscious” (Benjamin, 2006: 265-66) experience of the condition of dwelling in and through this “Sunhouse”.

At the commencement of the editing process, influenced by Smith’s structuring of *Leading Light*, I determined that the sun should dictate the tectonic form of the work. I wanted the film to follow the sun, as it did in Smith’s film, and in an attempt to sequence the footage I recorded the information about each clip in an excel spreadsheet.[72] When I then to tried to use this database to order the clips by the sun’s position in the sky I found that the order changed depending on whether it was sequenced by the sun’s angle of elevation above the horizon or the solar azimuth calculated from due North. This revelation of the changing relationship between solar elevation and solar azimuth as the days moved closer to the

[72] For the excel spreadsheet I found a macro which would provide the heliodon calculations. Based on the digital timestamp of the start time of the recording of each clip, and the speed of recording (either real-time or time-lapsed at 25 speed) the macro provided the solar elevation and azimuth for the start and end time of each clip. This solar data was then added to each piece of footage, so that it would appear in the final film, and so the precise clip order could be fine-tuned visually in the video editing software.

summer solstice[73] then impacted the form of the film, with the adoption of the structural film strategy of multi-projection (Le Grice, 1977: 142-43) – the overarching form of the work became a pair of parallel films,[74] edited from the same pieces of footage, rather than a single film.

The two different edits display the clips in a different order, each conforming to their own coherent structure following the sun's elevation and azimuth respectively. Each edit displays its changing values of either solar elevation or azimuth in the lower left-hand corner of each screen, marking the passage of time. This discrepancy in order, while the continuity of elevation and azimuth values is maintained, undermines the interpretation of either edit as a truthful recording of contiguous time sections, and serves to "deconstruct temporal as well as spatial continuity" (Mondloch, 2010: 50). Seen together, the two sequences encourage an action for the observer, who chooses which screen to view at any one moment, or possibly to watch both screens simultaneously – in discussing "*Time Code*, Mike Figgis's four-camera digital video project, [where] the screen is split into quadrants" Anne Friedberg asserts that "despite the assumption that even in multiple display one watches only one screen at a time, we actually watch all of the screens at the same time. Rather than demonstrate our split attention, the film demonstrates our ability to follow all four screens" (Friedberg, 2006: 217-18). This action, along with the viewer's linking of what they have already seen, to what they are now seeing (which may include a repeat of a clip, now on the adjacent screen), has parallels with the act of the viewer of a set of architectural drawings. This slippage in sequence of the two films reveals the variability of the relationship between space, time and light, dependent as they are, not only on time of day, but on time of year. The dual-screen format highlights the construction of the film as one of mediation, rather than simple re-presentation of an existing condition.

As the film progresses, sunlight moves through the house from east to west, the film following the sun's cardinal direction. The main body of the film concludes with the setting of the sun, its light golden, and elevation low, allowing penetration deep into the house. The final disappearance of the sunlight occurs in an *east*-facing room, a space which received morning light at the start of the film, the low sunlight now reflecting from the opposite house's west-facing windows. The return to this room re-orients the viewer, providing a reminder of where they, and the sunlight, started. As the sunlight slips away the values for solar elevation become negative, revealing the atmospheric refraction of

[73] This aspect of the sun's daily changing diurnal journey was not something that I was previously unaware of, especially as an architect! However, working with the footage in this way foregrounded this solar quality.

[74] Although the original intention was that the two films would be displayed via a dual projection, to facilitate their screening at film festivals, I produced a single edit which contained the two films side by side.

light from a sun that has already dropped below the horizon. *Sunhouse Elevation/ Sunhouse Azimuth* concludes with a coda, bringing together the fragments of space, time and light that preceded it. The spaces previously understood sequentially become simultaneous, and the sunlight occupies the whole house at once.

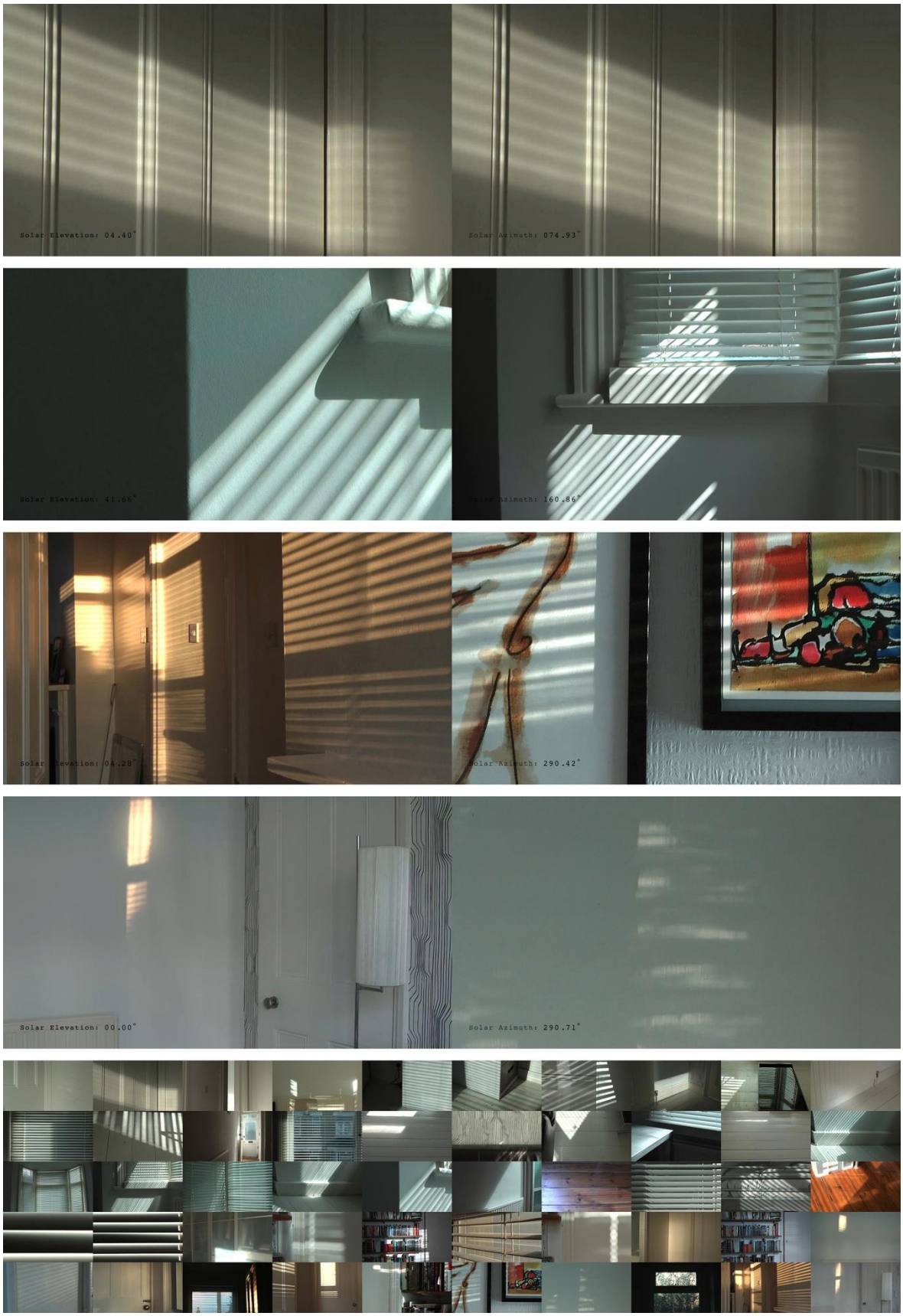

Figure 3-2: "Sunhouse Elevation/Sunhouse Azimuth" stills https://vimeo.com/72102037

Sunhouse Elevation/Sunhouse Azimuth was made with the intention of it being a form of architectural moving drawing, and it functioned as such in several specific ways. Through the procedure of making *Sunhouse* I undertook a process of architectural documentation and analysis, as Malcolm Le Grice (2001a: 164) noted in relation to his own filmmaking, "to work-things-out, or work-things-through by making films". The film started with the collection of footage, with the observation of a quality within my home that I wanted to explore further. Architectural design processes are frequently built upon a foundation of the products of "the business of observing" (Parry and Hopkins, 2019), undertaken through a range of "drawing" techniques. The film did not start with a pre-conceived idea, was not planned out using a storyboarding technique, but rather emerged from this initial process of observational "drawing", in order to be able to "see" things though an active combination of eye and drawing tool. The material gathered though filming was then analysed through the necessarily reflective process of editing, a process which, like architectural design, requires continual review and then action (Schön, 1984), through which the film was developed, and which generated new knowledge and understanding. As a piece of practice-based research, *Sunhouse* extends the comprehension of the mechanics of light and space, via a process of observation and analysis to reveal the quality and behaviour of sunlight in specific rooms and times. The film uses structure and form to explore some of the precise mechanics of the behaviour of the sun, and in doing so it serves as a form of elegant heliodon, offering a way in which, through film, "the artistic uses of photography are identical to its scientific uses" (Benjamin, 2006: 265). This form of *qualitative* analysis[75] undertaken through the making of the film allows the intangible qualities of light, space and experience to be expressed in the viewing of the work. It may communicate "the kind of glancing, slightly dematerialised quality that one does actually see in reality" (Hodgkin, 1984: 97). As artist filmmaker Mark Lewis notes, "the cinema already exists" in the world and all the camera has actually done "is to find itself, filming something that looks like a film" (Lewis and Mulvey, 2014).

3.3.3 Distraction, dwelling, and analogy

Writing more than 70 years after Benjamin introduced the notion of tactile vision, Juhani Pallasmaa makes a similar connection between visual and haptic experience: "Even the eye touches; the gaze implies an unconscious touch, bodily mimesis and identification… Our eyes stroke distant surfaces, contours and edges… We see the depth, the smoothness, the hardness of objects" (Pallasmaa, 2012: 63-64). As the moving sunlight alights upon the surface and forms of the rooms of both films the viewer's tactile vision evokes a haptic impression – the touch of light is not just about the visual, it is about the

[75] Contrasting with quantitative techniques which, while providing verifiable data on lux levels at different times of day and year, do not communicate or record the architectural qualities which result from the light itself.

textural and the formal. I assert that through the tactility of vision the sun's touch produces a haptic response in the viewer's body – the touch of the light is the touch of the eye, and of the skin. In both *Leading Light* and *Sunhouse Elevation/Sunhouse Azimuth*, I suggest that the viewer begins to "occupy" the space through an association with the shifting area of sunlight. The movement of sunlight through the otherwise unoccupied rooms becomes a substitute for the viewer's body.

> The very essence of lived experience is moulded by unconscious haptic imagery and unfocused peripheral vision. Focused vision confronts us with the world whereas peripheral vision envelops us in the flesh of the world… the quality of an architectural reality seems to depend fundamentally on peripheral vision, which enfolds the subject in the space… Peripheral vision integrates us with space, while focused vision pushes us out of the space making us mere spectators. (Pallasmaa, 2012: 14)

In *The Eyes of the Skin: Architecture and the Senses* Pallasmaa introduces the terms "focused" and "peripheral" vision, identifying their opposing relationships to spatial experience, and proposing that it is the latter which provides a greater spatial immersion (Pallasmaa, 2012: 16-19). Without explicit reference to Benjamin, Pallasmaa's "focused" and "peripheral" vision echoes Benjamin's opposing notions of "concentration" and "distraction" in viewers' engagement with works of art, architecture and film. I suggest that in *Leading Light* when the sunlight leaves the room so too does the viewer – the association with the sunlight is not replaced by an association with the artificial light. Instead, the even illumination of the artificial light focuses our vision, significantly diminishing the spatial experience, and in this "pushes us [the viewer] out of the space" (Pallasmaa, 2012: 14). The jarring nature of this spatial ejection serves to draw the viewer's attention to the film as constructed artefact, and to their perception of the attic room, as read through the preceding sunlit section of footage, as something similarly constructed. In *Sunhouse* (unlike *Leading Light)* the poetics of space touched by sunlight are never fractured by the introduction of artificial light, and a more expansive view of any space is denied. The gentle extrication of the viewer by the coda allows a fragment of the beauty of the sunlight to remain.

> there is surely plurality in everydayness. My everyday has a certain routine, doubtless, but it is also touched by a deal of unexpectedness … what sort of sense is constitutive of this everydayness? Surely this sense includes much that is not sense so much as sensuousness, an embodied and somewhat automatic "knowledge" that functions like peripheral vision, not studied contemplation, a knowledge that is imageric and sensate rather than ideational… "distraction" here refers to […an] apperceptive mode, the type of flitting and barely conscious peripheral vision perception … [with] a certain tactility growing out of distracted vision. (Taussig, 1992: 141, 143)

Anthropologist Michael Taussig also applies the term “peripheral vision” to his exploration of how Benjamin’s ideas of distraction and perception though habit relate to everydayness. I would assert that in both *Leading Light* and *Sunhouse Elevation/ Sunhouse Azimuth* following the sun around the room is a “distracted” move, based on the *habit* of dwelling. Architect and theorist Jonathan Hill specifically links Benjamin’s distraction to the extended duration of spatial dwelling – Hill’s observation of the simultaneity of an inhabitant’s actions relate to the body of the individual, the space that they occupy, and the space and world beyond (both the external environment to a room and the wider technological networks to which we are increasingly connected). In Hill’s interpretation of distraction within architectural experience the mass audience is replaced by the individual building inhabitant, or user.

> A building … is usually experienced over a long period of time… Therefore… architecture is experienced in a state of distraction. The attention of the user is seemingly focused on everything but the architecture… Distraction is not a state of unawareness but a particular type of awareness that enables a person to perform, at the same time, a series of complex activities that move in and out of focus from a conscious to an unconscious state. Habit, memory and experience are coupled with the sensual disembodiment of twentieth-century forms of communication to form a complex compound of spatial and temporal layers. Someone talks to you, caresses your back, while you listen to the phone, read the fax and peer out of the window. (Hill, 1998c: 144)

As Hill explains, the distraction of spatial experience is a quality of an experience over time, an experience formed from an accretion of subtle, almost unnoticed, peripheral aspects of the space. Light moving around a room over the timescale of several hours forms a key part of the experience of that space but is so gradual that it is unlikely to be consciously registered. Film historian Miriam Hansen draws attention to Benjamin’s discussion of the “optical unconscious”, a concept linked to the ability of the photographic and film camera to “see” things beyond the reach of conscious human perception. Hansen identifies the impact of such visualisation of previously unseen or unconscious phenomena, explaining that “cinematic techniques such as close-up, time lapse and slow motion photography and, above all, montage have changed our perception of the visual world” (Hansen, 1987: 209).

> A … deepening of apperception throughout the entire spectrum of optical – and now also auditory – impressions has been accomplished by film… With the close-up, space expands; with slow motion, movement is extended … it is another nature which speaks to the camera as compared to the eye. ‘Other’ above all in the sense that a space informed by human consciousness gives way to a space informed by the unconscious… It is through the camera that we first discover the optical unconscious, just as we discover the instinctual unconscious through psychoanalysis. (Benjamin, 2006: 265-66)

Time-lapse footage manifests the optical unconscious of the normally drawn out experience of *dwelling* – through the compression of time this filmic effect reveals "a space informed by the unconscious" (Benjamin, 2006: 266). While we know, conceptually, that sunlight changes its position within a room over the course of a day, and then over the course of a year, the pace of this movement is normally too slow to be "seen".[76] While Benjamin did not explicitly mention time-lapse imagery in his list of filmic techniques which may offer a "deepening of apperception" (Benjamin, 2006: 265-66) to reveal phenomena of the everyday worlds we inhabit, the temporal compression that time-lapse affords frees the viewer from the anchor of 1:1 temporal experience, to step outside this limitation of their primary spatiotemporal condition. With time-lapse imagery the change in the temporal scale speeds up the movement of sunlight sufficiently for its motion to be seen, but by limiting the temporal compression, time-lapse can still produce a "slow" experience for the film viewer. Once its movement is more perceptible, sunlight begins to manifest as a "form" in its own right, it has a kind of solidity, an almost physical presence – in *Leading Light* the sunlight's clear form, taken from the rectangle of the window through which it projects, changes as it meets objects in the rooms, but it is also just a device by which to literally shine a light on the other forms and surfaces within the rooms. In *Sunhouse* there are also several sections of *real-time* footage which reveals unnoticed phenomena – in the morning, intermittent cloud coverage generates rolling light projections through the living room blinds onto the wall; in the afternoon, light passing though tree foliage and then the dining room blinds makes a complex dance of light upon the surfaces and objects in the room.

The use of such filmic devices to explore aspects of space that would normally be part of what Pallasmaa describes as "peripheral vision [which] envelops us in the flesh of the world" (Pallasmaa, 2012: 14) places a particular *focus* on this ordinarily unconsciously experienced phenomena. Benjamin's theory of the optical unconscious would suggest that the phenomena which is "unconscious" in the spatial experience, but made manifest in the filmic experience, has been brought from the unconscious to consciousness. However, this does not become a form of "focused vision [which] confronts us with the world" (Pallasmaa, 2012: 14) – despite the focus on the movement of sunlight, the use of the structural film technique of a slow pace coupled with an absence of human narrative results in the viewer's experience still being one of distraction. The journey from unconscious to consciousness has been undermined by the use of extended duration – what the film partly brought to consciousness actually quivers at this threshold, becomes a liminal condition, almost seeing, but not quite. As such, the "distraction" with both films manifests as "a particular form of attention, simultaneously directed and dispersed" (Allen, 1995: 48) – while both films' use of time-lapse footage (coupled with real-time footage)

[76] The speed of the earth's rotation, and the subsequent speed of sunlight's changing position, means that the movement of narrow bands of sunlight *can* be consciously registered.

allows a day to be compressed into ten minutes,[77] the pace of each film is non-the-less still slow enough to allow the viewer the time to reach a sense of boredom (Fujiwara, 2007), dispersing their attention, while still visually engaged with the tactility of the imagery. As Andrew Benjamin identifies, there is an "awaiting linked to boredom [and…] the potentiality for interruption" (Benjamin, 2005: 170) – the viewer's implicit understanding of the movement of sunlight over the course of a day (an understanding which they bring to their reading of the film) allows them to recognise the film's structure and prophesy what is yet to come.

I assert that there is a fundamentally analogical relationship between the pro-filmic experience of spatial dwelling and the filmic experience of each film. Using the understanding of analogy established in Chapter 2 as "sameness-in-difference" (Stafford, 2001: xvi) allows for the inherent *difference* between that pro-filmic experience and the viewer's, while understanding that in this difference there are some meaningful parallels. To make this argument, I refer to Malcom Le Grice's suggestion of how such an analogical relationship between filmed space and the space of the projection event may occur. Le Grice identified that in most forms of cinematic practice:

> The greatest obstacle to forming some kind of interplay between the real time and real space of the cinema-viewing situation, and the recorded or implied time of the film's action, has been the enormous discrepancy of scale between them. One and a half hours in a roughly rectangular cinema interior to be related to the portrayal of a lifetime in Russia … They are so far apart in scale as to be unrelatable…
> From the introduction of the notion of equivalence between the shooting (camera) and projection TIME/SPACE, the possibility of other forms of relatability must arise. The work of Michael Snow, beginning at *Wavelength*, draws on Warhol's TIME/SPACE equivalents as a starting point, but this film and <---> *(Back and Forth)* develop more complex kinds of relationship. In both, some strict continuity allows the real TIME/SPACE of projection to become a 'concrete experience' in its own right. It is clear though, that neither film is shot in one take, or one camera 'set-up', but that in both the 'shooting' TIME/SPACE is shallow enough for the experience at projection to become an analog or be used as a metaphor for it. (Le Grice, 2001b: 156-57).

I would assert that both *Sunhouse* and *Leading Light* generate a significant temporal correspondence (despite the difference in the temporal scale) between shooting and viewing. The footage for *Leading Light* was shot on a single day (Smith, 1978: 81), and therefore easily accords with Le Grice's definition of shallowness. However, the extended time over which the footage for *Sunhouse* was collected means that it has a far more significant temporal difference between shooting and viewing than *Leading Light*, and the period of *years* in which the clips were shot would seem anything but shallow. This out-of-sequence shooting is a much more extreme version of the temporal discontinuity in the

[77] Both films are ten minutes long.

shooting of footage for Snow's *Wavelength*[78] – the use in *Sunhouse* of the two different criteria for sequencing the two edits, neither of which was the actual date and time of filming, resulted in an adjacency of clips which may have been shot days, weeks, months or years apart, continually jumping backward and forward in the "real time" of filming. This strategy deliberately dispenses with any claim to temporal continuity between each of the clips and attempts to (subtly) undermine the film's possible interpretation as a presentation of a continuous temporal sequence. However, I would still argue that Le Grice's model of the experience at the time/space of the viewing[79] of the film being an "analog" of the time and space of the filming, still applies to *Sunhouse*, as well as *Leading Light*. This analogical relationship is centred upon the notion of distraction, both as experienced as a spatial condition, of *dwelling*, and as experienced as a filmic condition, of *viewing*. In both the dwelling time/space and the viewing time/space extended duration leads to a distracted experience, where focus becomes secondary to peripheral vision. The slowly moving sunlight in both films contributes to a tactile visual experience, that engages the *viewer's* bodily proprioception, making them a form of *dweller*. This places the viewer in an analogical situation to that of occupying Smith's attic room, or the rooms of my house. The viewer of each film is situated within a continually changing durational event, moving through time, led by the light of the sun, distracted yet somewhat aware.

Another (but strongly connected) form of analogical relationship also exists between film and space in both *Leading Light* and *Sunhouse* – this is the analogical relationship that exists between architectural representation and an unbuilt, perceptually constructed, building.[80] I assert that through their active reading of the film, while themselves experiencing a state of distraction in the time/space of the place of viewing, the viewer forms a new, constructed, impression of the filmed spaces, informed by shadow and light, composed of fragments, formed of "prophecy and memory" (Snow, 1967a) and dwells within that perceived, and analogical, space. The new space that is formed through the watching of the films is similar to the new, analogical, space that is formed through the reading of architectural drawings. Like an architectural drawing the architecture of *Leading Light* and *Sunhouse* is created precisely through the activity of the viewer as the fragments revealed through light and shadow, over time, are pieced together. The remembered past and predicted future are peripheral to the present moment, and as they sit beyond the immediate focus of the present, they become part of a more distracted

[78] *Wavelength* was filmed out of sequence, with filming starting "in the middle … because it was convenient for Hollis Frampton … the actor who played the dying man, to do the scene that day" (Legge, 2009: 20)

[79] As projection is now only one of several ways of "screening" moving image work I use here the term "viewing'" rather than Le Grice's "projection" to refer to the experience at the time/space event of the film's screening. I acknowledge the spatial and formal particularity of *filmic* projection, but Le Grice's specific argument in the *Real TIME/SPACE* essay (Le Grice, 2001b) appears to not rely upon this particular material character of screening event, and can therefore be translated to apply to other technologies of screening.

[80] As discussed in Chapter 2.

experience of the whole. However, unlike conventional forms of architectural drawing, *Leading Light* and *Sunhouse* incorporate additional aspects of a distracted experience of space because they include the changes that occur in the spaces over time. As in both structural film *and* architectural drawing, the viewer has had to actively work to construct meaning. As structural films, the tectonics of the works have been carefully considered, their materials and form structured in such a way as to contribute to the meaning of the pieces as a whole. Like a series of orthographic drawings, the films (over their respective durations of ten minutes) have organised their components, their network of relationships, so that they are sequentially read, and reconstructed in the mind of the viewer.

The “experiential base” (Le Grice, 2001b: 156) of the space of viewing is a necessary foundational condition for this perceptual construction of a “new” space, because the bodily, “concrete experience” (Le Grice, 2001b: 157) of viewing these films contributes to this construction. The extended duration, and its potential for generating “boredom” in the viewer, its directed and dispersed distraction, and the visual tactility evoked though the filming of sunlight’s interaction with form and material, are part of the physical experience of viewing, and the qualities of this experience form part of the reading of the film. The film imagery is not interpreted in isolation from the viewer’s time/space experience of the act of viewing. Le Grice was concerned that the reality of the time/space of screening would be subsumed by an illusion of “retrospective reality”. Instead I propose that a third form of time/space exists, that of the projective, prophetic “reality” that is brought into perceptual existence through the interaction of film and the bodily experience of viewing and reading that film. It is this relationship, of representational artefact (in this case, film), being read, interpreted through the physical act of viewing, to the new perceptually constructed space which I propose is analogical in nature.

As already discussed in Chapter 2, analogy is a more appropriate concept than others which may link a representational artefact and its notional referent – unlike concepts such as simulation, depiction, resemblance, or verisimilitude, an analogical relationship allows for an independence of the linked elements. Analogy empowers each element to have its own unique character but understands that there is a connection by which something is offered between them. Neither Smith’s film nor mine attempt to be anything other than what they are (beyond the underlying “illusion” of all pictorial practice, which by its very nature will be a process of translation) – the films present themselves simply as a series of clips of sunlight in room/s. The films do not attempt to pretend to be the same as the experience of dwelling in the original, filmed room/s. Neither film attempts the task of “creating convincing illusory time/space” (Le Grice, 2001b: 155), or to hide “the projection event as the primary reality” (Le Grice, 2001b: 156). The films do not attempt to say how a space might be inhabited by using a human figure to “stand in” for the potential human occupants, including the viewer/s themselves. Instead they use devices sometimes

employed within architectural representation, of showing the artefacts of human occupation – chair, desk, bookshelf, bed, wardrobe – to encourage the viewer to locate their own body within the space on the screen.

3.4 Conclusion

While Walter Benjamin offered a mode of singular, focused viewing for the traditional work of art, or the (famous) architectural monument, the technology of film viewing at the time of writing the Artwork Essay necessitated a mass audience (Benjamin, 2006: 273), and an *individual* viewer/film relationship with the new media of the cinema, similar to that of painting and sculpture, was not conceivable. Subsequently, through the advent of television, the internet, the rise of the individual (digital) screen as the interface of image consumption, and of the development of screen and projection technology to offer the moving image a place within the art gallery, the singular act of viewing a moving image artefact has become commonplace. Additionally, the development of avant-garde cinema, particularly that of structural film, produced strategies for making moving image work which demanded a level of concentrated viewing from the cinema audience. In much of this work the act of viewing, of being an individual in an audience before a projected, and constructed, moving image, became one of explicit acknowledgement by the viewer of the structural film.

For structural filmmakers the act of screening, of viewing, is a primary act in the construction of the work (Le Grice, 2001b: 155-57). Both *Leading Light* and *Sunhouse* ask the viewer to be active in their reading of each film, and in doing so, through their experience of seeing and reading the film to undertake a task similar to that of reading architectural drawings – to construct a spatial condition in the mind. Despite the films utilising footage of real spaces, the space as read is a new, fictional,[81] or to use the architectural term, a *propositional* one, constructed by the viewer out of those fragments that are revealed by the sun, fragments that are all about texture and form. This process of construction is more complex in *Sunhouse* as compared to *Leading Light*, due to the increased complexity of the original time/spaces of filming. The reading of space is much more fragmented, and less coherent in my film than Smith's, largely because it covers a whole house, and also through the discontinuous temporality of the clips, and the manifestation of this in the dual screen format. This fragmentation resists a synthesis of a whole – even at the point of the coda, where all spaces/times are brought together, the sense of a complete house is never fully provided. The house, divided by internal walls and floors, cannot receive the continuous sweep of sunlight in the way Smith's single attic room did. The dividing of the house into individual rooms separates spatial experience,

[81] Patrick Keiller (2002: 38) suggests that "the space of a film is assembled from fragments [… therefore it] is always a fiction, even when the film is a documentary".

and similarly, divides the filmic experience.[82] The viewer may be able to ascertain something of the orientation and respective relationship of the rooms in the film, using their existing knowledge of the movement of the sun, from east to west. However, each room is never fully described – unlike Smith's room with its south-facing window, the east/west orientation of my house affords each room a limited period in which the sun will penetrate, and thereby illuminate – only a small proportion of each space makes its way into the film, led there by its reception of sunlight.

A few years after making *Leading Light*, Smith said of the film "I wanted to make a film of light cast by the sun largely because I found it *beautiful"* (Smith, 1978: 81). This statement shows that Smith was engaged with the particular and changing spatial and temporal qualities he had observed in the room in which he lived, qualities which were specifically associated with the movement of sunlight, and which had provoked him to make this film. This may suggest that *Leading Light* was always an architectural moving drawing, that its subject is intentionally architectural (as well as filmic), and that it is this subject which has provided the film with its form. This combination of subject and form in *Leading Light* is startlingly simple; it is contained, self-referential, and complete. For me (an architect) reading Smith's film, its subject is inherently architectural. As an artist filmmaker, I can see how the techniques of film structure hold that subject, draw it out, explore and represent it. The tectonics of Smith's film, amongst others, has shown me how the tectonics of architecture might find themselves within these mediating artefacts. I feel that watching Smith's film provides me with an experience *analogical* to that of dwelling in that room – as with all analogy, the two things (*viewing* and *dwelling*) are *different*. My viewing experience is not the same as the original spatial one, but it shares certain parallels. The drawn out, slow paced imagery gives me time to look, to become slightly bored even, and tells me something of the nature of dwelling in that room. The control of light shows me how the textures and forms within the space, and the continually changing nature of its illumination, define it in an intangible way. The ordinary, un-designed space of Smith's bedsit is transformed through its filming and through the reading of the film. The space of the film is not the same as the space of the room – the high level of contrast in the sunlit section of the film removes more of the room than it reveals.

Juhani Pallasmaa would also agree that it is possible for a film to *become* architecture: "Godard's list of the alternative ways of film making could be expanded by one more specific mode: cinema as architecture… A film director is bound to create architecture, although often unknowingly" (Pallasmaa, 2001: 14, 20). However, I would suggest that it is

[82] My strategy for the "cuts" in Sunhouse, by flashing to white through an overexposure of the image, attempts to highlight this transition, this point of constructed juxtaposition of time and space, rather than following "commercial narrative cinema's editing techniques … to efface the marks of the editing splice" (Gidal, 1989: 3).

only the section of the peripherally experienced, sunlit section of Smith's film that transforms into a work of architecture. It is the joint occupation of the room by the sunlight and the viewer, the haptic "reading" of the surfaces by the light and the mind of the viewer that forms this architecture. The fragmentation of spatial experience offered by peripheral vision in the sunlit section of the work is a key part of this momentarily formed "architecture" of *Leading Light* – this architecture dissolves once the whole room is shown clearly. A different sort of *whole* exists while we are only presented with the beautiful, evocative, distracted fragments. This whole is that of the room over a period of time, the space in distraction, rather than at any single moment in time. In the former, architecture exists in the mind of the viewer, in the latter it evaporates.

In *Leading Light* and *Sunhouse*, the interplay of light with material, space and form does what no static drawing could do and invites a direct temporal and tactile engagement with the tectonics of the room. They integrate the viewer within the space through haptic and peripheral vision, generating a powerful spatial impression in the mind of the viewer – "shadow gives shape and life to the object in light… In great architectural spaces, there is a constant, deep breathing of shadow and light; shadow inhales and illumination exhales light" (Pallasmaa, 2012: 71).

Sunhouse Elevation/Sunhouse Azimuth may generate in the viewer (as it did for the maker), a greater awareness of when sunlight enters a room, its impact upon the space, and the change of the effect, over time. As Miriam Hansen observed, the ability to "see" such phenomena though its filmic recording impacted upon my perception of this very phenomena when later occupying the spaces that had been filmed. Continuing to dwell in the house in which the film was made, my memory of making and watching my *Sunhouse* film makes me acutely aware when my house repeatedly re-performs fragments of the film. I hope that in watching *Sunhouse Elevation/Sunhouse Azimuth* a viewer might experience something analogical to my own dwelling within my home, over extended timescales. I also hope that the film's tectonics still maintains an awareness of its nature as a constructed artefact, affording a reading of sameness in difference.

Reading *Leading Light* and making *Sunhouse* has also impacted my experience of similar phenomena in other spaces and has led to the making of new film work, such as the *Factory Wall* work presented in Chapter 2. It has also directly informed my current practice filming architectural models which I will present in the next chapter.[83] In this latest work, sunlight becomes even more established as the primary activating agent, and the literal as well as analogical link between scaled space, built space and perceptual space.

[83] It has also informed the development of another strand of practice, that of cyanotype printing of architectural shadows. This work is mentioned in Chapter 4, and although pursuing a similar set of concerns to much of my film work, this practice sits outside the scope of this thesis.

Chapter 4

Practising Models/Modelling Practice

4.1 Introduction

The work in this extended chapter emerges from my previous filmic explorations of sunlight as a defining material in architectural space, taking this into the scaled space of the architectural model. This work started with the aim to free the practice from a reliance on existing built edifices for the basis of acquiring footage and has been developed throughout the duration of the thesis, overlapping with work presented in previous chapters. This chapter will present an evolving methodology in the construction of processes of architectural moving drawing, situating and contextualising this work in relation to art and architecture practices and theory. Taking reference from both disciplines, in developing these techniques I have considered what to film, how to film it, and how the resulting imagery might be read, and at times this has led to new, innovative methodologies for making imagery. In presenting a developing series of strategies for the filming of architectural models the chapter uses this work to demonstrate applications for these processes within a hybrid art/architecture practice and indicate implications for more conventional architectural practice. The chapter takes Vivian Sobchack's concept of "film's body" (Sobchack, 1992), introduced in the previous chapter, considering how and where the "film's body" is constituted when using miniature cameras to film architectural models. The chapter builds upon earlier chapters' discussion of construction in the reading of architectural representation, to extend to the interpretation of imagery generated from photographs and films of architectural models. Questions of resemblance will connect with ideas about the "uncanny" (Foster, 1983) (Freud, 2003: 141, 161), as related to the visibility of the photographed or filmed subject as the constructed artifice of a model (Kolb, 2009), and the lack of an original referent embedded in the photographic image (Manchanda, 2007: 66).

4.1.1 Working with models

A significant shift in my practice occurred early in the second year of the PhD – prior to this, all my film work had been constructed from footage shot within existing spaces. At this time, I was establishing the theoretical underpinning for understanding the ways in which a reading of my time-based pieces might operate along similar grounds to that of architectural drawing. I wished to encompass something more definitively propositional in nature, made prior to the material existence of a building – while it is clear that imagery made from existing built edifices are new artefacts in their own right, and as I have already argued, in the reading of such imagery a process of perceptual construction can take place, this is none-the-less a different form of operation to explicitly propositional architectural representations. As such, I felt limited by the dependence of my footage on an existing built condition and looked to develop a strand of film work which used architectural models as the primary source of footage.

My experience as an architect and architectural educator affords me a familiarity with the making and use of models for architectural design and communication processes. Within architectural representation, model-making parallels the production of two-dimensional drawings (Schmal and Elser, 2012). While digital models now supersede some of the historic practices of physical model-making, this analogue technique is still prevalent, and even increasing in use, in many architectural practices, and is a core process taught within many schools of architecture. Models are produced as three-dimensional sketches in the architectural design process as a way of testing and iterating spatial configurations. They can be used to analyse existing conditions, and to develop strategic ideas. Models can also be used to communicate architectural projects to a range of audiences, from the architects themselves and the design team involved in the project's development, to presentation models made for lay audiences such as clients, end-users, and local communities. In all these categories, models are made either to be used directly (displayed, examined, altered) and/or photographed (and very occasionally filmed). Large scale models allow architects to work directly with materials, either scaled down versions of the actual materials (or full size in the case of 1:1 prototyping), or other modelling materials which can stand in for their full-sized analogues. The three dimensional implication of the meeting of material, of depth and texture, of the tolerance of a joint, or the sequence of assembly can be tested through this direct manipulation of material, in contrast to a computer model, where materials have zero thickness[84] and surface skin is prioritised over what lies beneath. Large scale facade models, such as those employed by 31/44 Architects, Morris and Company, and Níall McLaughlin Architects (to name just three) support the design of this three-dimensional face of the building, exploring not only elevational composition, but the subtle choreography of depth that articulates the building in the context of its urban surroundings. The use of large-scale interior models, such as Jamie Fobert Architects' working models for the extension to Tate St Ives, allows the testing of the quality of light, the interplay of materials, and provides a "feeling" of spatial occupation superior to that of computer generated imagery (Fobert, 2016). Such models do not necessarily attempt the photographic realism of CGI, but I would claim that their material existence, their use of real space, real light and materials, and real time, offer the viewer of the model and its photograph (or film) a strong engagement with the projected space.

A number of artists work with spatial models, to exhibit directly, or for their photographic practice, and also occasionally for film practice. These range from reconstructions of real places, to realistic or fantastical propositional constructions, and vary in scale from the minute, to life size. In his essay for the *Otherworldly: Optical Delusions and Small*

[84] Even a "solid" object in a CAD model is merely a hollow form entirely defined by its two-dimensional surfaces, and, in the case of BIM, the code noting the architectural specification of the element represented by that virtual object.

Realities exhibition catalogue, New York's Museum of Arts & Design chief curator David McFadden (2011: 10) identifies such work as a form of diorama, in-part originating with Daguerre's diorama in the early nineteenth century, but also with "Baroque-era religious tableaux and devotional objects" (Siddiqui, 2017: 171). While acknowledging that "artists working in this realm inhabit a broad territory enjoyed by a larger family of makers" (McFadden, 2011: 8), which includes "architectural model builders", McFadden would dismiss the relevance of these other disciplinary practices for this form of art practice. Most of the "diorama" works in *Otherworldly* have a hyper-realistic quality; highly detailed, with fully textured and coloured materials they attempt a high level of verisimilitude – they are more like model train sets than architectural models. In contrast, in *Beyond Architecture: Imaginative Buildings and Fictional Cities*, Robert Klanten and Lukas Feireiss (2009) identify artwork which explores an architectural subject, much of which demonstrate clear reference to processes of architectural model-making in their techniques. Such work exhibits a reduced use of detail, abstracted material, evidence of the model's construction, or a fragmentation of the represented space, as can be seen in works by Thomas Demand, James Casebere, Karsten Konrad, Oscar Laurens, Nathan Coley, Edouard Sautai, Jens Reinert, and Larissa Fassler. It is these forms of art practice, along with disciplinary practices of architectural model-making that my ongoing, transdisciplinary experiments filming models are situated.

While I continue to film built architecture, the main thread of my current practice uses footage produced from architectural models, or found objects which may resemble architectural models, thus enabling the moving image work to be generated independently of existing built architecture. This provides a mode of practise of architectural moving drawing for incorporation in speculative, propositional design processes. Additionally, unlike the filming of real spaces, shooting models allows for the development of more experimental forms of filming and subsequent use of such filmed footage – within a model the camera can film for days, without intruding on the normal human occupation of a space. This can offer access to an optical unconscious that may be manifest within the real space as proposed by the model, but which may be difficult to explore through such extended filming in a real, and occupied, work of architecture. I had held a desire to extend my practice to filming models for some time – in my work as an architectural educator in a school which celebrates the use of physical models, I was surrounded by compelling photographs of model interiors, as well as the physical artefacts themselves. I had enjoyed making models while an undergraduate student, but my own experience in architectural practice and in postgraduate study had involved using digital drawing and modelling tools. This in part reflected the period in which I was working and studying – at the time these digital tools were new, and perceived to be innovative, and were replacing more traditional analogue drawing and modelling processes (Larson, 1996; Dubrow and Kletzien, 1996).

My work with filming models broadly takes four different forms, each of which have been developed in parallel, and which inform one another. Firstly, there are architectural models that I have constructed – these range from invented rooms, designed purely for the purpose of filming, through to reconstructions of existing spaces. For some projects, the space being reconstructed is the studio or gallery in which I make and then film the model. In this, my performative actions of artist/architect become part of the work itself – I record these actions, generating additional video footage to integrate within any final “artwork” I might produce as an output of the project, and also to act as a form of documentation of the very practice that I am modelling. Another strand involves the filming of found objects selected for their formal qualities and materials similar to those used for architectural model-making. When filmed by a miniature camera the scale of these objects shifts to that of built architecture, the found object transitioning in that moment to architectural model, the imagery of a repurposed artefact “proposing” new space through the perceptual shift in scale that the filming affords. Techniques developed though filming both made models and found objects have been utilised in nascent collaborations with architectural practitioners, as I begin to explore how the techniques that I have been developing through the thesis might be used to film the models that are a critical part of their practice.

A parallel strand of my work with models utilises three-dimensional objects to create orthographic imagery, the form of the object compressed to the picture plane through the projection of its shadow. These processes produce moving imagery which most closely resemble “drawings”, though the loss of perspectival views, and an increased level of abstraction. Within this work, the performative act of “making” the model to be filmed and printed is captured and incorporated into the finished pieces. This strand of practice is closely linked with a parallel practice that is not within scope of this thesis, that of my work using cyanotype printing to explore and record light and shadow within architectural space.

In this chapter I will present the work chronologically as far as it is possible, so that the progression of the practice, and the influence of the development of each technique on the next can be traced. However, an attempt to group the practice by specific technique means that some of the work presented sequentially was developed in parallel, and occasionally in reverse order. Where these stands of practice have explicitly influenced one another, I will cross reference them. Some of the technical aspects of the making of the work are presented in detail, especially where these involve the invention and evolution of new hybrid techniques. As some of this work involved many similar versions and iterations not every experiment is presented, and some are only shown with limited detail. All this work is presented in detail in the practice blog.

4.2 Constructing re-construction

Within architecture, especially architectural education, the modelled reconstruction of a precedent work of architecture can offer insights into buildings which may only be accessible as two-dimensional imagery. In such endeavours, a common reference for architects is the work of Thomas Demand (Murray, 2008), whose reconstructions of spaces from photographs, are, like many architectural models, made to be photographed, and after photographing, the models themselves are destroyed (Westerbeck, 2012: 128).[85] I commenced my own work filming models with several reconstructions of installation artworks, negating the need to design the architecture of the model.

4.2.1 Reconstructing Nauman's Double Doors

In late 2015/early 2016 a reconstruction of Bruce Nauman's 1973 installation *Double Doors – Projection and Displacement* (as re-installed in 1990 for the "Un Choix D'art Minimal Dans La Collection Panza" exhibition at the Musée d'Art Moderne de la Ville de Paris)[86] became the first model that I made and filmed. The original versions of the installation were ephemeral, existing only through the photographic and textual documentation, themselves echoes of the original artwork. As Margaret Morse notes, "[installation] is so hard to document. While an installation can be diagrammed, photographed, videotaped, or described in language, its crucial element is ultimately missing from any such two-dimensional construction, that is, 'the space-in-between,' or the actual construction of a passage for bodies or figures in space and time" (Morse, 1990: 154). My intention was that the model reconstruction would "remake" the space, and unlike a digital reconstruction, it would be a physical space, albeit at a reduced scale. Filming would allow a new type of access to the original artwork, particularly as no time-based documentation of that original appears to exist. Spatial installations are designed to be experienced by a living, moving body, over a period of time – a film of a scaled model reconstruction of the installation, while not simulating the actual bodily experience of that original space, may generate a parallel, analogous experience in the active viewer of the film. The making of a film of the scaled model reconstruction would also constitute the production of new work. As Buskirk, Jones, and Jones (2013) explain, the terms "reconstruct", "re-create", and "refabricate" imply a connection to an original work of art, but also involve a process of translation and creation.

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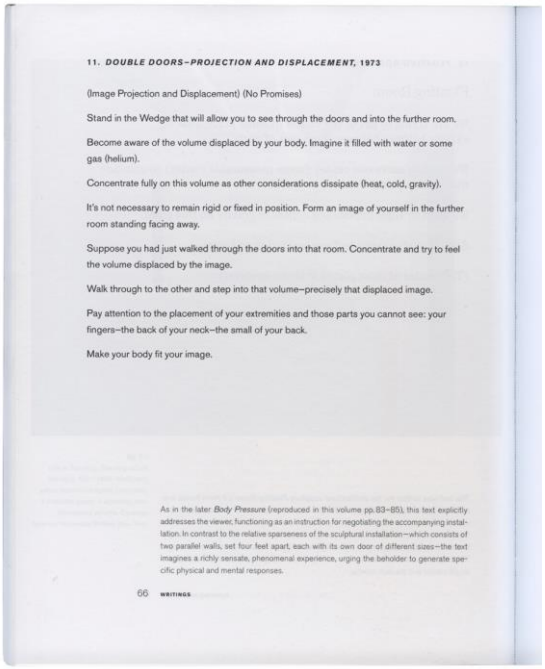
[85] Unlike other artists who make and photograph models, and indeed unlike architectural models, Thomas Demand's models are "full sized" (Westerbeck, 2012: 127) or "life sized" (Manchanda, 2007: 59; Quiles, 2013).

[86] I had only ever experienced this piece though a single photograph and I had been intrigued by it since acquiring the Panza exhibition catalogue over twenty years ago. My work as an undergraduate fine art student included the production of architectural installations, and Nauman's work, along with that of 1960s minimalists such as Robert Morris and Donald Judd had been particularly influential.
The project is discussed in more detail at: https://architecturalmovingdrawing.com/category/historic-installation-reconstruction/naumans-doors/

Figure 4-1: Bruce Nauman's "Double Doors – Projection and Displacement (1973)" (Pagé and Panza, 1990: 82).



11. *DOUBLE DOORS–PROJECTION AND DISPLACEMENT*, 1973

(Image Projection and Displacement) (No Promises)

Stand in the Wedge that will allow you to see through the doors and into the further room.

Become aware of the volume displaced by your body. Imagine it filled with water or some gas (helium).

Concentrate fully on this volume as other considerations dissipate (heat, cold, gravity).

It's not necessary to remain rigid or fixed in position. Form an image of yourself in the further room standing facing away.

Suppose you had just walked through the doors into that room. Concentrate and try to feel the volume displaced by the image.

Walk through to the other and step into that volume–precisely that displaced image.

Pay attention to the placement of your extremities and those parts you cannot see: your fingers–the back of your neck–the small of your back.

Make your body fit your image.

As in the later *Body Pressure* (reproduced in this volume pp.83–85), this text explicitly addresses the viewer, functioning as an instruction for negotiating the accompanying installation. In contrast to the relative spareness of the sculptural installation–which consists of two parallel walls, set four feet apart, each with its own door of different sizes–the text imagines a richly sensate, phenomenal experience, urging the beholder to generate specific physical and mental responses.

Figure 4-2: Accompanying text from Bruce Nauman's "Double Doors" installation (Nauman and Kraynak, 2003: 66)

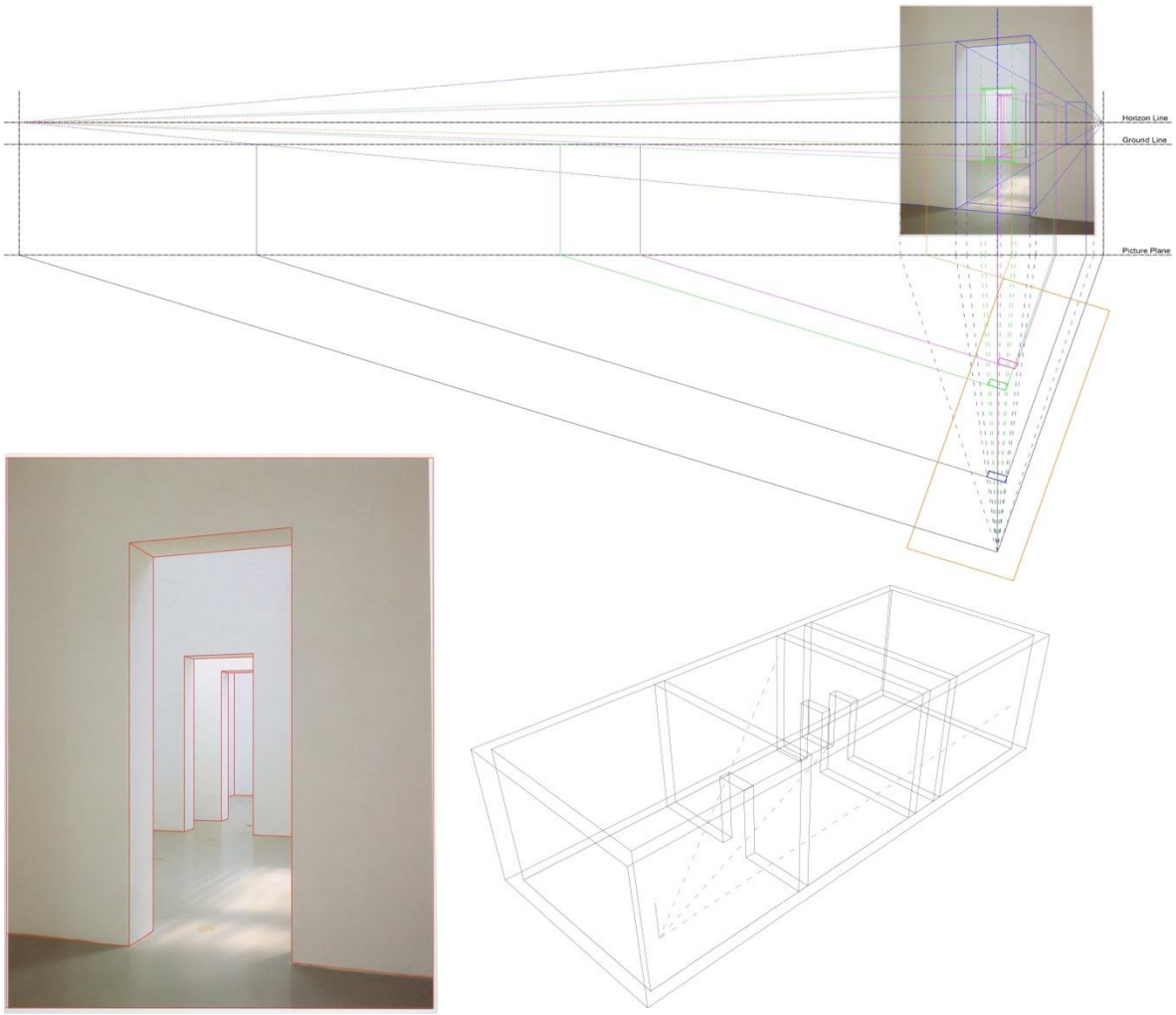


Figure 4-3: Development of CAD 3d model of Nauman's Double Doors installation using reverse perspective process

Using the minimal information available (two book pages as shown above) I undertook a process of reverse engineering the perspectival image to determine the dimensions of the installation. A simple CAD 3d model allowed these dimensions to be tested and compared with the original installation photograph.

Figure 4-4: Constructing the model of Nauman's Double Doors installation

The scale of the resulting 1:50[87] paper and card model produced significant depth of field in its photographs and exposed its constructed nature. Colin Westerbeck (2012: 129) discusses Demand's self-identified "imperfectness" of the models he makes and photographs, with Catharina Manchanda (2007: 59, 65) asserting that the visibly constructed artefact of the model, in which pencil marks are still visible, distinguishes the work from the "documentary tradition" to which it refers. This visibility of the photographed subject as a model, a construction, rather than from life, "has put paid to any residual idea that photography automatically portrays objective reality" (Kolb, 2009). The lack of an original referent embedded in the photographic image engages the viewer in a process of construction: "In place of the 'original', or the representation of the original, the viewer is confronted with the interpenetration of endless references that constantly blur the line between the objective and subjective, between fact and fiction" (Manchanda, 2007: 66).

4.2.1.1 *Displaced* (2019)

Footage shot within the Nauman doors model has resulted in several edits, each of which explored the spatiality of the model for a reinterpretation of the original work. Preliminary footage shot with my iPhone in slow motion mode[88] (on a "dolly" with a ball bearing base),

[87] 1:50 is normally the smallest scale used to make architectural models for subsequent interior photography. 1:20 or 1:25 are more common scales as they allow a greater level of precision in their fabrication. However, if I had used these scales the model would have been twice as large in each dimension (and eight times the volume), which was impractical given the size of my home office/studio at that time.

[88] Filming in slow-motion while moving the camera relatively quickly provides a smoother motion

was initially discarded due to a difficulty obtaining the desired smoothness in the camera movement. However, when reviewing the footage in early 2019 I appreciated the repetition in what I had deemed to be these “failed” attempts to obtain a “good” version and realised that the unique nature of each slightly unsteady take was a feature I could make good use of in an edit. The repetitions of the camera’s movement towards the door openings echoed the instructions in Nauman’s original installation text – they became a version of the viewer’s imagined action, first perceptually projecting their body through into the next space, following through with the movement of their actual body. The less-than-perfect camera movement reflects that of hand-held footage to represent an inhabitant’s point of view (Gidal, 1989: 35-36; Le Grice, 2001c: 203) and suggest a hesitancy in the approach to the doorways.

The vertical orientation of the footage lent itself to a multi-image format and the final edit composes the footage as single, diptych and triptych arrangements, depending on the type of movement and the location inside the model. The model imagery is interspersed with the text of Nauman’s accompanying instructions for the original installation. Sound is used to differentiate between the model imagery and the textual instructions. The model footage is accompanied by an inverse sine wave (referencing Michael Snow’s sine wave soundtrack to *Wavelength*) – the single audio file is used at a series of different speeds, starting at 400% and slowing to 10%. When several clips appear side-by-side on screen the sine wave is overlaid with itself, but slightly offset so that an extra layer of frequency interference occurs. The sections with text have silence, releasing the viewer momentarily from the slightly claustrophobic space of the model.

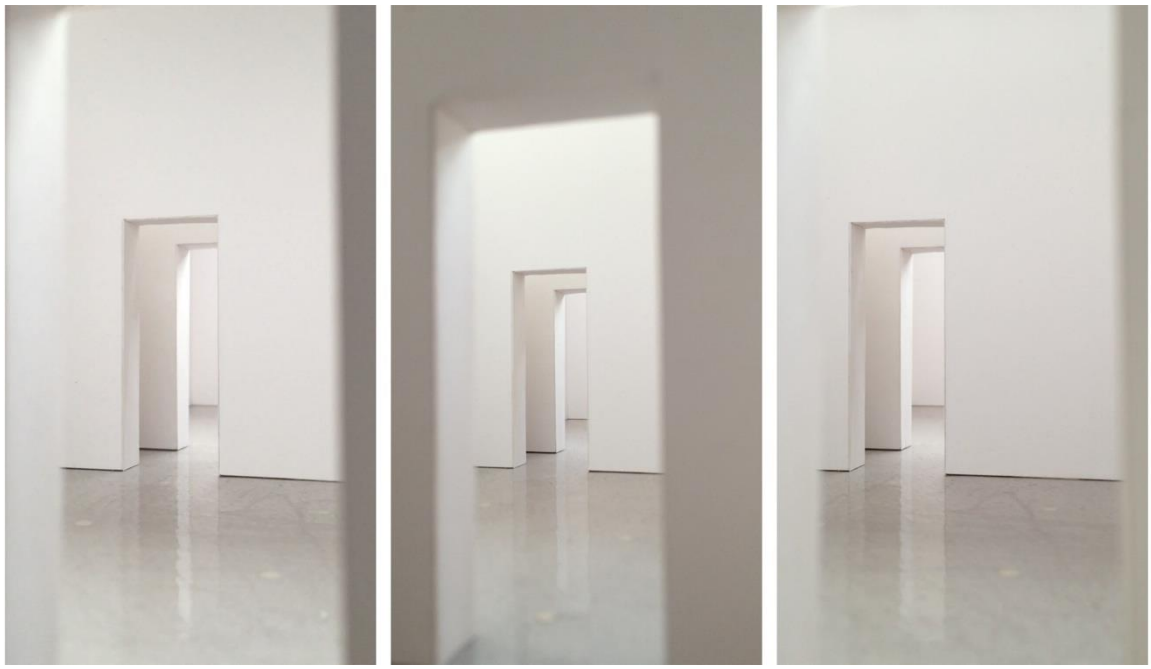


Figure 4-5: “Displaced” (2019) https://vimeo.com/343166578

than simply moving the camera slowly.

Nauman's installation text, itself an instruction to the viewer, emphasises that this spatial installation was designed to be experienced by an embodied viewer, over a period of time – the film of the scaled model reconstruction of the installation generates a parallel, analogous experience for its viewer. The film serves as a performance of the textual instructions as the camera repeatedly attempts to move forwards into the model space and its enfilade of rooms. The film's viewer is also encouraged to perform the textual instructions, yet is perpetually held back, rigidly separated from the space beyond both by the impermeable threshold of the screen, as well as the scale differential between their own body and the scaled model space. The uncanny quality of the imagery of the model space, whose perceptible artifice is doubled with a perceptual construction of "real" space, is amplified by the discomforting overlay of the ever-slowing inverse sine wave. This constructed sound, like the visibly (re)constructed space, affects the viewer, simultaneously engaging and repelling them into and out of the projected space.

The film concludes with an extended coda which references the two sources for the reconstruction. A pan up the page from the Paris exhibition catalogue identifies the artwork through the image's annotation, and then a zoom into the print grain of the image attempts, but ultimately fails, to find a spatiality in the two-dimensional surface of the printed image.[89] The start of the "credits" of the film form a secondary coda, playing with both filmic and research conventions. Text appears which acknowledges the reconstructive act involved in making the film, identifying the scale of the model (of interest to an architect viewer) and lists the two sources used.[90]

4.2.1.2 *Displaced Days* (2017)

A key moment in my work filming models occurred in late 2016 as I attempted to explore other ways to film the Nauman doors model. My iPhone was too large to easily fit within a model of this scale, leading to research into other, smaller cameras, and resulting in the appropriation of action cameras for filming models.[91] The focus on the technical issues of *how* I could film models, rather than simply *what* I could film, led to specific consideration of the relationship between the camera's body and the (small) space of the model in which it dwells. These issues echo related concerns from structural film – of the relationship between the profilmic event of space, camera and filmmaker, and the filmic event of space, screen and viewer. Referring to a range of filmmaking practices, from dramatic cinema to the avant-garde, Vivian Sobchack presents the notion of "film's body"

[89] The zoom into the original photograph, revealing the grain of that image, references a similar, but reversed strategy in Gidal's in *Key* (1968b) which zooms *out* from the grain of a photograph of Nico.
[90] Listing the sources allows the film to formally acknowledge its direct references, in good academic manner.
[91] https://architecturalmovingdrawing.com/category/camera-investigations/

(Sobchack, 1992), which she asserts spans from camera to projector and screen, providing the film a holistic material and spatial presence. For Sobchack, film's "body" has separate relationships with the filmmaker behind the camera, the "spectator"[92] in front of the screen, and the material world which all inhabit. Similarly, Rosalind Krauss discusses "the compound idea of the "apparatus" – the medium or support for film being neither the celluloid strip of the images, nor the camera that filmed them, nor the projector that brings them to life in motion, nor the beam of light that relays them to the screen, nor that screen itself, but all of these taken together, including the audience's position caught between the source of the light behind it and the image projected before its eyes" (Krauss, 2000: 24-25), and links this idea to structural film practices.

For the filming of architectural models, using a miniature camera, Sobchack's explanation of the relationship between filmmaker, camera, and material world takes a different turn – the filmmaker cannot inhabit the same space as the camera, diluting the "embodiment relation" (Sobchack, 1992: 183) between the body of the filmmaker and the body of the camera. In the space of the model the camera has a scale corresponding to that of a human body, and it is therefore the camera's body *alone* that occupies the scaled down space of the model. Furthermore, Sobchack's filmmaker and spectator become conflated when the camera relays its view to a separate screen,[93] thus restructuring the filmmaker's relationship to the image at the point of filming.

Figure 4-6: Nauman's "Double Doors" model with Yi action camera

With the acquisition of my first action camera I was able to film from a viewpoint matching that of the original reference photograph, an image in which the space felt activated by the ingress of sunlight. I therefore sought to obtain imagery of sunlight moving though the space of the installation, to produce a temporal version of the printed still image. The desire to use the movement of sunlight as a significant aspect of my work filming models

[92] "Spectator" is the term Sobchack uses, but one which I find too passive for the very active role of the viewer and which also implies the witnessing of a spectacle.
[93] Action cameras have smartphones apps linking via Wi-Fi to the camera's view and controls. This allows the filmmaker to see through the "viewfinder" while physically remote from the camera itself.

stemmed from the *Sunhouse* film, and as these scaled spaces are not inhabited by moving occupants light is one of the most explicitly temporal dimensions of the architectural model. I placed the model near a window, oriented such that sunlight would enter the model at a similar angle to the Paris installation, and set the camera recording in time-lapse. Three days later the memory card was full, and I was left with sufficient footage to produce a triptych format, each panel showing one of the three days.

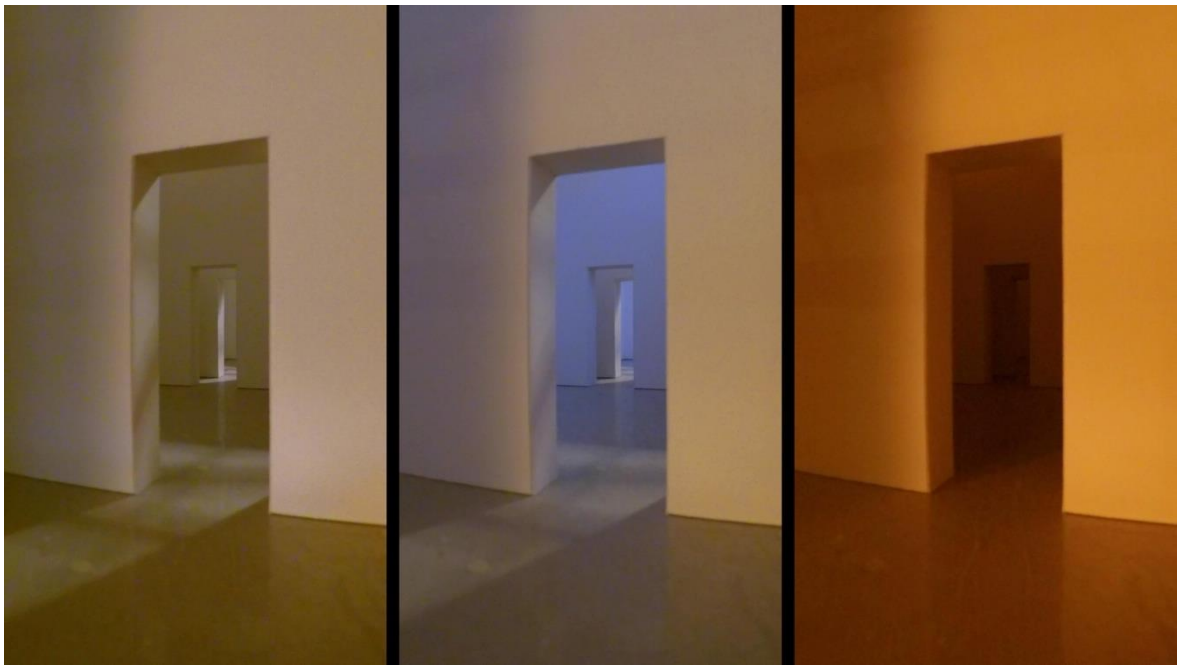


Figure 4-7: Still from Displaced Days (2017) *https://vimeo.com/399253649*

While the length of recording was an incidental result of the relationship between the memory card size and the selected frame-rate, the ability to position three days of footage in parallel highlighted the difference between each day, showing the appearance and disappearance of sunlight to be variable, so undermining the notion of a singular spatiotemporal condition in any space. Another element of the footage occurred at the start and end of each day – the camera, despite having the setting for all indicator lights to be disabled, intermittently illuminated its red LEDs. I enjoyed the effect of this in the footage as it referenced Nauman's work with neon signs.[94]

4.2.2 Wunderlich remade

In 2012 I had contributed a moving image installation for an exhibition for a conference in Melbourne, Australia.[95] Specifically designed for the site of the exhibition – the Wunderlich Gallery at the University of Melbourne – my *Projective Views* installation comprised

[94] For an overview of Nauman's work with neon and fluorescent signs see Ketner et al. (2006).
[95] This section has largely been published in Suess (2018b). This project is documented in more detail in the practice blog: https://architecturalmovingdrawing.com/category/historic-installation-reconstruction/flow-installation/

several filmic projections of a series of views through windows in London, northern Italy, Perth and Austinmer, New South Wales. Located in the homes of friends and family, these were places in which I regularly dwell, the views thorough the windows familiar to me.

Figure 4-8: "Projective Views" installation in the Wunderlich Galley, Melbourne

The footage was projected onto the gallery panels positioned in front of the room's long row of windows, and on the opposite wall, transposing new virtual "windows" (Friedberg, 2006: 11-12) onto these other, distant exterior spaces.

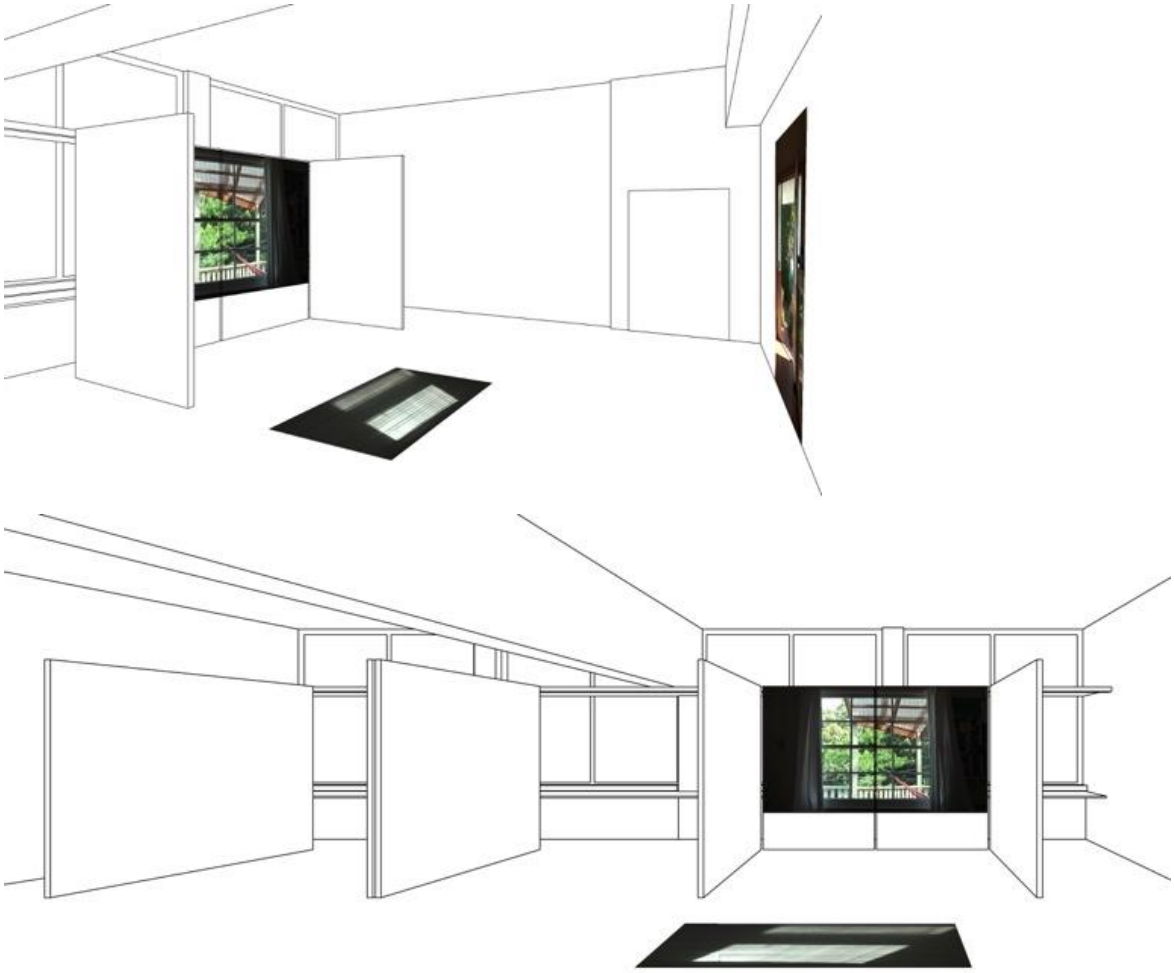


Figure 4-9: CAD perspective collages produced for "Projective Views" proposal

The projected window together with the interior space of the gallery, and the real window with a view to the local exterior of the gallery building, collectively formed a new spatial condition for the duration of the projection. As with Krzysztof Wodiczko's "Polish pavilion at the Venice Biennale in 2009 … [this] created a kind of virtual world that could be entered by the visitor" (Westgeest, 2015: 105-06). The resulting piece was therefore both observational, through its use of recordings of existing conditions, and propositional, though the creation of a new hybrid experiential space, formed of both projected and material space.

In 2015 I was invited to contribute a visual essay about the installation for an edited book by the conference convenors. However, as I had been unable to attend the Melbourne exhibition in person, my only access to the completed work was via photographic documentation, and unfortunately this material was not of a sufficient quality to use as the basis for a visual essay. In order to generate additional imagery, I continued the model reconstruction work with a scaled replica of my own installation. This also provided me with access to a version of the original artwork that I had not been able to experience first-hand – as such this space was, for me, only ever constructed within my imagination. The gallery space has since been demolished, with a new gallery in a new building in its place, and therefore the act of reconstruction through a model remade not only my own installation, but the now lost architecture within which it was situated.

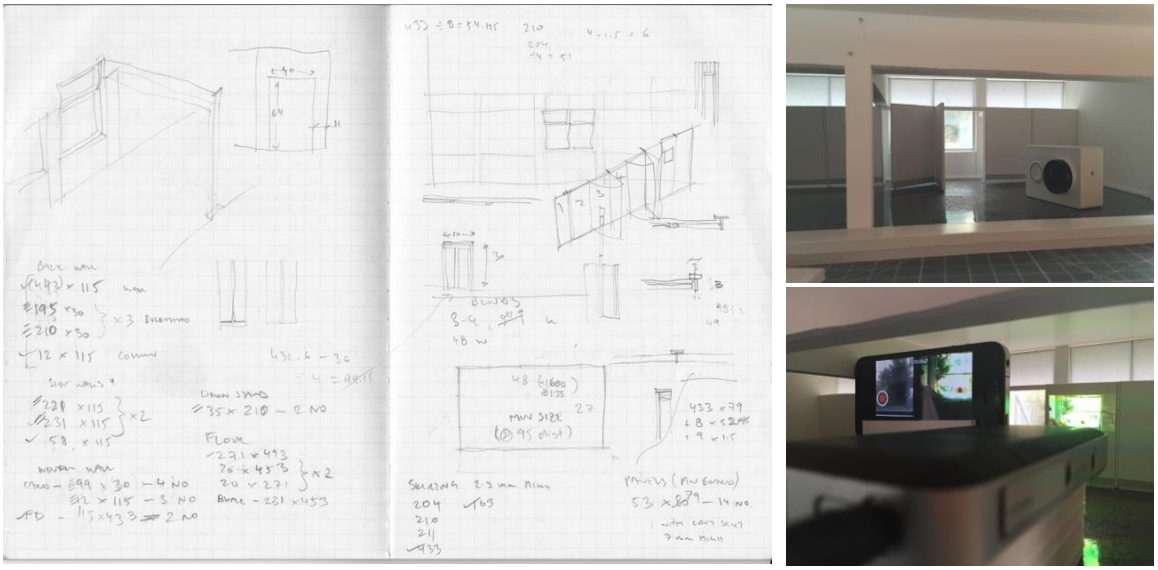


Figure 4-10: 1:33 "Projective Views" reconstruction model process

The model was made in early 2016 from paper and card, using a miniature data projector to project the filmed windows. The scale of 1:33, while not a standard architectural scale[96] was used for the model as it was large enough to obtain the necessary amount of detail, and to be able to accommodate the data projector, but small enough to work with the

[96] 1:33 is a scale commonly used for model aircraft, but it is also sometimes used for architectural models due to the level of detail it affords.

space constraints of my workspace. The reconstruction was based on photographs (supplied by others) of the space before and during the exhibition and the CAD drawings of the gallery, which I had used to design the original installation. As the model was constructed and photographed in my London home office/studio, the “real” exterior seen through the window[97] is different to that of the actual gallery in Melbourne, but as the reconstruction is an easily transported model this “exterior” can change, unlike that of the original exhibition and gallery. From this reconstruction a series of “documentary” photographs were produced (and used for the visual essay) – these provided secondary documentation of the original installation, but also in effect, constituted a new piece of work.

Figure 4-11: “Projective Views” reconstruction model with digital projection

It also enabled recordings of the installation at different diurnal conditions, particularly the shift from day to night, when the “real” (model) window becomes a black pane, rather than an aperture into another space. This new “remade” space can be “experienced” through a

[97] Unlike the exterior in the original installation documentation, the model’s “exterior” consists merely of blurred images of Australian trees and shrubs, planted within a London garden.

primary interaction with the model itself, and through the secondary experience of viewing photographs and films taken from within the model. Photographic and filmed imagery allowed a view from inside the model, as the body of the camera could be accommodated in these compressed spaces. A form of Sobchack's "embodiment relationship" was still present for me as I dwelt in the same room as the model, manipulating the camera with my hands, as the only part of my body that could enter the model space. As I peered into the model through its cut-away walls and ceilings, my experience was doubled as I also vicariously experienced this small world through the eye of the camera, as seen on my iPhone screen. In this, my experience was also in part that of the "spectator", taking primary input though the mediation of a screen.

I also filmed the reconstructed installation, attempting to generate the time-based footage missing from the original installation documentation. However, there were several aspects of the resultant footage that made it unsuitable – the projected films within the model produced a strobing effect when re-filmed, and the contrast differential in the projected image and the model room meant that both could not be seen clearly in the footage. Finally, as the original window footage was shot (and projected) as real-time, any movement within that window footage was indiscernible on the small screen inside the small model. It was not possible to produce new filmic imagery the experience of which could function as an analogue of the experience of the original installation. A more compelling experience was obtained by peering into the model itself and watching first-hand the miniature projection, a kind of real space/time of the projection event (Le Grice, 2001b: 156). This direct interaction with the model itself for a viewer is something that I went on to explore in later work, in particular, the *Phoenix Gallery* and *Studio F23* projects as presented later in this chapter.

Rather than continuing to try to obtain footage of the original installation, in mid-2016 I used the model of the empty gallery to make an exploration of sunlight moving through the space. In this, I treated the model as a "new" space, rather than a replica of the original gallery. As I was filming it in a different hemisphere, and not just time zone, all notions of solar orientation were irrelevant. The resultant simple sequence of time-lapse footage recorded the sunlight moving though the model/room, at a range of scales, exploring how the material of the model responds to the light. A blurred "real" view through the windows is visible while the model's material nature is still apparent in the imagery. The eye level perspectival imagery coupled with a narrow depth of field that allows differing levels of focus, and the tactile quality of light across subtly textured material provides a spatial immersion to the viewer. The scaled body of the action camera is wholly encapsulated within the model, and thus dwells within the space sized to fit its small body – in the viewing of the film recorded by this miniature mechanical body the viewer's body can enter the space, enacting a perceptual shrinkage akin to that of Alice (in Wonderland).

Figure 4-12: Wunderlich model sun sequence. https://vimeo.com/166187305

4.3 Making Space

Following the early reconstructions of existing spaces, I wanted to develop models of "propositional" space, whose only referent was the one generated through the model itself. In discussing James Casebere's photographs of models Hal Foster identifies these "images as simulacra, as copies without originals [… with] no referent in the world […which] do not transcribe a reality so much as conceive one" (Foster, 1983: 204, 203). In this, Foster is identifying a quality of all propositional architectural models, which, while not having a referent in the world *yet*, potentially have one in their future. As previously discussed, at this stage the referent only exists in the mind of the viewer, which has an analogical relationship with its pictorial version, and its prophesied one.

4.3.1 Light Modulator

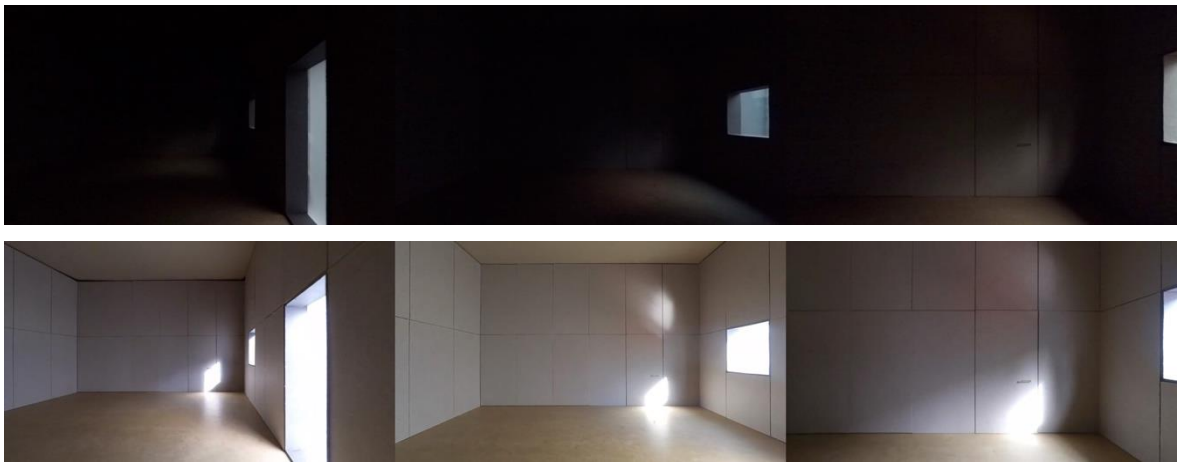


Figure 4-13: "Light Modulator" – dawn to dusk – 3 days, 3 scales https://vimeo.com/399693689

Hesitant to “design” an architecture to film, this 1:25 model[98] (made in mid-late 2016) took the common dimensions for sheet material (4x8 feet) as its basic module, offering the potential for reconfiguration – moving the wall, window and door locations – thereby allowing the model to be used for a propositional design process. In its largest configuration the model could provide the first of several iterations testing different proportions of room and placement of openings, all based on the modular grid. I borrowed Moholoy Nagy’s term “Light Modulator” for the working title of the project, to reflect its use of the modulation of light as its primary medium, as well as make reference to Le Corbusier’s anthropometric scale of proportions, “the Modulor” (1951) for the modular nature of the model and its ability to modulate space. Although made to film sunlight moving through the model room, dawn and dusk provided the most evocative footage, the texture and colour of the material surfaces emerging and disappearing along with the light. While this project did not develop further in the way originally intended, it prompted the start of work exploring lower levels of light.[99]

4.3.2 Three Yi model

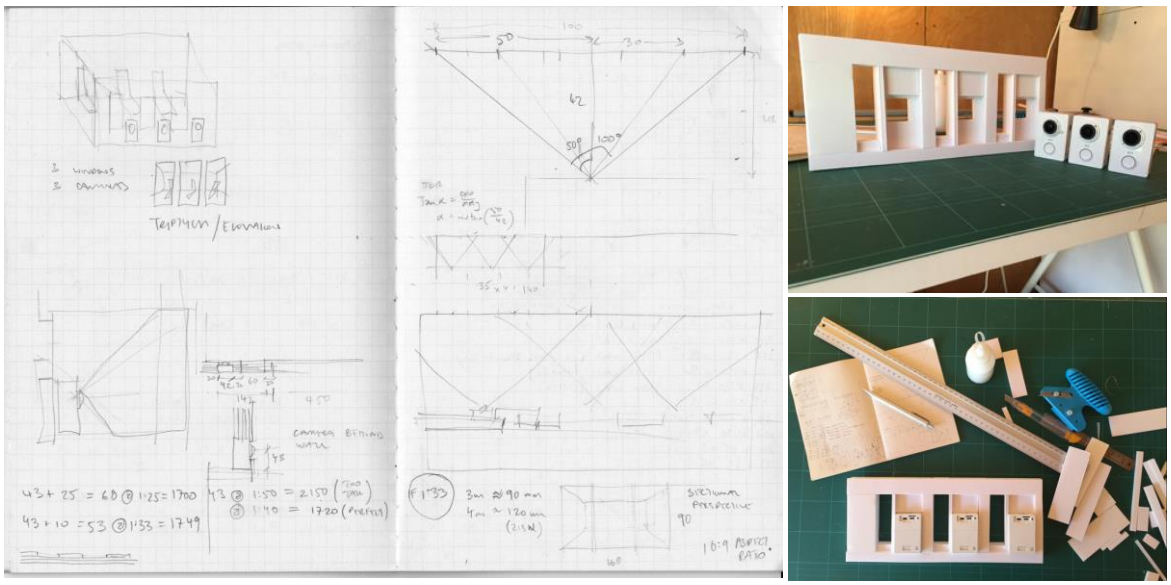


Figure 4-14: Design sketches for the Three Yi Model, and model construction

This project[100] commenced in April 2017 and aimed to produce imagery that minimised perspectival qualities and was more elevational in nature, by utilising my growing collection of action cameras[101] with a model designed for three cameras to simultaneously film an expanded field of view. This draws upon the surveying technique of photogrammetry, by which a series of elevational photographs are rectified, scaled and

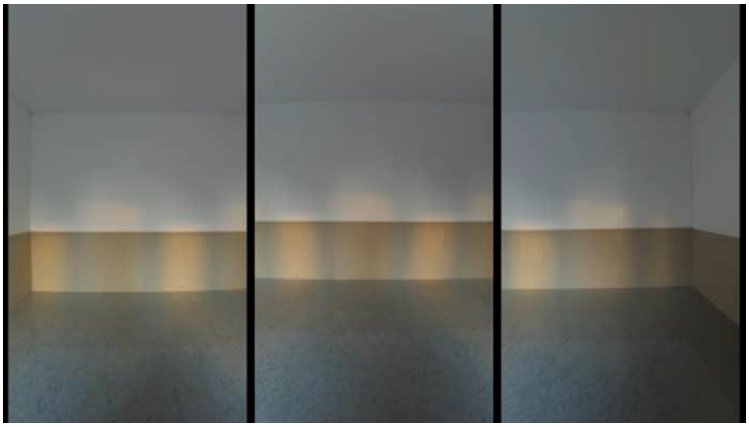
[98] https://architecturalmovingdrawing.com/category/modulator/

[99] The filming of low light required an extension of my research into the technical working of the action cameras, in particular a consideration of the quality of sensor within the camera. Fortunately, the original Yi Action camera, with which I had made these Light Modulator recordings had such a sensor.

[100] https://architecturalmovingdrawing.com/category/three-yi-model/

[101] I had bought extra cameras to film simultaneously from several locations within a model.

stitched together in order to trace a measured elevation (Bedford and Papworth, 2009: 14-16), and sought to widen the view as I had done with the triptych format in the *Approach* film. The model was designed to be portable,[102] to allow its transportation to Australia for a trip at Easter 2017, and to make use of the sunshine there. The scale of 1:33 was small enough to transport, and worked with the cameras' fields of view, providing some overlap between each recording. The front wall of the model held the cameras in a fixed position, thereby embedding the camera in the architectural component and provided the form of the wall/tripod with its own tectonic character. A simple datum line a third of the way up the walls was formed by a change in lining, and three tall, narrow windows adjacent to each of the cameras provided the only source of light. Footage from the model was taken in London and Perth, but unfortunately the cameras did not all record continuously.



https://vimeo.com/214971034

https://vimeo.com/214975013

Figure 4-15: Filming the Three Yi model in London and Perth

Back in London in May 2017 (as part of the "found objects" work discussed in more detail in the next section), I used the three Yi wall tripod to film a quickly assembled makeshift model using cellular packing material and card.[103] Again, several of the cameras stopped working during filming – in the edit below each panel is played at a speed that showed the entirety of the footage in two minutes, resulting in a time slippage between the three panels.

[102] The model pieces were pinned rather than glued to allow flat-pack transport. This is a common technique when making design development models, to allow quick reconfiguration.
[103] Cellular card packing material, which gave its surface a dimpled pattern, with a sheet of Perspex for the floor. https://architecturalmovingdrawing.com/2017/05/01/found-card-3-yi-test-model/

Figure 4-16: Three Yi filming found object room assembly 1 *https://vimeo.com/215481647*

I did not continue with this specific technique as the 1-point perspective apparent in the imagery of the floors, ceiling and side walls dominates the imagery. However, the flat rectangle of the back wall indicates how this technique could be developed for use in a similar way for external footage of buildings or models, to form a type of moving photogrammetric elevation. The use of multiple cameras to simultaneously film inside a model was continued, and is documented later in this chapter, in section 4.7.1.1.

4.4 Found objects/possible architectures

Ultimately, I was not happy with the specificity of the architectural language in both the *Light Modulator* and *Three Yi* models, and the impact it had on the reading of the imagery. In making these models I was designing architecture purely to have material to film – while interested in the potential for this work in processes of architectural design, the intention of my thesis is not to undertake such design directly. Rather, the aim was to develop techniques by which the architectural model could be filmed, how techniques I had developed from filming buildings might be translated to these small architectures, and how the model might offer new opportunities for filming not available to the built edifice. I therefore shifted my strategy to using found objects for filming, appropriating items whose material and/or formal qualities might, when filmed, resemble architectural and/or urban space and material. Like James Casebere's photographs of his own "architectural" models based on existing typologies, the imagery proposes new, but familiar, spatial conditions (Kunst, 2016). The found object, while suggesting an architecture, does not attempt photo-realistic simulation. Art and architecture critic Wouter Davidts likens Casebere's models to ones made through architectural practice, explaining that architectural "scale models should be neither too realistic nor too detailed… A model needs to retain a relative degree of abstraction as a material object to accomplish its conjectural quality… A model's degree of detailing … does not stand in a reversely proportional relationship to its capacity to stir one's imagination regarding the future reality it projects" (Davidts, 2014).

This accords with Japanese robotics professor Masahiro Mori's idea of the "Uncanny Valley" to refer to a *reduction* in viewer affinity as simulations gain *increased* levels of verisimilitude (Mori et al., 2012). Similarly, Neuroscientist Vilayanur S. Ramachandran (2003) extends the concept of "Peak Shift"[104] to discuss how artworks and other visual representational artefacts may communicate more succinctly through such amplification of visual elements, rather than strict visual resemblance. As discussed in Chapter 3, the agency of the sunlight, and its optical tactility, provides a level of viewer immersion – sunlight may also act as Ramachandran's "amplified element" in provoking a strong viewer response to the imagery filmed from the clearly identifiable found objects.

Hal Foster identifies the uncanny quality of Casebere's photographs of invented architectures, which are "resonant with repetitions yet without originals, they are simulacra; not real yet somehow 'effective,' they are phantasms; *heimlich* and *unheimlich* at once, they are uncanny" (Foster, 1983: 204). Foster asserts that Casebere's work "confounds our belief in the photograph as a record of the real, and he suppresses all specific detail in order to cast its reality-value in doubt" (Foster, 1983: 204, 203). This paradoxical relationship between an image and its projection of a non-existent subject is at the heart of architectural representation. The proposal of speculative possible future worlds relies on the understanding that what it shows does not yet exist but asks the viewer to momentarily believe in the prospective vision, while knowing it is a construct. It is such an "uncanny" quality to the imagery that I wish to manifest in my work with models and is one that I believe makes filmed or photographed imagery generated from physical models more compelling than CGI renders and animations. In maintaining the paradoxical nature of the image, rather than presenting what appears to be a photograph of a flawless completed building, the model image hovers between real space and constructed representational artefact, activating something vital in the viewer's perceptual imagination.

The following section provides a largely chronological overview of my experiments filming various objects of card packing material, exploring the passage of light and shadow across these formal and textural artefacts. More detail about each experiment is on the practice online journal, at the links provided. The work in this section supports the development of model filming techniques, such as time-lapse, orthographic viewpoints, a range of scales (close-up through to wide-angle) by using found objects. In this, it models a form of practice that may be useful for architects and can inform my own collaborative projects with architects (as discussed later). However, the materials that I choose to film, and any resulting "possible architecture" that I conjure through edited films, are part of my own hybrid art/architecture practice. As such, this work is situated alongside forms of art practice which utilise photographed or filmed imagery of models and contributes to this

[104] Originating in cognitive science, "Peak Shift" refers to stronger responses in a subject to exaggerated or amplified factors, despite a deviation from visual resemblance.

context through the embedded architectural disciplinary influences within my filming strategies that take reference from architectural drawing conventions. The imagery hints as potential architectures, which never resolve into a definitive singular architectural "proposition". For me, there is a power in withholding such a level of resolution, to allow the interpreting imagination of the viewer to construct a sense of space within still ambiguous imagery. This strand of work is ongoing, and the precise form of any "final" outputs is, like the architectures they depict, still to be resolved.

4.4.1 Conical yarn spool interiors

The found object work started while on a trip to Australia in Easter 2017,[105] when I noticed an architectural model-like quality to a yarn cone – released from its coil of raw silk, the grey cardboard was similar to that used for architectural models, and its perforated conical form was inherently architectural. These evenly arrayed circular punctures admitted light into the interior of the cone – using the three Yi Action cameras mounted in the foam-board wall/tripod made for triptych filming, I filmed upwards, into the cones' interiors. The resulting footage revealed an unexpected phenomenon – the perforations acted as the pinhole lenses of a camera obscura, each projecting a small image of the clouds which passed overhead, rolling around the interior conical surfaces.

Figure 4-17: Silk cone filming arrangement; pentiptych of silk cone camera obscuras
https://vimeo.com/216790872

[105] https://architecturalmovingdrawing.com/2017/04/29/silk-cone-found-object-models/

4.4.2 Assembled and readymade rooms

Back in London in May 2017 I continued experimenting with found objects and materials – this series of experiments takes found materials with interesting textures or markings, assembling them into simple rooms, and also appropriates found objects which already contain interior space, whose architectural language is structured by the original object's proportions and material surfaces. Through filming, the architectural potential of these made and found rooms is revealed.

Figure 4-18: Found object room assembly 2 - triptych
May 2017 – Found materials are arranged to encourage oblique light over the dimpled card surface. Filming with one camera over three days presented as a triptych.[106]
https://vimeo.com/216275713

Figure 4-19: Long amazon box
May 2017 – This box has long thin proportions, several arrows printed on the surfaces, and an opening flap that becomes an awning. [107]
https://vimeo.com/382172237

Figure 4-20: Shoebox with perforated packing material roof
August 2017 – This shoebox has the junction between wall and floor expressed as a strong shadow gap. A paper lining at the top of the sides forms a subtle, deep cornice. The perforated packing material provides an articulated soffit, while admitting dappled light. [108]
https://vimeo.com/231100135

[106] https://architecturalmovingdrawing.com/2017/05/06/new-found-card-model/
[107] https://architecturalmovingdrawing.com/2017/05/08/long-amazon-box/
[108] https://architecturalmovingdrawing.com/2017/08/26/firefly-8s-test-filming-shoebox-packing-material/

Figure 4-21: Cardboard box and bubble wrap floor
Easter 2018 – An unremarkable cardboard box receives an undulating floor of bubble wrap and is filmed simultaneously with two cameras side-by-side.[109]
https://vimeo.com/265686391

This final piece, below, was filmed with two different zoom length lenses, during which one of the cameras was accidentally nudged and so changed angle of view. This suggested that I could set up cameras with a series of different viewpoints, each presenting fragmented views of the model room, a technique that I explored later, in section 4.7.1.1.

Figure 4-22: Shoebox and polypropylene dividers *https://vimeo.com/269136010*
Easter 2018 – Shoebox with readymade cornice, and end walls are divided into two panels. Frosted polypropylene dividers provide a translucent soffit, obscuring the space beyond the model. The slots in the dividers admit slices of sunlight into the model room. [110]

4.4.3 Moulded card packaging

This sequence of experiments used moulded pulped cardboard packing material, which has largely replaced polystyrene packing. The textured grey or brown card is evocative of concrete or rendered surfaces, and the strong architectural forms become beautifully animated by the moving sunlight and shadow.

At my childhood home in Perth at Easter 2018, the roof of the front veranda provided the most appropriate location for setting up the filming experiments, being the only continuously unshaded place.[111] Moulded grey pulp cardboard for lining the bottom of boxes of fruit had cupped surfaces to protect the fruit's delicate and easily bruised flesh. Suggestive of an undulating wall, the sheets are filmed in elevation.

[109] https://architecturalmovingdrawing.com/2018/04/19/austinmer-box-1-split-screen/
[110] https://architecturalmovingdrawing.com/2018/04/22/austinmer-shoe-box-with-polycarbonate-divider-soffit/
[111] https://architecturalmovingdrawing.com/2018/03/29/fruit-carton-perth-verandah-roof/

Figure 4-23: Fruit carton packing edit using zooms of a single piece of footage
https://vimeo.com/269925266

At home in London in September 2018, a collection of numerous examples moulded card packaging[112] was filmed as an assembly in plan view to form an urban topography, and as individual elements, in elevation, to suggest a deep, textured facade.[113]

https://vimeo.com/358830110

Figure 4-24: Assembly of moulded box packing

[112] Sourced in a clear out of my loft.
[113] https://architecturalmovingdrawing.com/2018/09/25/assorted-moulded-card-packing-material/

Figure 4-25: Moulded box packing zoom edits
https://vimeo.com/356250216 *https://vimeo.com/356250689*

On a trip to IKEA in late 2018, I noticed pieces of card that had been used for supporting rolls of carpet which were destined for recycling. Their strong forms and repetition provide an artificial topography, reminiscent of the architecture of pre-Columbian civilizations.[114]

Figure 4-26: IKEA carpet packing moulded card filming and footage
https://vimeo.com/358830200 *https://vimeo.com/358830244*

4.4.4 Honeycomb packing architecture

Its cells exposed along cut edges, forming rhythms of structure, honeycomb packaging material is essentially architectural in nature. Stacked vertically, building forms are quickly conjured, and the depth of their facades provide an opportunity for light and shadow to activate these elevations.[115]

[114] https://architecturalmovingdrawing.com/2018/10/24/ikea-carpet-packing/
[115] https://architecturalmovingdrawing.com/category/found-objects/honeycomb-packing/

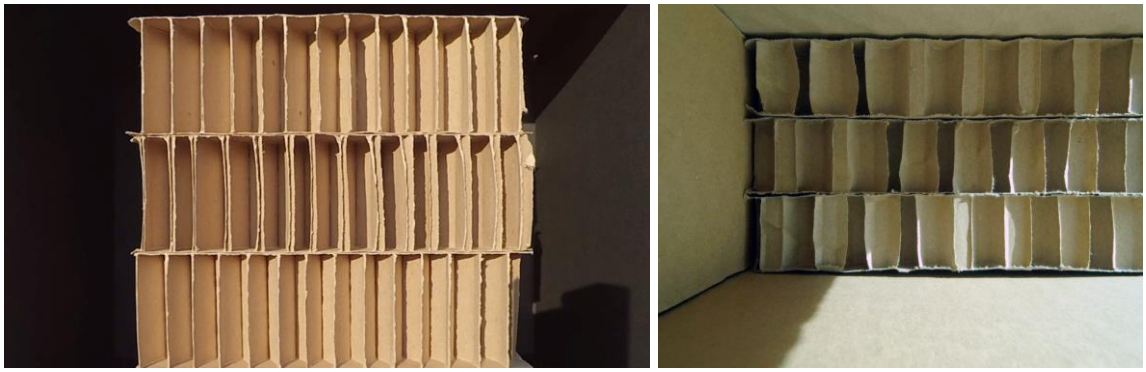
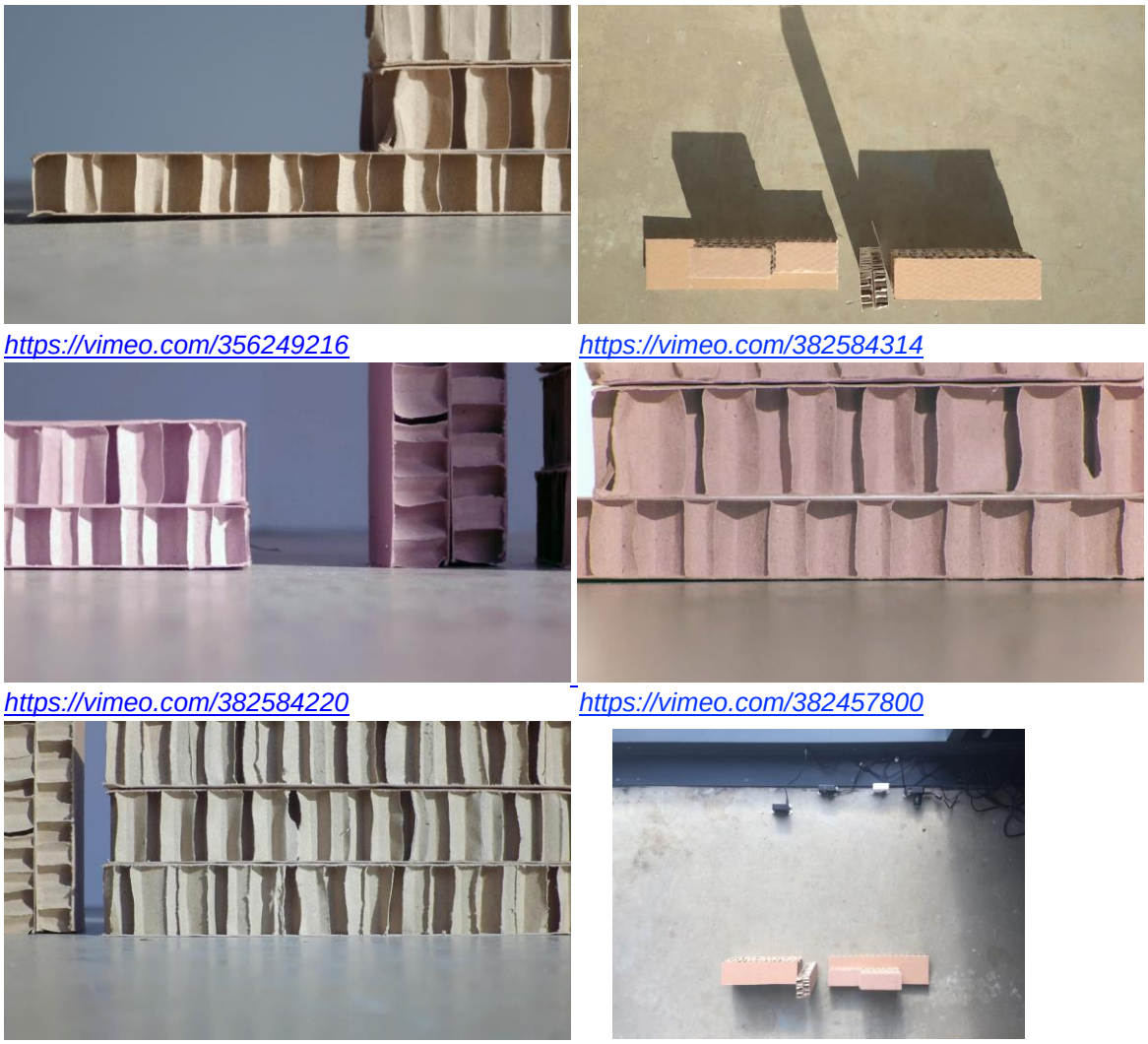


Figure 4-27: Honeycomb packing footage, Grezzo, Italy and London
https://vimeo.com/381907824 *https://vimeo.com/381906761*

Following the above early experiments in May and August 2017, in October 2018, this more complex assembly of the honeycomb card into architectural forms[116] was filmed in elevation with several action cameras, each fitted with different zoom lenses, and in plan using my 4K camcorder.

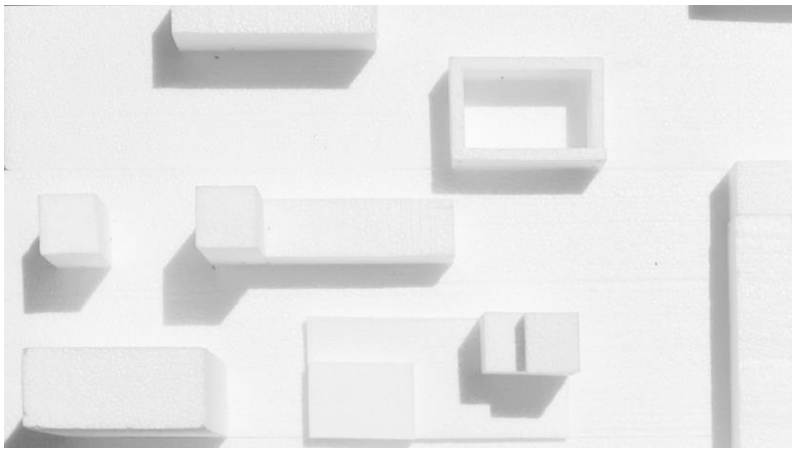


https://vimeo.com/356249216 *https://vimeo.com/382584314*
https://vimeo.com/382584220 *https://vimeo.com/382457800*
https://vimeo.com/382457919
Figure 4-28: Honeycomb packaging architecture

[116] https://architecturalmovingdrawing.com/2018/10/27/honeycomb-packing-assembly-multiple-cameras/

4.4.5 Polystyrene blocks

This pair of filming tests[117] in June 2018 sought to perform an animated sciagraphy, capturing the shadows of three-dimensional forms, the objects themselves disappearing into their white background. Several practical issues limited this work, such as the intrusion of the tripod's shadow, and the continued presence of a perspectival element to the images. These issues are addressed in later experiments with back-filming (presented in section 4.6.3).



https://vimeo.com/276489632

https://vimeo.com/356927682

Figure 4-29: Filming polystyrene blocks

My various tests filming found objects are reminiscent of elements of Hans Op de Beek's *Staging Silence* films (2009), (2013), (2019), where everyday objects become architectural models – thermos flasks and stacked towers of glass ashtrays form a street scene in *Staging Silence (1);* water bottles become a cityscape, potatoes are transmuted into islands in a waterscape, and chocolate bars make the textured floor of an interior scene in *Staging Silence (2).* Op de Beek's strategy of revealing the transformation of these everyday objects through inclusion of the performer's hands finds its way into my later project of the Studio F23 model, as presented in section 4.74, and suggests a further direction to my work with found objects.

[117] https://architecturalmovingdrawing.com/category/found-objects/polystyrene-packing/

4.5 Design thinking: architectural design practice through models

The development of processes for filming models presented as in the previous sections has enabled me to begin to work with architectural practitioners to consider how my evolving techniques of practising architectural moving drawing might relate to more normative forms of architectural practice. While no longer working in architectural practice myself, my teaching role provides a network of leading practitioners – this section presents several (as yet uncompleted) projects in collaboration with architectural practice Witherford Watson Mann (WWM).

Within architectural practice there are a small number of examples of model-based filmmaking, such as in photographer Leon Chew's commissioned film of NORD Architecture's models (Chew, 2015); Maarten Vanden Abeele's inclusion of footage of the Museum Dhondt-Dhaenens model in his commissioned portrait of the building, *You Weren't There Yet* (Abeele, 2015); and Andrew Power's short model film for his "House with a Guest Room" project (Power, 2017). In Chew's film, the model as artefact is the primary subject, rather than the architecture which the model was used to imagine, and potentially bring into being. Chew amalgamates imagery from models of several of NORD's projects, using strong contrast between light and shadow to unify the individual works of architecture. A commissioned and evocative soundtrack also blurs the distinction between the projects, providing a significant impact on the reading of the imagery. For *You Weren't There Yet*, Abeele juxtaposes the architectural model with the space which it models and in which it is sited – in this enjoyable moment the filmmaker plays with this self-referentiality, transitioning from model footage to imagery of the built edifice. The model is treated as both a subject in its own right, and as the vehicle for an architectural subject. Power's short film uses the simple filmic device of a horizontal camera track along the length of a 1:50 paper and card model to explore the horizontality of the proposed building, to "know what the interior would look like [and…] how it would feel to move from room to room" (Power, 2020). Glimpses into the house's rooms are obtained as the camera makes its three journeys along the elevation, and human dwelling is implied by the presence of furniture. In this film, made by the architect from their own detailed design development model, the nature of the filmed artefact as a model is apparent and is emphasised by the inclusion of a model car jerkily entering the driveway immediately prior to the start of the tracking motion.

NOORD's London Director, Graeme Williamson, sees Chew's film as a precursor to the potential use of model footage as an alternative to architectural CGI animations, asserting "The film reevaluates the power of the model within the contemporary context of fly-throughs and CGI that is generally trotted out" (Williamson, quoted in Marrs, 2015). Williamson's statement highlights that while the photography of models has become a

ubiquitous part of the design and communication process[118] for architects who make them in-house, time-based imagery is still very scarce. In my collaborations with architectural practitioners I hope to be able to test strategies for such an alternative to computer generated moving imagery for presentation purposes. However, such externally facing imagery is a small part of architects' use of mediating artefacts – drawings, models and other representational tools are used in an iterative and reflective design process to propose and evaluate new architecture. The work in the previous section indicates how working models, prepared quickly, and which do not attempt verisimilitude, can be filmed to test spatiotemporal conditions. In future collaborations with architectural practitioners, and in my teaching practice, I intend to further explore architectural moving drawing using models for design development.

4.5.1 Astley Castle model

In the summer of 2017, I began the first of several collaborations with Witherford Watson Mann. Following a conversation about my research, William Mann invited me to film the design development model for their Stirling Prize winning project, Astley Castle, and in September 2017 I spent a day at the practice's office filming the model.[119] The model had been in long term storage and had been brought out to be part of an international exhibition. At the time of filming parts of the model were in a slightly damaged state, although this contributed to the emphasis of the model as a working document for architectural thinking, and its imperfections help ensure the viewer of the footage is aware of the constructed nature of the spatial imagery.

At the start of the day William Mann, Christopher Watson and I talked about how the filming would proceed. William and Chris were conceiving of the artefact of the model as the primary subject, but for me the model was the vehicle that the film could use to construct the *architectural* subject of the building. The decision to film from within the model *and* as an overview meant that both model and building effectively became overlaid subjects. The juxtaposition of this footage shows the model as an artefact inherently entwined with the design development process, and presents a series of possible architectures, which eventually culminate in the proposal that was built. The footage records William "performing" the design iterations through the model. The imagery from within the model shows the space of the building changing, evolving from ruin to architectural proposition, but by way of the eddies and circuits[120] necessary for design

[118] The striking quality of model photographs lends themselves very well to the image centric medium of Instagram and can be a strong branding tool in such use of social media for the promotion of a practice.
[119] https://architecturalmovingdrawing.com/category/collaborations/astley-castle/
[120] Evans (1989: 20) uses this term to emphasise the complex route between drawing and building. However, it is also an appropriate concept for the iterative and reflective design methodology of architects.

development. As in Op de Beek's *Staging Silence* films, William's hands are present as the active agent placing, replacing, and removing elements of the model, their scale differential highlighting the physical nature of the model artefact. However, despite such a recognition, the viewpoint of the camera *within* the space of the model offers the viewer a level of spatial immersion through which they "see space" and not merely a model.

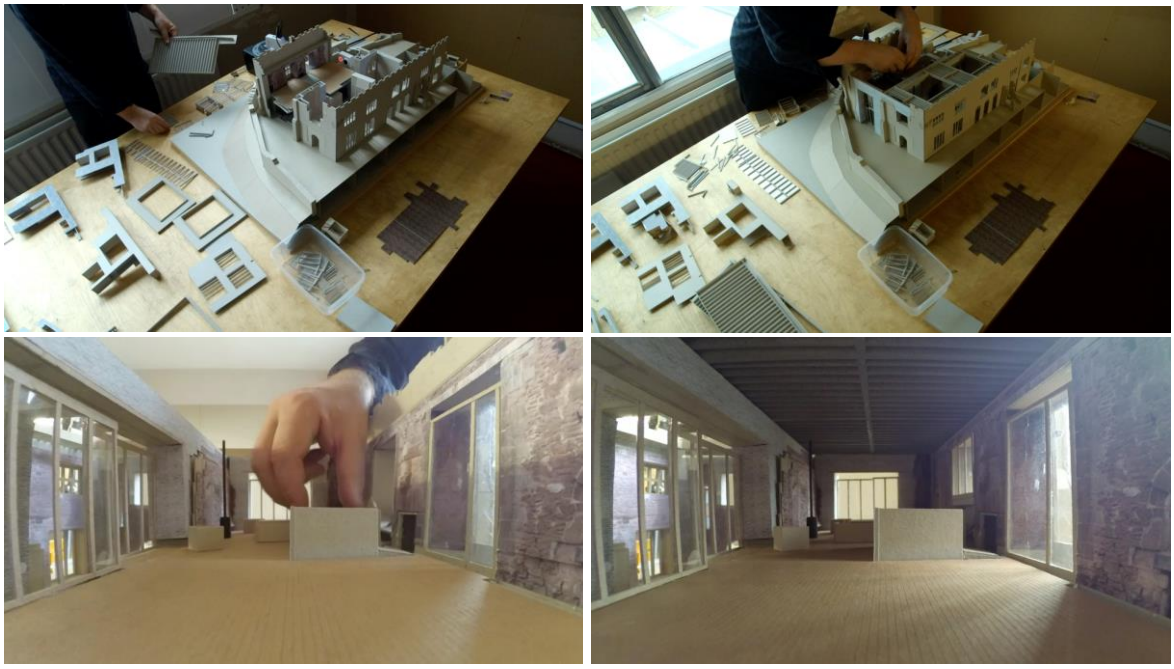


Figure 4-30: "Performing" the design process of Astley Castle in the model
https://vimeo.com/301686833

The overview imagery, taken outside the model, shows the artefact in its entirety, as well as the architect as more of a whole person, rather than just a pair of hands. In this footage the bodily relationship between architect and model is much more apparent – it exposes the perambulations the architect undergoes to interact with the model, to use it as a tool for architectural imagining.

4.5.2 The Albany, Deptford, models

In summer 2019 William contacted me to ask if I would like to collaborate on the making of a film for the practice's refurbishment and extension of the existing building and proposed development of the wider grounds of The Albany, Deptford.[121] Witherford Watson Mann had been working with The Albany for several years – as the project was not an architectural competition, but rather a current active stage of a long-standing collaboration with the client, the production of visual material to communicate the project had the opportunity to be more innovative, and not rely on CGI renderings. Like NOORD's Director, Graeme Williamson, William Mann was keen to see how model footage could replace the CGI imagery that architects felt obliged to produce.

[121] https://architecturalmovingdrawing.com/category/collaborations/the-albany/

The practice had two key models for the project that we worked with in different ways – a 1:400 massing model that had been used to test a range of alternatives for the project, and a new, still under construction, 1:75 model of the current version of the proposal. On a sunny day in June 2019 I spent a day at WWM's office recording preliminary footage of the models, and discussing the project with William, to understand how the architectural intentions for the still developing proposal could relate to strategies for filming and editing. This filming was understood as a rehearsal for a later final filming of the 1:75 model,[122] and was used to consider how to best insert the action cameras into this model, test different viewpoints, and to also inform decisions about how the model should be completed.

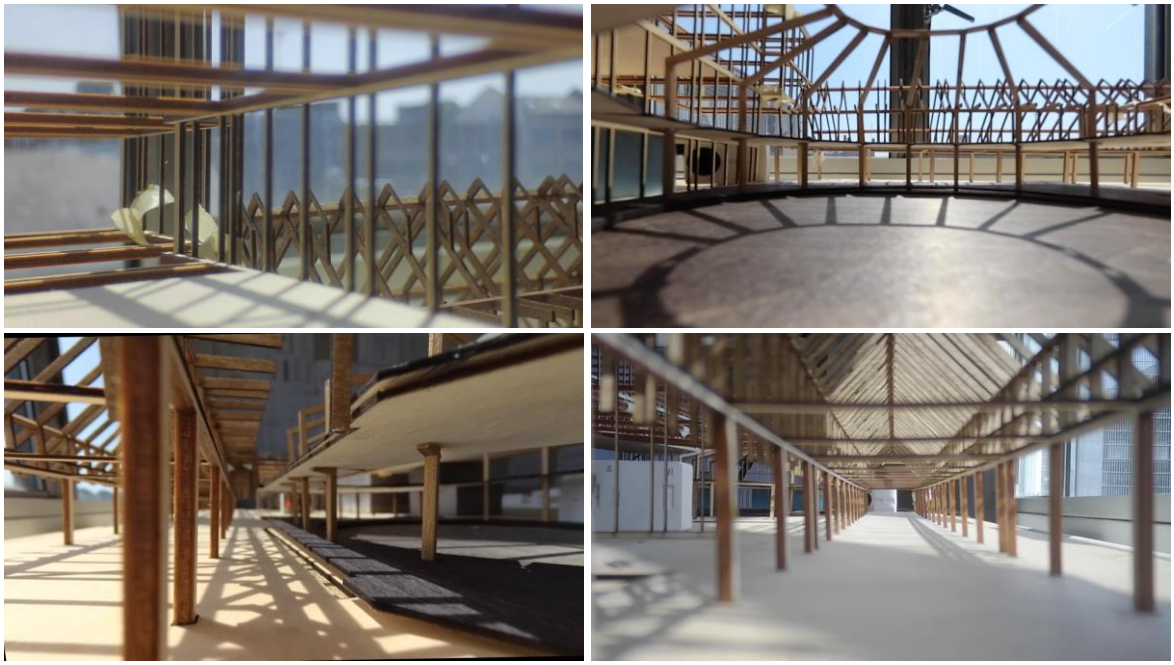


Figure 4-31: Time-lapse footage of The Albany model using action cameras
https://vimeo.com/345442864 https://vimeo.com/345442366
https://vimeo.com/345441940 https://vimeo.com/345448030

In some of the footage the blurred skyline of the part of the city beyond WWM's office windows became a backdrop for the model. William and I both observed this at the time and discussed ways that we could situate the model for the next filming to ensure we retained this effect. On this sunny day the frame structure of the 1:75 model provided a series of delightful moving shadows of the as yet uncovered structural elements. While these would be roofed over in a final built scheme, they would still likely play a tectonic role in the interior experience, and so their expression in the film may still be relevant. I also made some quick test "fly-over" clips, filmed with my iPhone in slow-motion mode to obtain a smoother hand-held motion, a technique used in the Nauman doors model.

[122] At the time of writing this second filming has not yet taken place.

Figure 4-32: Slow-motion footage of The Albany model using iPhone camera
https://vimeo.com/346709543 https://vimeo.com/346709424 https://vimeo.com/346709953

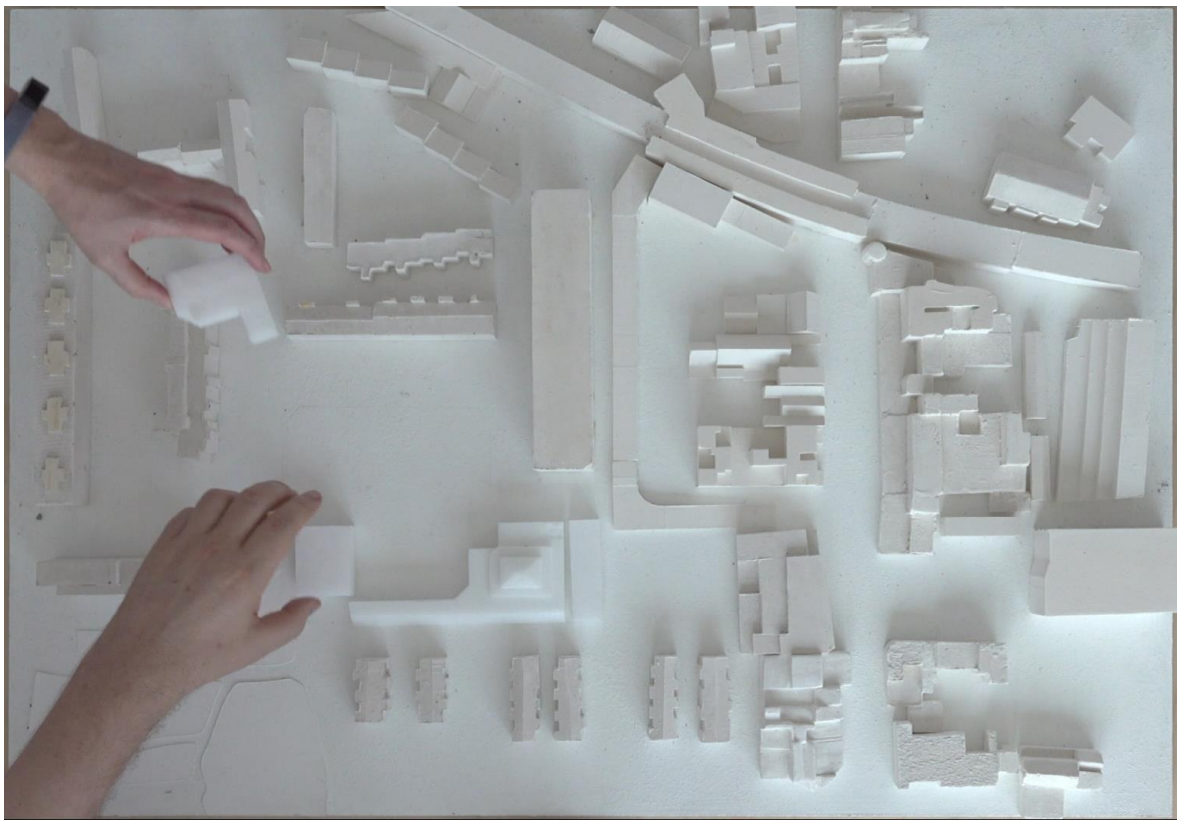


Figure 4-33: 1:400 model of The Albany with "performance" of design development
https://vimeo.com/345522161 https://vimeo.com/345521301

The 1:400 model was used to record William "performing" the strategic moves of the design development – in fact, this performance was a form of re-enactment, as the design development he presented in ten minutes had already taken place, over a much more

extended timeframe. However, this re-enactment served more purpose than merely the subject for filming – it brought to the fore the key strategic moves of the design process, refreshing William's memory of the proposal, and providing me with a greater level of understanding about the project.[123]

These preliminary experiments working with architectural practitioners are snapshots of work-in-progress, and as such will continue beyond the completion of this thesis. However, my wider project and further practice goes beyond the development of tools for use in normative architectural practice. As the last two sections of this chapter will demonstrate, the various hybrid making practices of architectural moving drawing has value to art practice, and as a transdisciplinary art/architecture practice in its own right.

4.6 Shadow drawings

The evolving techniques in this section literally use light as the primary active agent, taking the orthographic shadows of objects cast by the sun's parallel rays as the flattened trace of that object projected onto a picture plane. The work brings together the projection of light, and the projection within architectural representation, producing architectural moving drawing strategies of making which are free from the perspectival element in all lens-based imagery. This strand of moving image practice has developed in parallel to another strand of practice using cyanotype photogram printing. As the cyanotype work is not directly a moving-image media practice (although duration is a significant component of the work), this is not fully in scope of the thesis – although this work emerged from the thesis, and has continued to inform the moving image work, I will only refer to it as it pertains to the development or incorporation of practices of architectural moving drawing. As the processes in this section have been very experimental and iterative, I will show stages of development of a particular technique or strand of work, while also highlighting critical junctures.

4.6.1 Camera/room

Questions of how a longer temporality might be reflected in the work arose in a supervisory conversation, specifically how to include the fading of architectural materials by sunlight. This led to the exploration of how light sensitive materials could be used for this task, with the "slow" photographic process of cyanotype printing[124] thereby becoming introduced to my practice.

[123] During the filming, William's narrative often felt directed at me – I potentially became a stand-in for the audience of the film, but also as an architect and architectural educator, I was a colleague with whom he could share thoughts about the project.
[124] I had been introduced to cyanotype printing on an earlier visit to friends in Australia. The recent visit offered the opportunity of my friend's expertise and supply of cyanotype chemicals.

On my Easter 2017 visit to my friends in New South Wales I began to experiment with this idea. A series of small “model” rooms[125] with interchangeable window configurations were designed and constructed to admit sunlight and expose cyanotype paper lining the interior surfaces of the model.

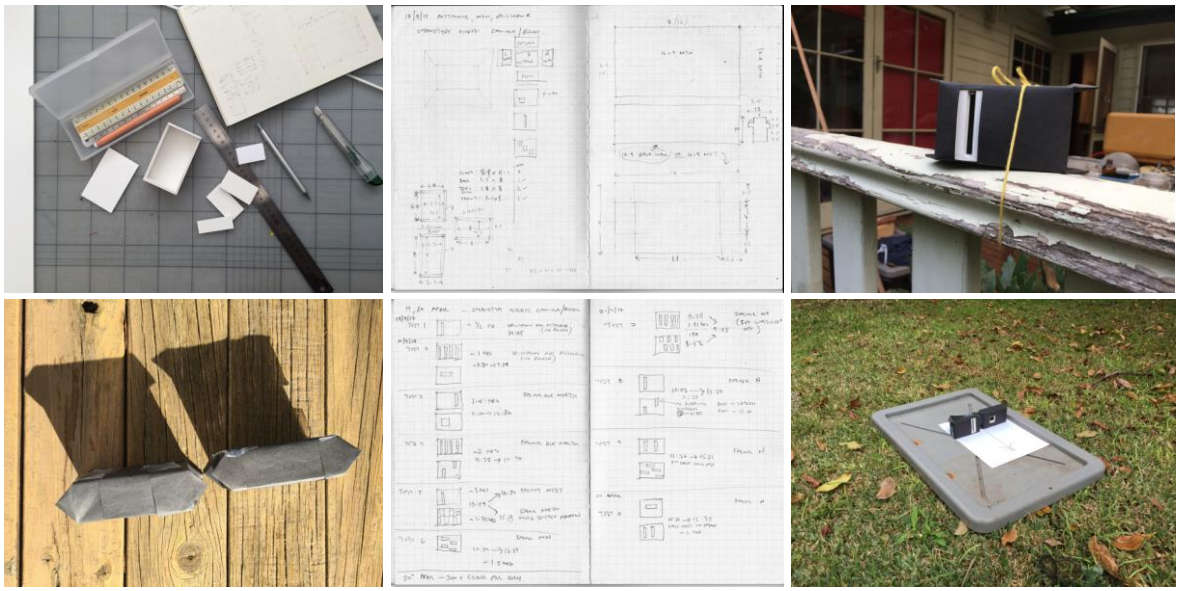


Figure 4-34: Model camera/rooms for cyanotypes

The resultant unfolded prints contain time embedded in their surface – intermittent sunshine had generated patches of exposure, and they also revealed the behaviour of light within the model, with reflected light creating soft-edged pools of exposure.

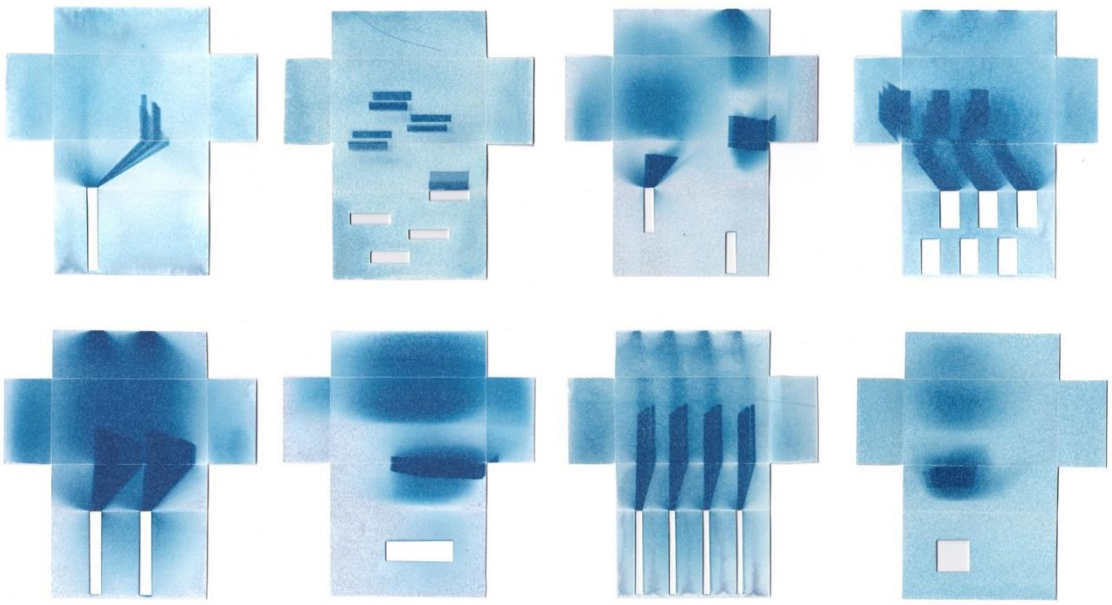


Figure 4-35: Cyanotype exposures inside model camera/rooms

[125] The size of the model room was based on the 16:9 HD screen ratio – 80mm wide by 45mm high and 25mm deep. The resulting “room” was therefore approximately 1:100, and of a similar proportion to a digital camera, which felt apt as I was using the room to act as a form of camera (itself Italian for “room”). This project is presented in detail on my practice blog: https://architecturalmovingdrawing.com/category/cyanotype-roomcamera/

I folded the nets back into their foam-board housings and filmed the movement of new sunlight across the surfaces that had been marked by the previous passages of sunlight.[126] This indicates a possible extension of this project – if the exposures were filmed as they occurred, the exposed room could subsequently be re-filmed in the same location, demonstrating the daily change in the sun's path.

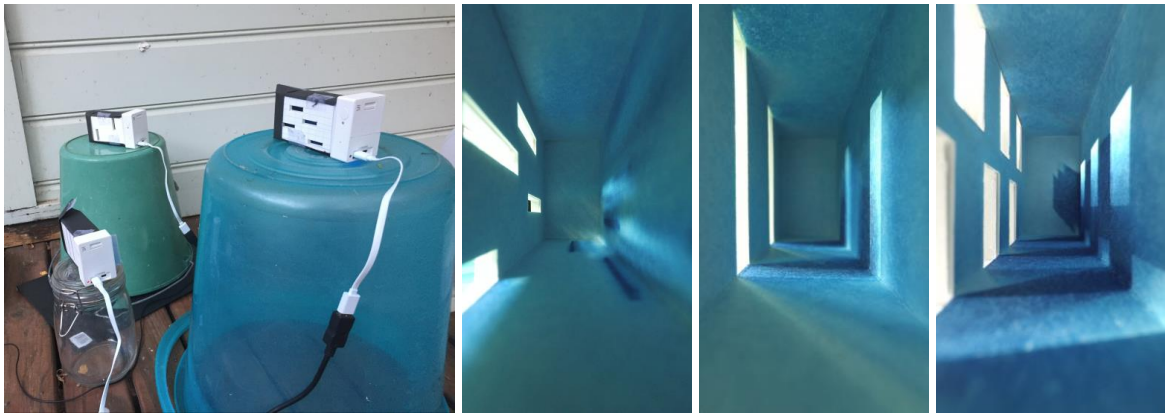


Figure 4-36: Filming the cyanotype prints inside model camera/rooms
https://vimeo.com/215312553

After this project I continued to work with larger scale cyanotypes, translating the principles of the model rooms back into real architectural space.[127] I will indicate where this strand of my practice has directly informed or explicitly overlaps with my moving image practice and the development of processes of architectural moving drawing.

4.6.2 Silk cone shadows

While filming inside the silk cones in Austinmer, NSW at Easter 2017[128] I had become interested in the shadows the cones themselves made as objects[129] – their architectural shapes were expressed entirely through their shadows, these forms then being reconstructed by the mind of the viewer. In the first preliminary experiment in my home office in London the camera's shadow was present in the imagery, and the surface receiving the projected shadows lacked a material and textural neutrality. In the later Australian experiments[130] it continued to be a challenge to record the shadows without including the objects themselves or the shadow of the camera. Back filming the shadows would eliminate both of these issues, but it was some time before I was able to test this strategy.

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[126] In this, I was not particularly rigorous in the orientation of the models and therefore the sunlight's route did not match the original exposures.
[127] This work is documented on www.eleanorsuess.works and my Instagram feed @eleanor_suess
[128] This was at the same time that I was making the cyanotype camera rooms.
[129] https://architecturalmovingdrawing.com/category/found-objects/silk-cones/
[130] https://architecturalmovingdrawing.com/2018/04/26/silk-cone-shadows-austinmer-april-2018/
https://architecturalmovingdrawing.com/2018/04/28/silk-cone-shadows-on-perth-verandah-roof/

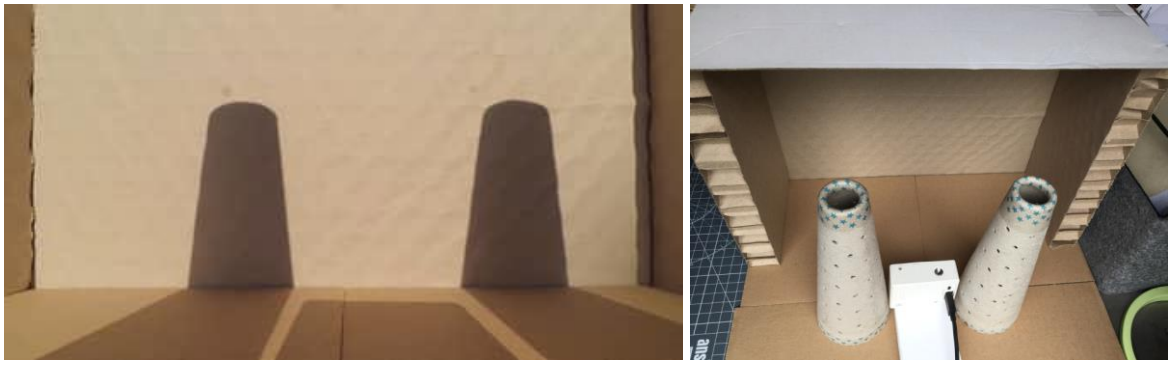

Figure 4-37: Preliminary silk cone shadow filming test (London, May 2017)
https://vimeo.com/216278907

Figure 4-38: Shadows filmed in plan from above (Austinmer, April 2018)
https://vimeo.com/269663604

Figure 4-39: Shadows filmed in plan from above (Perth, April 2018)
https://vimeo.com/269663247

In September 2019 I took up a studio space in Croydon, close to my home (a move which has significantly impacted my practice since), which allowed me to set up more structured and controllable shadow filming arrangements. The arrival in my studio of a discarded fish tank, repurposed as a large vitrine, provided a readymade filming apparatus.[131]

[131] https://architecturalmovingdrawing.com/2019/05/14/cone-shadows-in-vitrine/

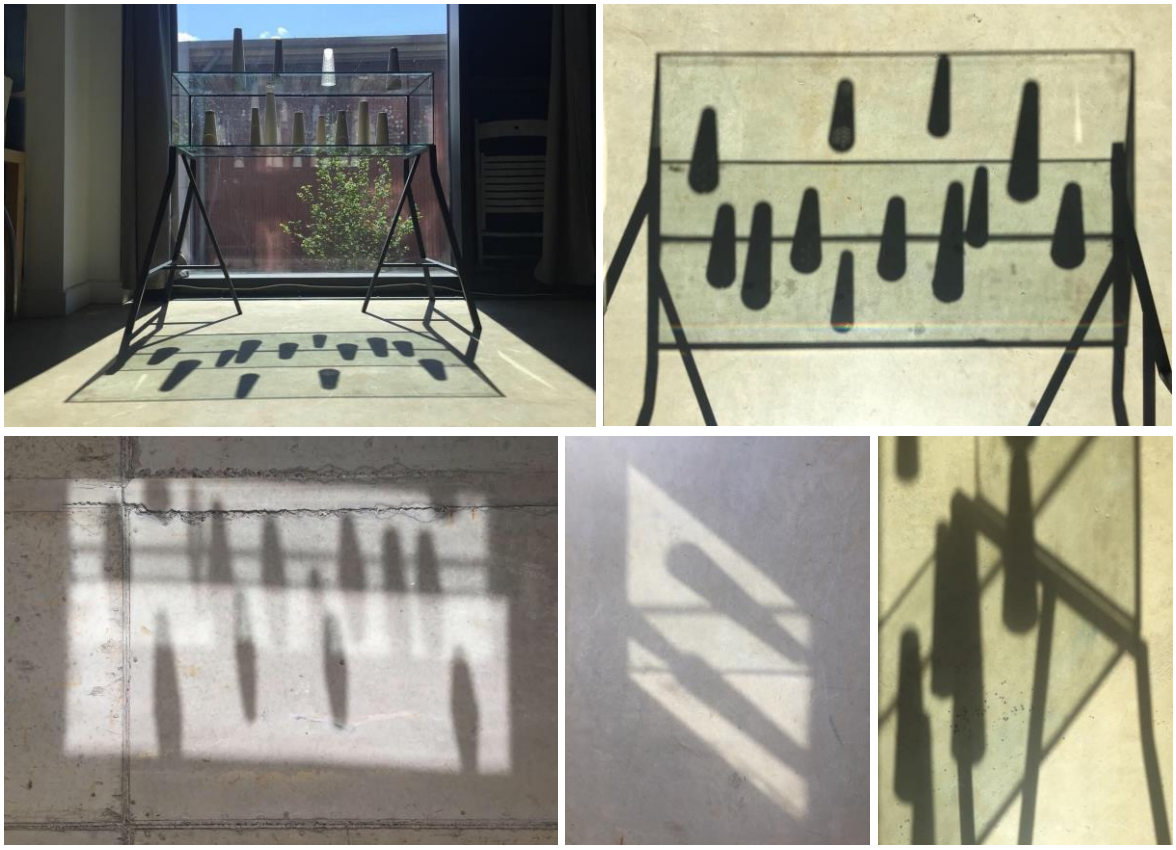

Figure 4-40: Shadows and reflections of silk cones in fish tank vitrine

Balanced on two trestles, the fish tank vitrine housed my now expanded collection[132] of yarn cones. The shadow of the makeshift vitrine and its two layers of cones traversed the floor of my studio, while its reflections moved across the ceiling. These projections of objects within their container of display offered a powerful image of the relationship between object and a container (be it a frame, vitrine or plinth) which has the power to elevate an ordinary, found object into an artefact of wonder. The shadow and reflection projections became a kind of second order Wunderkammer in the studio. While a beautiful phenomenon in the room, which marked time as the shadows and reflections found themselves in different places as the day moved on, it was not one which was simple to film[133]. Instead, I used the vitrine to test the back-filming strategy – a length of greaseproof paper lining the lower level of the vitrine received the cone's shadows, which were filmed by an action camera positioned underneath the assembly. While largely effective, the top layer of glass cast a line of shadow and prompted the design and construction of a bespoke back-filming apparatus. The resulting device has evolved over time, but initially took the form of a sheet of "opal" perspex (a milky acrylic normally used in light boxes) placed on top of a simple timber frame, balanced on trestles. This allowed "clean" footage of the cones' shadows to be captured.[134]

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[132] The proprietor of the online store where I had sourced the original yarn kindly included an array of differently sized cones in my next yarn delivery, and I sent her a link to the silk cone obscura film to show what could be made from them.

[133] I intend to explore ways of filming this setup. The most recent project, a scaled model of the studio, including a replica of the fish tank vitrine (see section 4.7.4) may be one such strategy.

[134] https://architecturalmovingdrawing.com/2019/09/05/silk-cone-shadows-back-projected/

Figure 4-41: Back-filming silk cone shadows in fish tank vitrine May 2019 https://vimeo.com/341992871

Figure 4-42: Silk cones shadows on bespoke back-filming apparatus, September 2019

https://vimeo.com/384220217 *Setting up*

https://vimeo.com/384217715 *One day of filming*

https://vimeo.com/384310100 *Four days of filming overlaid*

The third clip of *Figure 4-42* was made by overlaying four days of filming to ensure almost continuous shadows – this produces a flickering effect, as one layer moves into and out of focus, and a slight doubling to the shadows as the daily shift in the sun's elevation relative to azimuth varies their length. This process is developed further, in the next section, with the filming of acrylic objects.

4.6.3 Acrylic cubes and blocks

This section highlights a strand of practice that has its origins in the cone shadows and my experimentation with cyanotype photograms, and has extended, through both time-based work and cyanotype printing, into an exploration of the conventions of three-dimensional architectural parallel projection drawing. In the summer of 2017 on holiday in Italy I expanded the camera/room cyanotype exposure to prints of sunlight as it fell through windows in real rooms, effectively forming internal photograms of the building.[135] During the Easter 2018 Australia trip I continued this work, in the NSW house of my friends in which I regularly stay, and my childhood home in Perth. However, in the Australian climate houses are designed to limit the direct entry of sunlight, and the resulting solar gain, especially in mid-summer. I therefore started to make prints of found objects, that in some way helped to define the sense of each place, rather than "printing" the building itself. It was during the printing of particularly three-dimensional objects, such as chairs, that I registered that these images conformed to a specific form of three-dimensional architectural drawing projection – the axonometric, or plan oblique.

Figure 4-43: Chair cyanotype - non-perspectival axonometric (plan oblique) projection

The term "axonometric" for this form of oblique parallel projection is particular to architecture (and generally British rather than American architectural vocabulary). North American architectural theorist Hilary Bryon provides an overview of the formalisation of Western systems of parallel projection in the early to mid-nineteenth century, including the original use of the term axonometric as being "defined by projectors perpendicular to the plane of projection" (Bryon, 2008: 337), of which isometric projection is one version (Figure 4-45) "when all three axes are rotated so that each is equally inclined to the plane of projection". Building upon work by William Farish (1822), and then Thomas Sopwith (1838) and Joseph Jopling (1842), M. H. Meyer and C. Th. Meyer furthered the development theories and techniques for "axonometrischen" projections. However, it is the plan oblique, or "military projection", which is referred to as "axonometric" in British

[135] https://architecturalmovingdrawing.com/2017/10/09/grezzo-house-prints/

architectural vocabulary. Bryon identifies that it was “in 1706 that oblique projection, called at the time cavalier perspective, was geometrically and rationally theorised as a representational technique by Louis Bretez… The term cavalier perspective stems from the military utility of the drawing system at the time. It is a distant view comparable to that seen by a soldier atop his horse. The oblique projection’s vanishing lines extend to infinity, parallel; thus, offering the advantage of measurability” (Bryon, 2008: 337). Bryon acknowledges that “an abridged survey of iconic ‘axonometric’ representations of the twentieth century … demonstrates that … most representations broadly identified as axonometric are in fact oblique projections, particularly based on the historic facts of the system of parallel projection” (Bryon, 2008: 345). In this thesis I follow the conventional British architectural use of the term “axonometric” to refer to plan oblique projection.

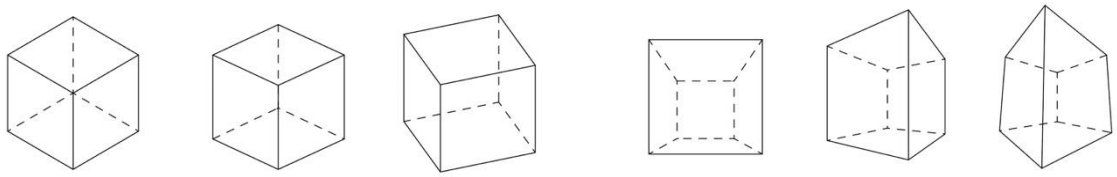

Figure 4-44: Isometric and perspectival projections
In order: Isometric (all sides’ angles and lengths equal); Dimetric (two sides’ angles and lengths equal); Trimetric (no sides’ angles and lengths equal); 1-point perspective; 2-point perspective; 3-point perspective

Unlike isometric and perspectival projection, axonometric drawings provide an impossible view of an object or building, offering a single image from two different viewpoints. From a true plan (to scale, right angles preserved, and normally rotated either at 45º or 30º/60º to the page) the building or object’s elevations (also drawn to scale in their vertical dimensions), project upwards. Axonometric projection can be either an aerial view (from above), or a “worm’s eye” view (from below). There are other forms of oblique projection, such as elevation or section oblique, which take the form of either “cavalier” or “cabinet” projection, the only difference being the lengths of the oblique lines.

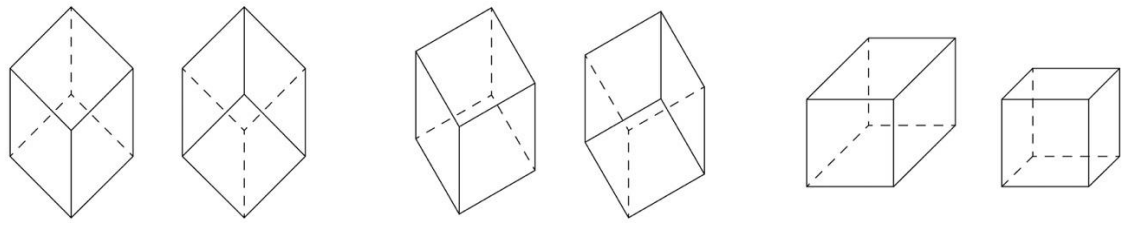

Figure 4-45: Oblique parallel projections
In order: 45º Axonometric (plan oblique/military projection) Top view; 45º Axonometric (plan oblique) Worm’s eye view; 30º/60º Axonometric (plan oblique/military projection) Top view; 30º/60º Axonometric (plan oblique) Worm’s eye view; 45º Elevation oblique – cavalier projection; 45º Elevation oblique – cabinet projection (oblique lengths are halved)

The paradoxical nature of the axonometric drawing (which as an architect I was acutely aware of) had led me to assume that this projection could only be constructed through a manually composed drawing and could not be found in the real, three-dimensional

world.[136] However, the cyanotype prints of chairs revealed that rather than being absent from the world, we are surrounded by axonometric imagery – whenever the sun's parallel rays cast shadows of a three dimensional object they project the oblique sides of that object, while the horizontal surfaces and the object's intersection with the ground provide true plans.

Once in my Croydon studio in Autumn 2018, I began to explore the making of axonometric "drawings" through cyanotype printing. A collection of 100mm acrylic cubes, originally bought to use as small vitrines to display my collection of action cameras, became the first test objects.[137] I found the resulting prints particularly appealing as the edges of the acrylic cubes cast shadows which resulted in white lines against the blue cyanotype background, which then became more blurred as their source rose higher from the picture plane.[138]

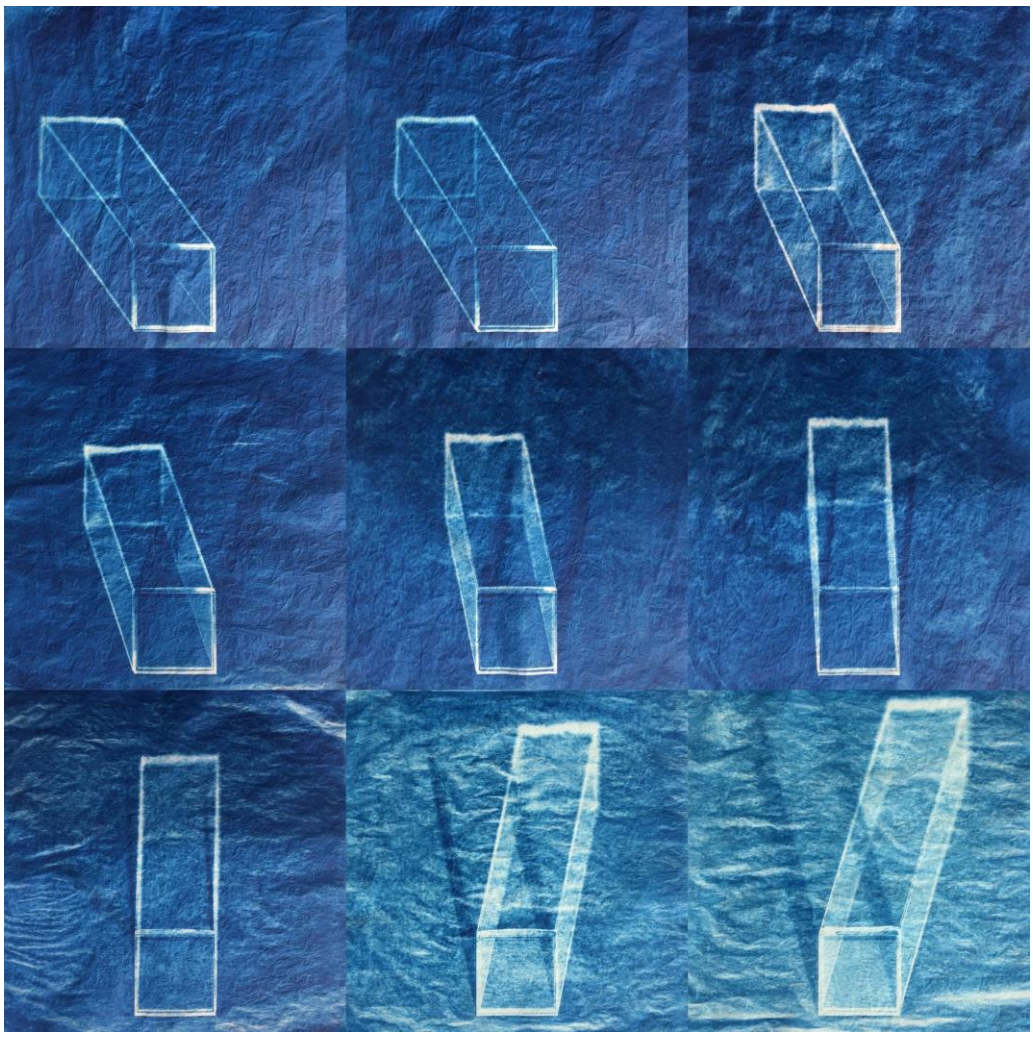

Figure 4-46: Axonometric projection imagery from photogram of acrylic cube

[136] Axonometrics are a drawing form that are easier to construct by hand than an isometric drawing, which skews its plan as well as elevations (Meyer and Meyer, 1855–1863; in Bryon, 2008: 341-343)

[137] I had also recently started teaching a postgraduate architecture class in cyanotype printing and was keen to develop new techniques as one of the active practitioners in the class. This pedagogic model incorporates staff practice-led research into the curriculum with tutors continuing their own practice as effective members of the class that they are leading.

[138] This is a result of the object's penumbra, caused by the size of the sun as the light source.

As the prints were made in late October and exposed after the sun's peak at midday, the low sun angle cast long shadows. The apparent "wireframe" image on the print implied a rectangular rather than cubic form as its "height" was much longer in dimension than its width and depth. The conventions of architectural axonometric drawings require that the height of objects is drawn at the same scale as their plan, and if the reader of the imagery of my cyanotype prints is (even subconsciously) aware of this convention they would interpret the length of the cubes' shadows as representing a much taller form.

Projection lines for drawing are often likened to lines of light, especially when relating the eyes' reception of supposedly perspectival imagery to perspectival projection onto a picture plane though techniques such as Alberti's veil, or Leonardo's glass (Haralambidou, 2007: 40) in the invention of techniques for transcribing (monocular) perspective into drawn image. Similarly, Raphael's conception of orthographic projection, resulting from an increasingly (and ultimately infinitely) distanced viewpoint "are most readily understood to be representations of light paths" (Evans, 1995b: 108).

The nature of shadows as forms of oblique projection was understood by Meyer and Meyer: "the picture developed by the oblique projection is like an orthographic shadow" (Meyer and Meyer, 1855–1863: 2; translated in Bryon, 2008: 342). Meyer and Meyer's work was extended by Julian Weisbach (1857), and while primarily focussing on isometric forms of projection, Weisbach goes on to indicate how similar techniques of parallel projection can be used to calculate the shadows of objects (as cast by a parallel light source such as the sun).

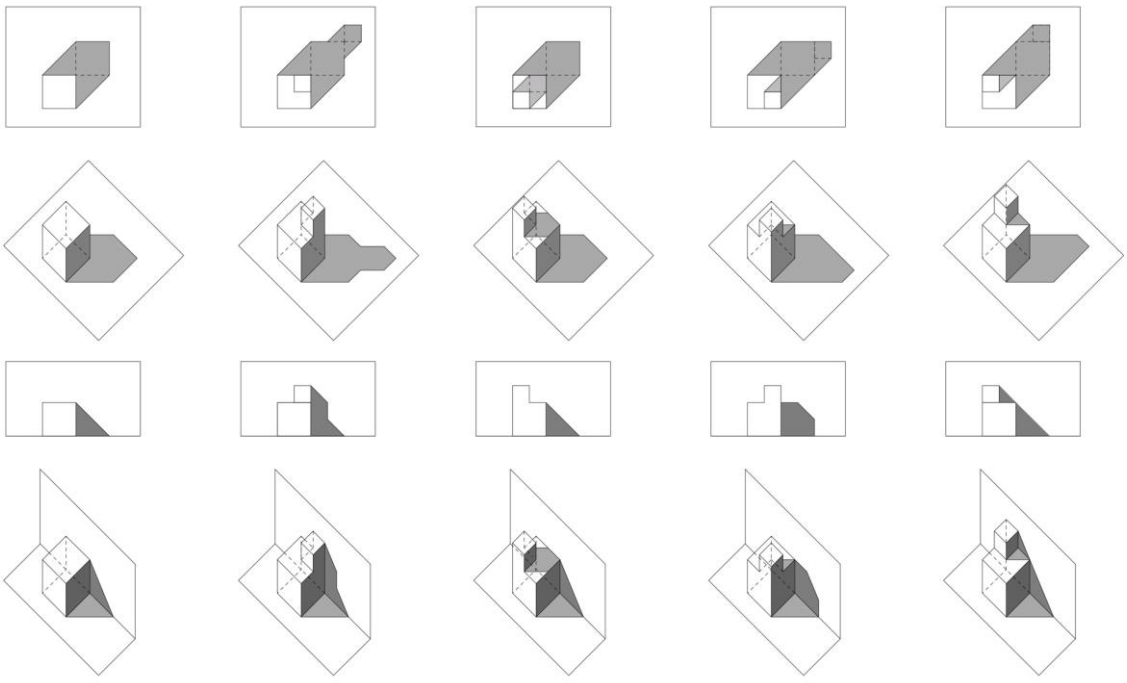

Figure 4-47: Sciagraphic projections of shadows onto plans and elevations

These demonstrate parallel oblique projection as being inherently connected to another drawing convention, that of sciagraphy,[139] or the drawing of shadows. This technique "is the practice of projecting shadows on to the plans and elevations of forms to indicate a third dimension" (Center, 1967: 6) and "not to render the actual condition of sunlight at a specific point in time" (Ching, 2015: 177). Sciagraphy is used to illustrate depth on plan or elevation drawings – shadows of objects rising from the ground plane are drawn to scale, following the convention of a solar angle of 45º (Holmes, 1952: v). Sciagraphy can also be applied to perspectival images, and the fall of the shadows are calculated from the light source in a similar manner to the converging perspectival lines of the objects within that image (Ching, 2015: 181-84).

In May 2019 the back-filming apparatus, initially intended for filming the cones, offered the opportunity to extend this evolving cyanotype practice to filming. This practice is ongoing and has become fully integrated with my use of the cyanotype technique. The following summarises this work to date, with a focus on the time-based artefacts produced though this process. Where a specific piece of work directly uses cyanotype printing as well as filming these will also be shown.

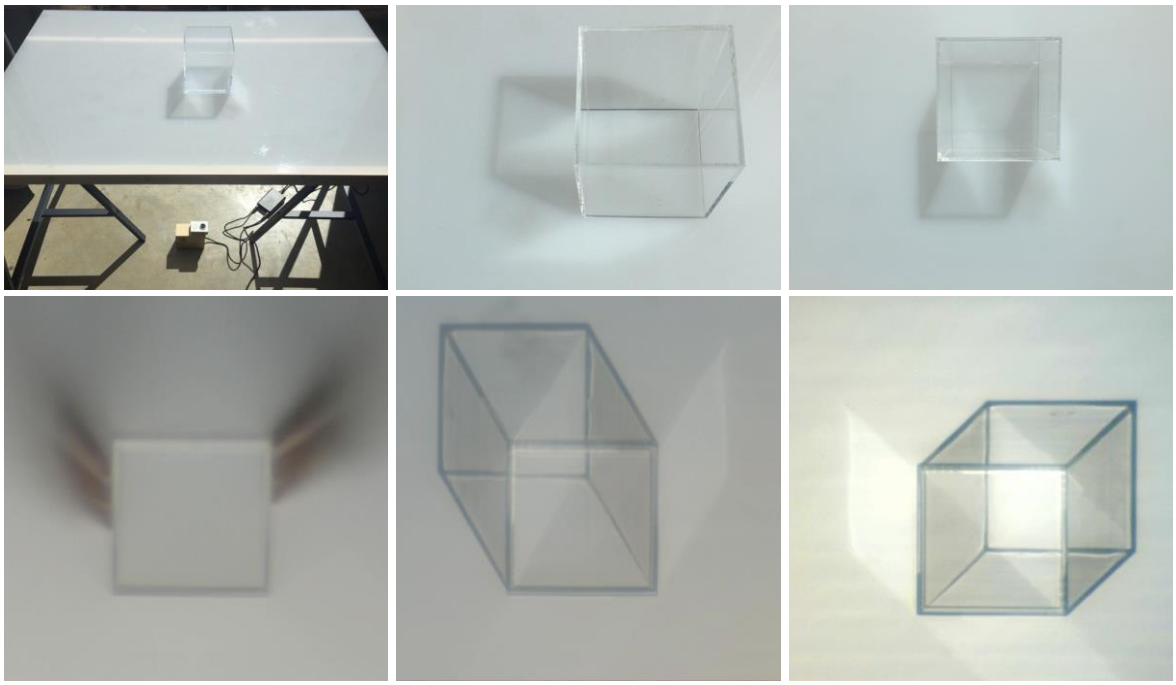

Figure 4-48: Back filming the shadows of the 100mm acrylic cube
https://vimeo.com/341974429 https://vimeo.com/384353808 https://vimeo.com/341974114

Starting with a single 100mm acrylic cube, I included the setting up of the cube in the filming, highlighting the material nature and scale of the object, and its manipulation. In the first time-lapse shadow filming, the intermittent sunshine flickers the sharp wireframe

[139] Also, at the invention of photography, "Talbot's … first name for photography was sciagraphy (literally, a shadow drawing or shadow writing)" (Kenaan, 2015: 553). Additionally, "in the early eighteenth century, [sciagraphy] was the art or practice of finding the hour of the day or night by observation of the shadow cast by the sun or moon or stars upon a dial." (Holmes, 1952: v)

axonometric image of the cube in and out of existence. While the subversion this provides to the otherwise instrumental imagery was enjoyable, the next attempt overlaid footage recorded over three full days to generate a continuous shadow. The resulting clip still flickers, the cube ghosting slightly when one or several of the three layers loses its direct sunlight, but ultimately it retains a continuous whole presence. This clip, with its constant flicker and line-based content, is reminiscent of rotoscope imagery, a technique that also uses projection, and a conversion of three-dimensional image into line form. Like Alberti's veil and Leonardo's glass, the rotoscope functions by way of a surface arresting light rays, which are then recorded in some manner from its rear side.

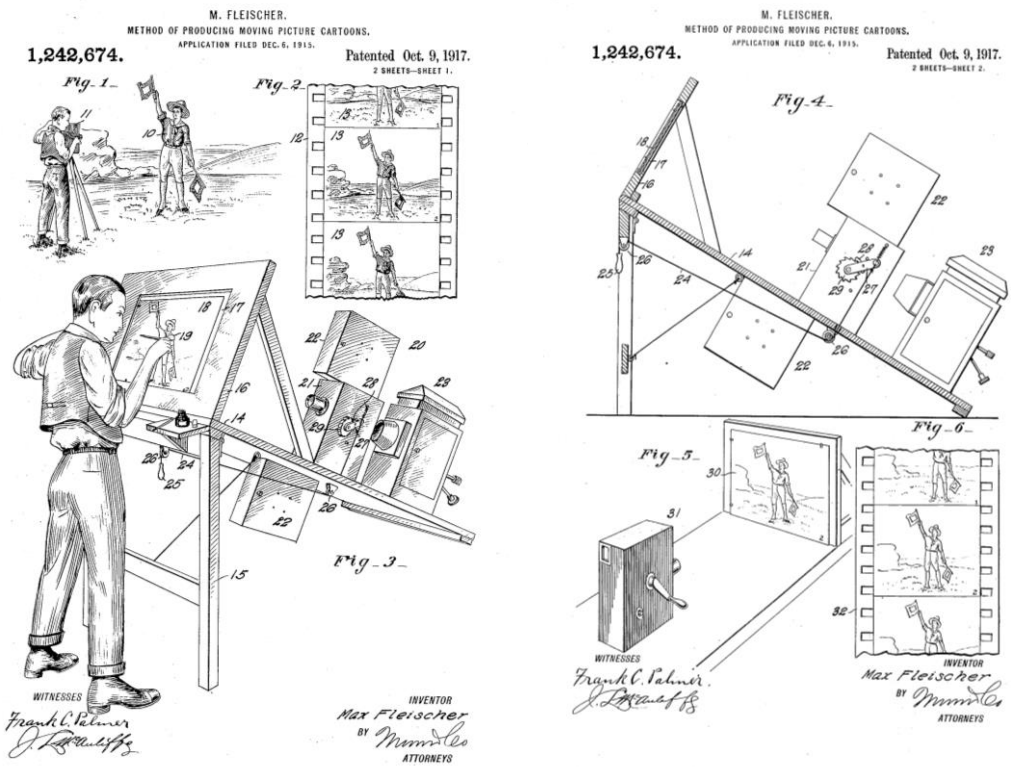

Figure 4-49: Max Fleischer's patent application for the rotoscope (Fleischer, 1917)

As Meyer and Meyer identified, sciagraphy and oblique parallel projection share the same underlying geometrical rules – these "shadow drawings" can therefore be read as either form of representation, providing an ambiguity of interpretation, largely impacted by the orientation of the object to paper/screen. When objects are placed at 90º to the image's edge their resulting shadows read as either sciagraphic or elevation oblique, while the shadows of rotated objects read as axonometric. Additionally, this ambiguity of interpretation is compounded by the "wireframe" nature of the imagery, an ambiguity which was first identified by Louis Necker in his observation of the perceptual flipping between aerial and worm's eye view when viewing wireframe drawings of crystals. Necker identified that a viewer reads the point upon which their eye is focussing, which he termed "distinct vision" (Necker, 1832: 336-37), as the nearest point, and so with a mere shifting of focus the viewer appears to see the form in different orientations. The static images of

the cubes' shadows, either as cyanotypes or as stills from the time-lapse filming, contain this "perceptual ambiguity" (Difford, 2014: 483). The image of the still in the cube footage (Figure 4-49) can be made to "flip" as per Necker's observation by alternatively focussing on either of the two squares, to alternate which appears "in front", thereby switching the view of the cube to either down or upwards. The slight blurring as the source of the shadow pulls away from the picture plane provides the sharper lines with a natural point of focus, lending them the impression of being closest to the viewer, according to Necker's principle of distinct vison in determining orientation.

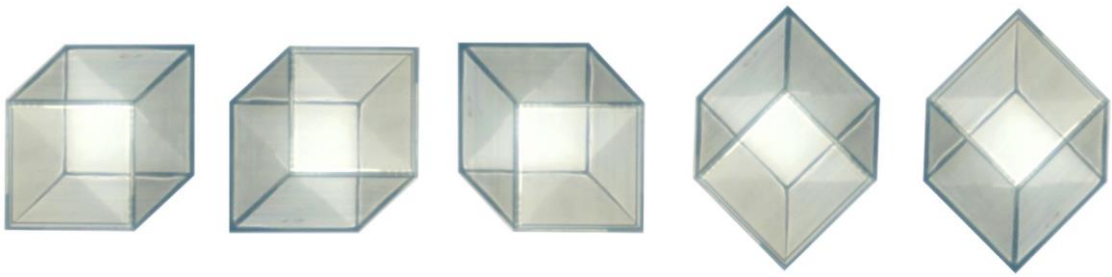

Figure 4-50: Rotated image of the cube's shadows demonstrating ambiguity of reading

Additionally, as shown in the sequence of rotated versions of that film still in the illustration above, a more fundamental ambiguity of orientation occurs with this single cube – square on to the paper/screen it can easily be read as an elevation oblique (with the nearest square the front face) or as a plan oblique, or as plan with sciagraphic shadows drawn. Rotated by 45º, the imagery is immediately axonometric, but the inversion of the sharp and blurred squares, and the resulting inversion of the point of focus, shifts the image between aerial and worm's eye view. In the film footage these shadows continuously move, and the addition of this temporal element provides an anchor as the part of the object that rests on the picture plane remains unmoving, while that which stands above this plane moves with the passing sun. As this fixed element is that with the sharpest focus, it undermines Necker's principle of distinct vision, as it also reads as being a ground plane, and thereby further away from the viewer than parts that rise above it.

4.6.3.1 Acrylic block and cube sciagraphic shadows

I have continued to expand this process, to construct increasingly complex arrangements using the original 100mm cubes, new bespoke 50mm acrylic cubes that I had manufactured for this purpose, as well as differently sized solid acrylic blocks.[140] The blocks and cubes provide very different effects – the cubes present as wireframe "drawings", while the blocks' side edges present as solid, and also reflect strong bands of light down onto the screen. The first series of experiments with filming the back-projected shadows of acrylic cubes and blocks used the objects in an alignment parallel with the

[140] https://architecturalmovingdrawing.com/category/back-projection/acrylic-blocks-and-cubes/

projection screen. The footage has been edited to ensure that the sun always comes from below, and is mirrored to provide a true plan view, ensuring that the sun's progress goes from east to west (right to left). This page and solar orientation follows the convention of sciagraphy, leading to a preference for reading the imagery as this form of projection.

Figure 4-51: Early acrylic cube and block back-filming setup, June 2019

The "design" of the configuration of cubes and blocks occurred in the act of making the arrangement – simple architectural principles such as alignment and repetition informed the otherwise instinctive and responsive method. In this instance, the process started with the positioning of one element (a cube within a cube, inspired by an earlier cyanotype print), and other elements were then positioned to align with this first piece. Subtle adjustments were made, and the composition progressed.[141] The arrangement read like an urban design proposition, the performance of making was a design process, and the assembly of blocks and cubes became a form of architectural model. The clips presented below were often sped up to fit within a minute's timeframe,[142] however, this eliminates the pauses between adjustments, disguising the careful and deliberate performance, and implying a fluid and fast process. As with the first single cube, I frequently overlaid several days' worth of footage to obtain stronger and more continuous shadows, which creates a continuous flickering, as the sunlight, and thereby the block/cube shadows, disappears

[141] The composition could be checked as it progressed via an iPad displaying the view from the camera.

[142] This was initially undertaken as a strategy for presenting process work on Instagram. In later projects the clips have also been shortened by cutting out the sections where my hands are not visible, as well as speeding up the clip.

intermittently on each of the layers. In some of the following examples the footage from different days was deliberately misaligned, showing shadows in two positions simultaneously, and with individual layers intermittently losing their shadows, flicking between the two locations. This doubling serves to undermine a literal, coherent reading of the imagery.

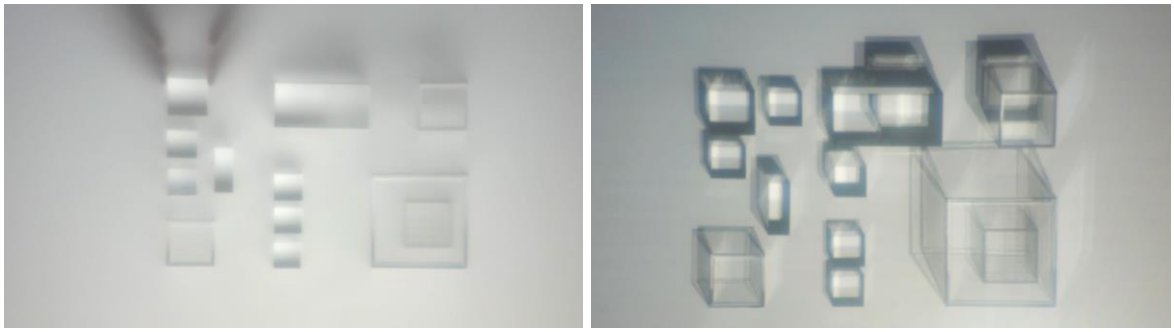

Figure 4-52: Cube and block arrangement 2 – setup & misaligned overlaid time-lapse
https://vimeo.com/346701906 https://vimeo.com/397500056 https://vimeo.com/346534555

Figure 4-53: Cube and block arrangement 4 –setup and time-lapse footage
https://vimeo.com/384522756 https://vimeo.com/384525285

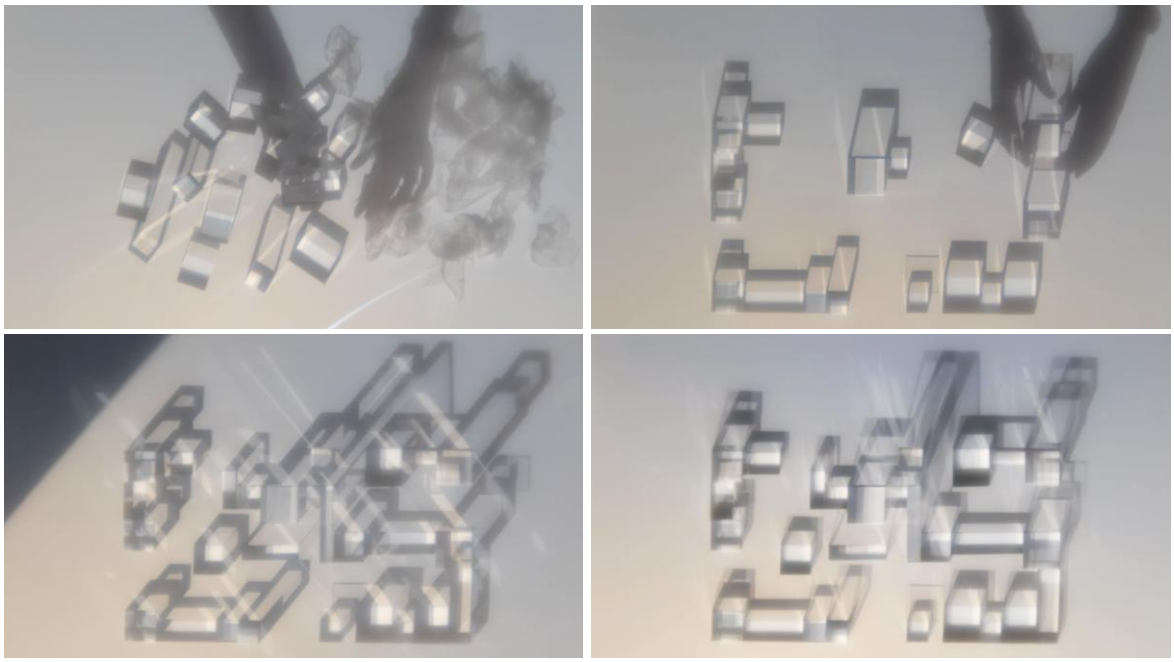

Figure 4-54: New acrylic blocks – unwrapping & setup; takedown; time-lapse
https://vimeo.com/384535522 https://vimeo.com/384535279
https://vimeo.com//385260286 https://vimeo.com/385260584

4.6.3.2 Acrylic cube back filming and cyanotype test

Figure 4-55: Acrylic cube cyanotype and filming
https://vimeo.com/359978680 *https://vimeo.com/385268439*

In August 2019 this experiment was the first in which I made both a cyanotype print and video footage of the same arrangement of acrylic cubes. In this instance, the cyanotype was made first, and therefore the filming of the set-up of the arrangement is a *reconstruction* of that performative process.

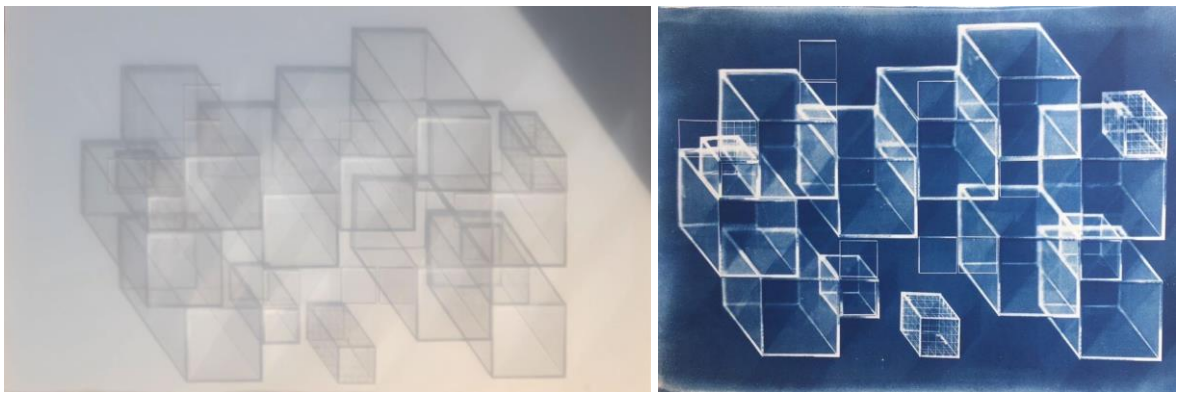

Figure 4-56: Time-lapse footage and matching cyanotype
https://vimeo.com/359978891

The cyanotype print was made at the sun's zenith, with the paper angled 45º from due South, and with a solar elevation of 50º the print closely conforms to the conventions of sciagraphic and oblique projection. However the filming apparatus was set up parallel to the window (about 30º off due south), which prevented the generation of an image identical to that of the cyanotype – when the shadows are at 45º to the screen they are

much longer than in the print as it reaches this angle later in the day. The “Necker cube” ambiguity of reading is strong in the cyanotype print, and in the video clip, the strongest point of ambiguity is where the shadows project vertically (providing a “90-degree axonometric” image (Allen, 2019)), and the three-dimensionality of the imagery is momentarily disrupted.

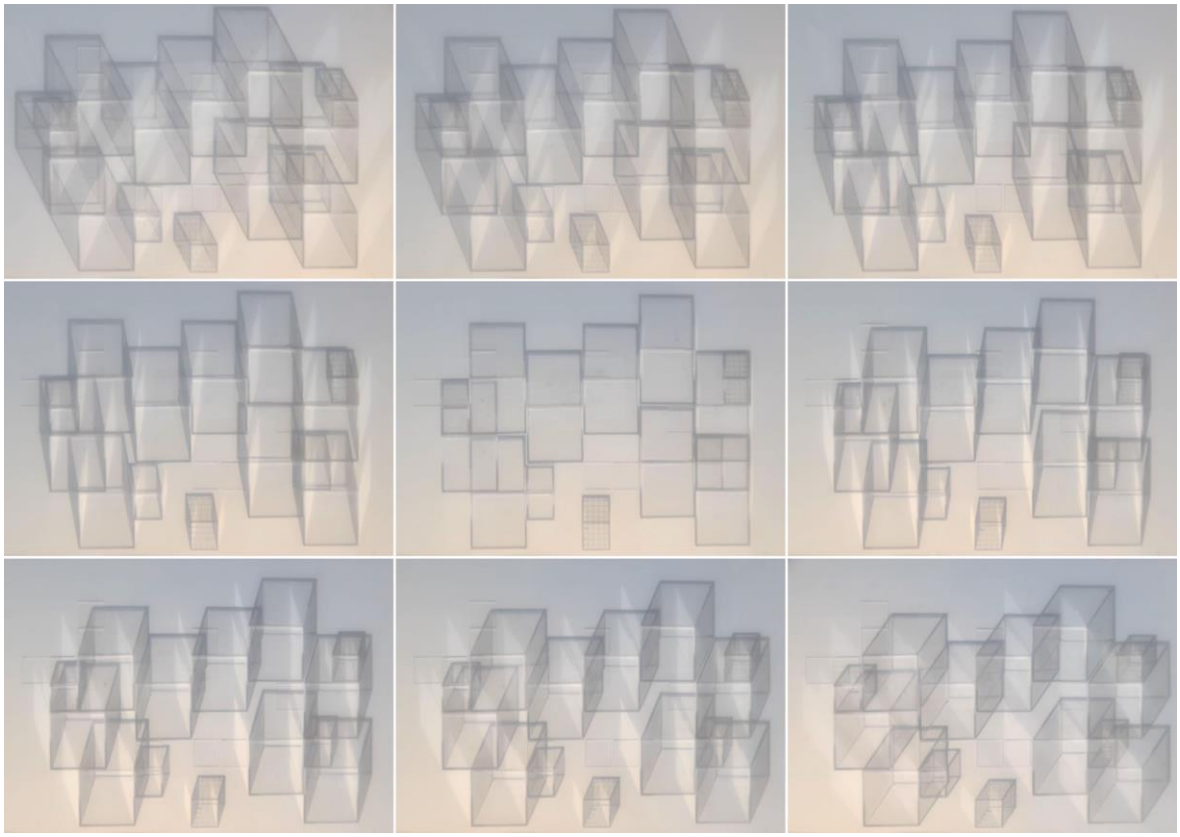

Figure 4-57: Stills from acrylic cube time-lapse showing ambiguity of reading

4.6.3.3 Small box experiments

These experiments in late August 2019 test out the shadows of a small injection moulded plastic box, as well as a different type of back-projection screen. Aware that the milky acrylic was diffusing the shadows, a thinner surface to arrest the shadows was clearly needed. A small sheet of acrylic still contained the white protective film on one side and this thin surface produced much sharper shadows than previously.

The clips are made from footage obtained by moving the whole filming arrangement, the shadows moving without needing to film in time-lapse. The first clip is a single piece of footage made by rotating the filming assembly by 45º, pausing briefly, and then repeating. The second clip overlays four sections of footage – in each layer the filming assembly has been tilted in a different direction, lengthening and shortening the shadows. Both become animations demonstrating various drawing projections rather than showing the path of the sun.

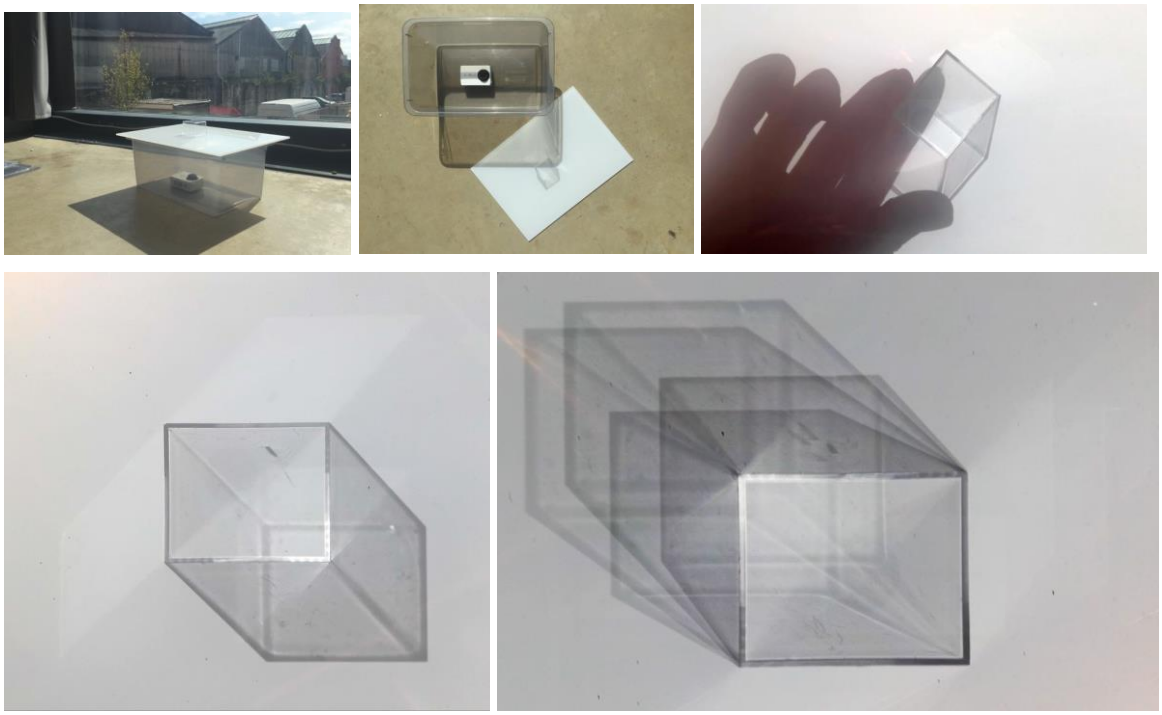

Figure 4-58: Small box experiments
https://vimeo.com/359978282
https://vimeo.com/359978352
https://vimeo.com/359978631

4.6.3.4 Cubes and blocks on new frosted acrylic sheet

Figure 4-59: Cubes on new frosted acrylic sheet

This experiment in early October 2019 tested a sheet of frosted acrylic to receive the back-projected shadows – the hope was that this would produce a sharper image than the

milky acrylic, as the shadow would only be cast on a thin surface. However, frosting on both sides of the sheet produced a slight doubling of the shadows, and the light was very uneven from front to back. As can be seen in the set-up and take-down clips, this material is more transparent than the opal milky acrylic, with a clearer image of my hands.

Figure 4-60: Cubes on frosted acrylic – setup, takedown, three days overlaid
https://vimeo.com/385697398 https://vimeo.com/385697605 https://vimeo.com/385698663

This was the first experiment whereby I was able to transfer the whole arrangement (atop a clear sheet of acrylic) directly onto the cyanotype paper, which also allowed a series of copies of this print to be made.

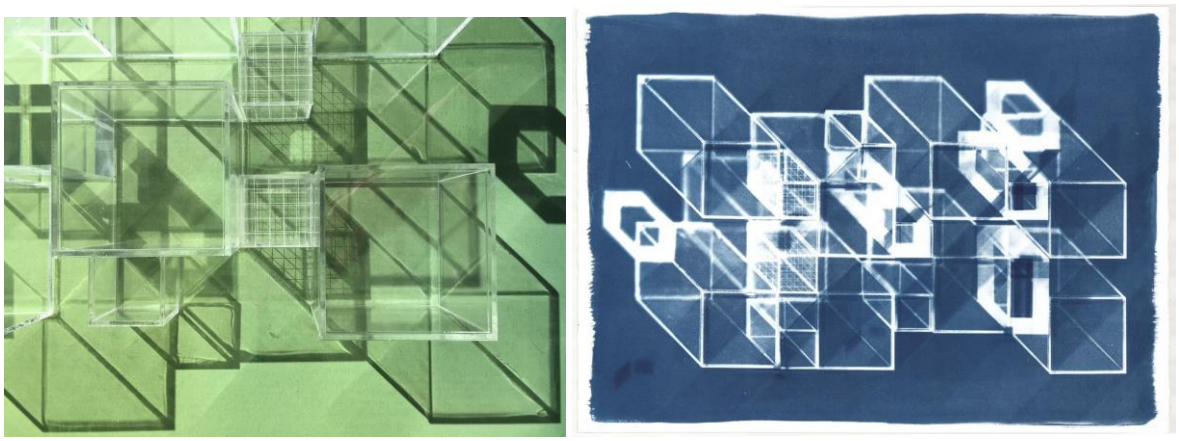

Figure 4-61: Cyanotype exposure and print made from filmed arrangement

4.6.3.5 Acrylic cubes and blocks on new rice paper screen

The disappointing results from the frosted acrylic screen prompted a different approach – in early October 2019 (about a week after the frosted acrylic experiment) I fabricated a rice paper screen[143] which could sit underneath a sheet of clear acrylic, receiving the objects' shadows. This produced very sharp shadows, and the texture of the paper provided a subtle material presence to the "picture plane". Fortuitously, this eliminated the reflection of the camera that had been present in some of the earlier footage as the underside of the screen was no longer reflective.

[143] While the initial version of this screen was slightly loose, I refined the technique, with reference to the manufacture of Japanese architectural paper screens, using wetting of the paper to provide a taught surface. See 4.6.3.7 for the final design.

Figure 4-62: Rice paper screen for back-filming

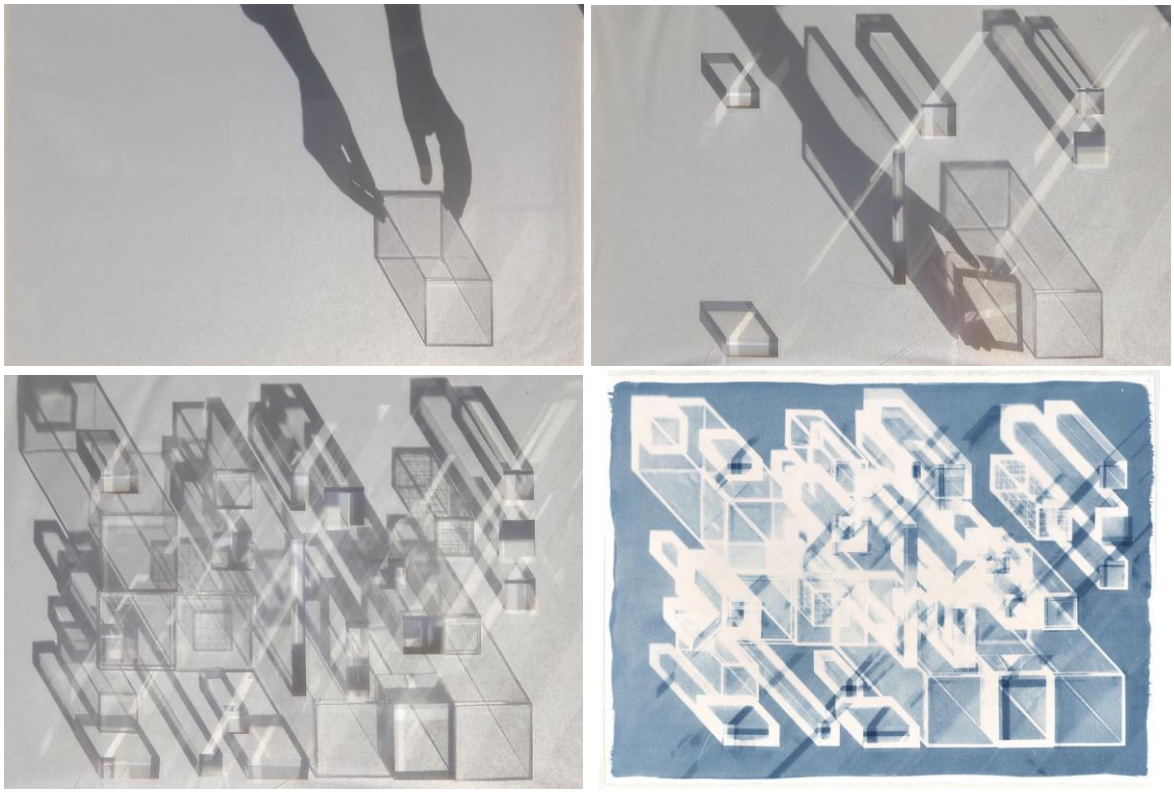

Figure 4-63: Arrangement on rice paper screen & cyanotype
https://vimeo.com/385834816 *https://vimeo.com/385827174* *https://vimeo.com/385827429*

4.6.3.6 Axonometric Portraits

The next series of experiments started in early November 2019, and changed the previous process in several critical ways – the page/screen was rotated to a vertical

orientation, and the blocks rotated to a 45º orientation in relation to the screen, producing a clearly axonometric projection, and losing the potential reading of plan or elevation with projected sciagraphic shadows.[144] The screen was rotated to due south, so that the vertical shadows occur at the solar apex, which necessitated the set-up and take-down episodes to be undertaken close to midday.

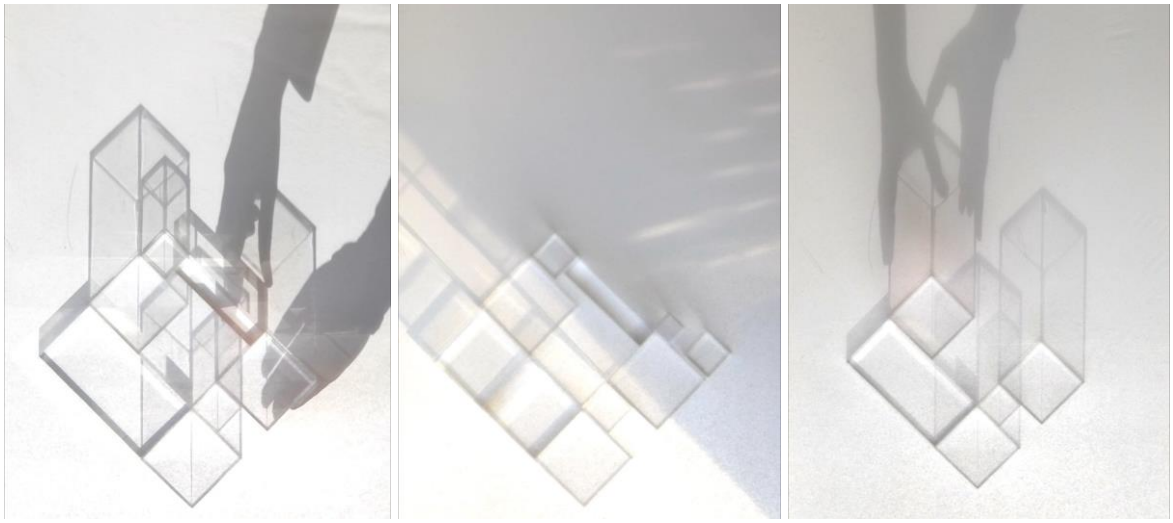

Figure 4-64: Axonometric Portrait 1 – setup, day time-lapse, takedown
https://vimeo.com/387131838 https://vimeo.com/387131749 https://vimeo.com/387131951

The footage of the set-up and take-down of the arrangements allowed me to more fully explore the performative nature of this process, which by this stage had become more conscious. In reviewing this imagery, I particularly enjoyed the positioning of the second cube, the gesture of pulling it away from the first cube, and then inserting a smaller cube in the gap. This led to a strategy for the subsequent arrangements in this series – starting with a single cube placed bottom centre, and following an implicit 50mm 45º grid,[145] other cubes would be set out in relation to the first cube and contain this gesture of "pulling apart". In taking down the arrangements a quick and instinctive set of decisions determined the sequence of removal. While not necessarily following the same order of the set-up process, the final set of moves deliberately reverses the "pulling away" movement of the second cube.

Additional changes in process resulted from the time of year – the low sun necessitated tilting the filming apparatus, to ensure the objects' lengthening shadows fit within the bounds of the screen/paper, and the weakness of the autumnal sunlight required longer exposures for the cyanotype prints. The prints needed to be frequently rotated to keep the shadows in the same place, parallel to the page, and at times led to a softening of these shadows, when a significant amount of the exposure was caused by daylight, rather than direct sunlight.

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[144] https://architecturalmovingdrawing.com/category/back-projection/axonometric-portraits/
[145] Based on the dimensions of the 50mm and 100mm cubes. I have considered scribing a grid into the perspex ground/picture plane – this would help ensure the arrangement's alignment with the grid, but also manifest this currently invisible surface as an explicit plane.

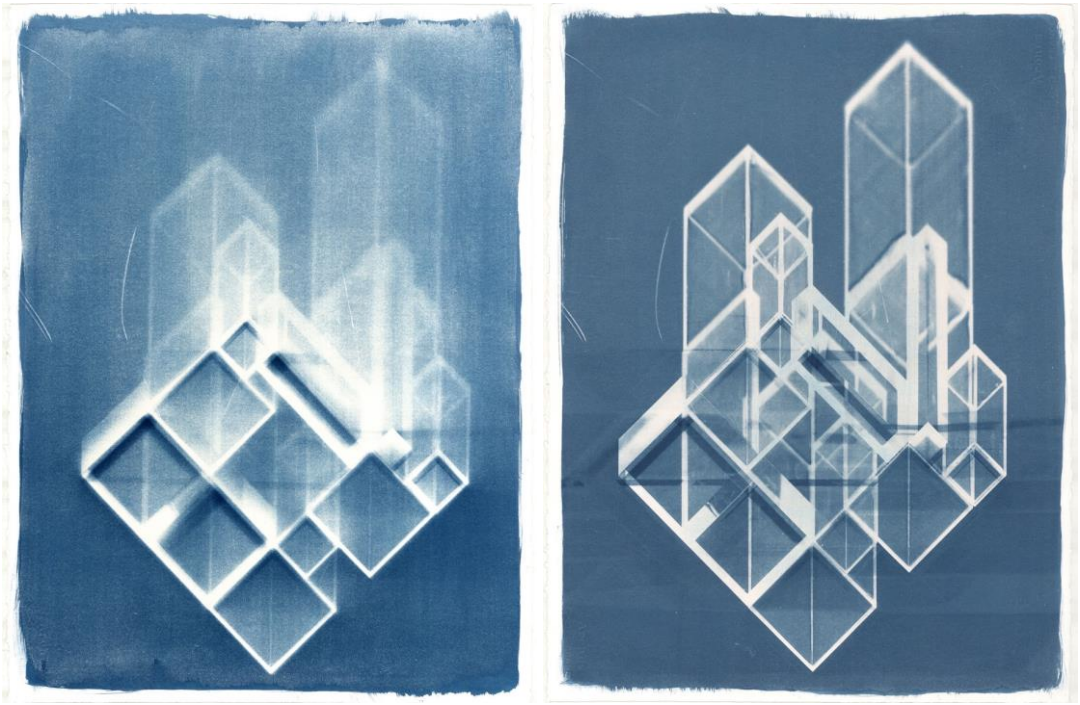


Figure 4-65: Axonometric Portrait 1 – cyanotypes made on cloudy day and full sun

Each of the above two cyanotype prints can be read very differently – the softening of the lines and the faintness of the vertical elements in the first print places more emphasis on the orthographic elements on the picture plane, bringing this surface to the “front” of the image and leading to a tendency to read it as a worm’s eye view. In the second print the strength of the vertical form (the vertical dimensions doubled due to the low angle of light) could encourage the image to be read as if from above.

This next arrangement starts with the same placements as previously, building up to a dense massing. In the take-down sequence the final gesture to remove the first/last cube is drawn out – released from the picture plane, the object is turned in space to expose its form.

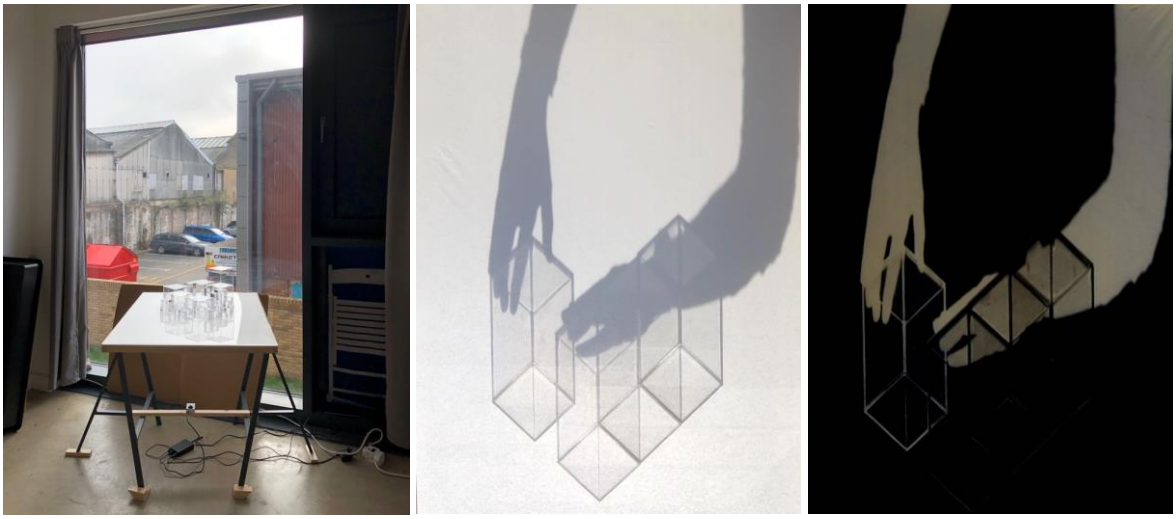


Figure 4-66: Axonometric Portrait 3 – setup and edited with focus on hands
https://vimeo.com/387133497 *https://vimeo.com/387134080*

Working with the “subtract” blending mode on Premiere, I developed imagery which focusses on my hands as they place each object, with the cube/block disappearing as it is placed.

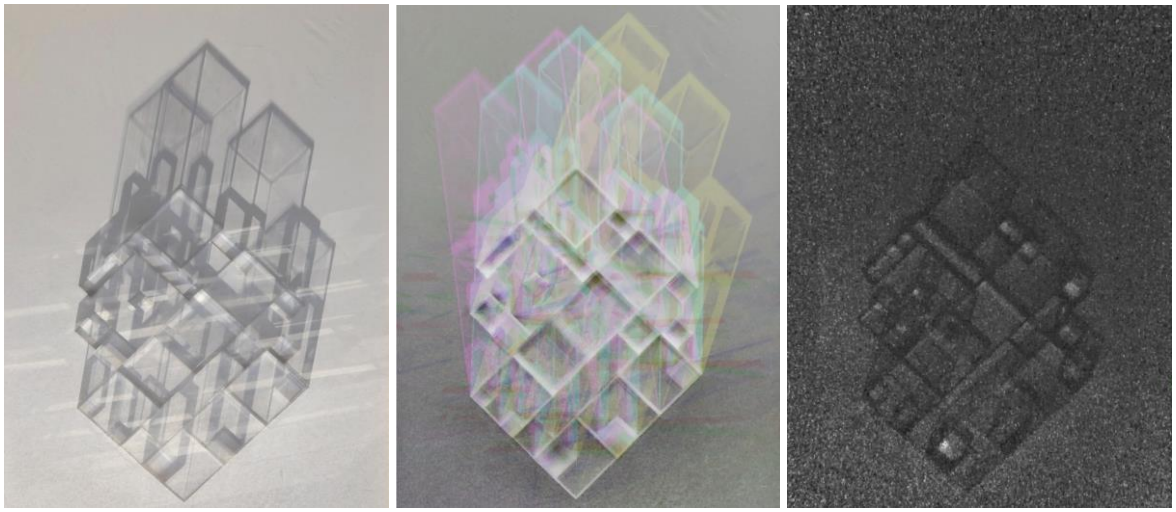


Figure 4-67: Axonometric Portrait 3 – day and night time-lapse footage
https://vimeo.com/387133703 https://vimeo.com/397743829 https://vimeo.com/387134028

The time-lapse footage, recorded over 4.5 days, included three days of intermittent sun, overlaid to produce largely continuous shadow imagery. A slight doubling and movement of the shadows results from the selected days’ footage being filmed several days apart. This misalignment led to the development of the above middle clip, which inverts and colourises each of the three days of footage with cyan, yellow and magenta, which, when overlaid using “screen” blending mode, produces greyscale imagery. The original footage also included a night with a full moon which cast its own faint shadows. The visual noise in each frame of this low-light imagery provides the video with a “static” effect.

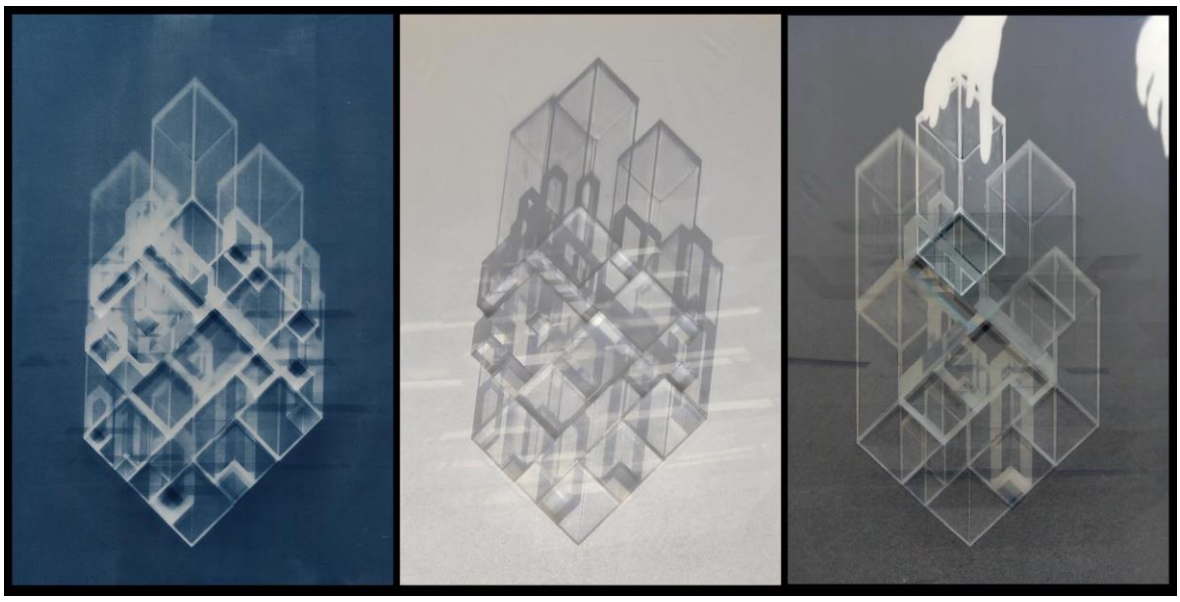


Figure 4-68: Axonometric Portrait 3 – triptych video edit *https://vimeo.com/389673747*

In working to combine the filmic and cyanotype outputs of what I consider to be a single project, I have produced the above triptych edit using the manipulated footage, along with three versions of the cyanotype prints produced from this arrangement. This film treats the "process" imagery of the set-up and take-down as key elements, the performative nature of these acts is celebrated. The use of the triptych format encourages an activity for the viewer, and the use of repetition, but with different temporal speeds, allows them to access mechanisms of both memory and prophecy in their reading.

During November and December of 2019, I continued with the strategy of the "axonometric portrait" pieces to develop a series of time-based and cyanotype artefacts, based on the underlying principle of 100mm cubes spaced apart by 50mm, as established in the first axonometric experiment.

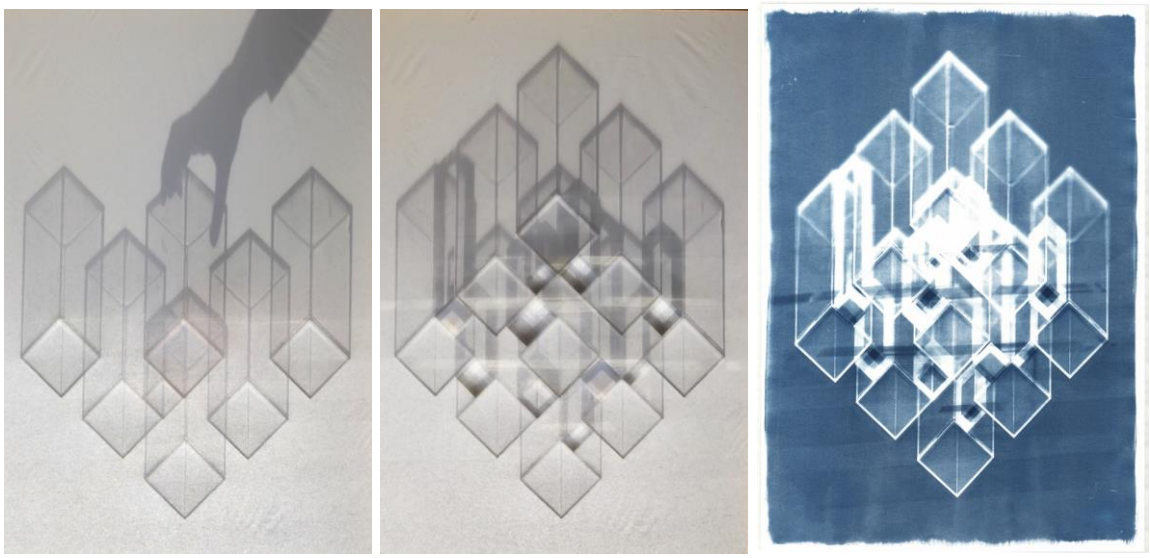


Figure 4-69: Axonometric Portrait 4 –setup, two days' time-lapse overlaid, cyanotype
https://vimeo.com/387166425 *https://vimeo.com/387257855*

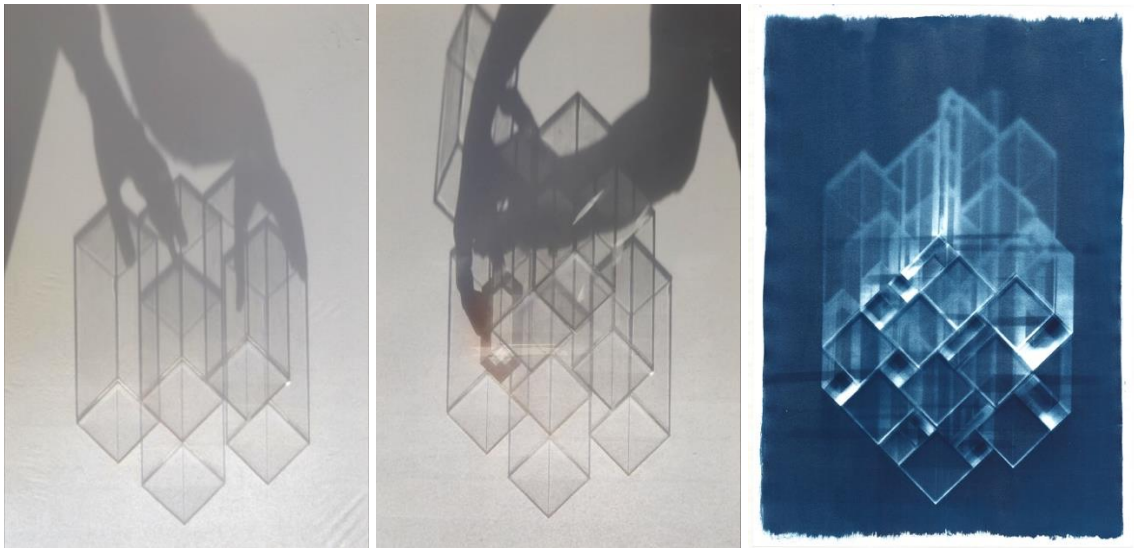


Figure 4-70: Axonometric Portrait 5 – setup, takedown, cyanotype
https://vimeo.com/387257944 *https://vimeo.com/387260707*

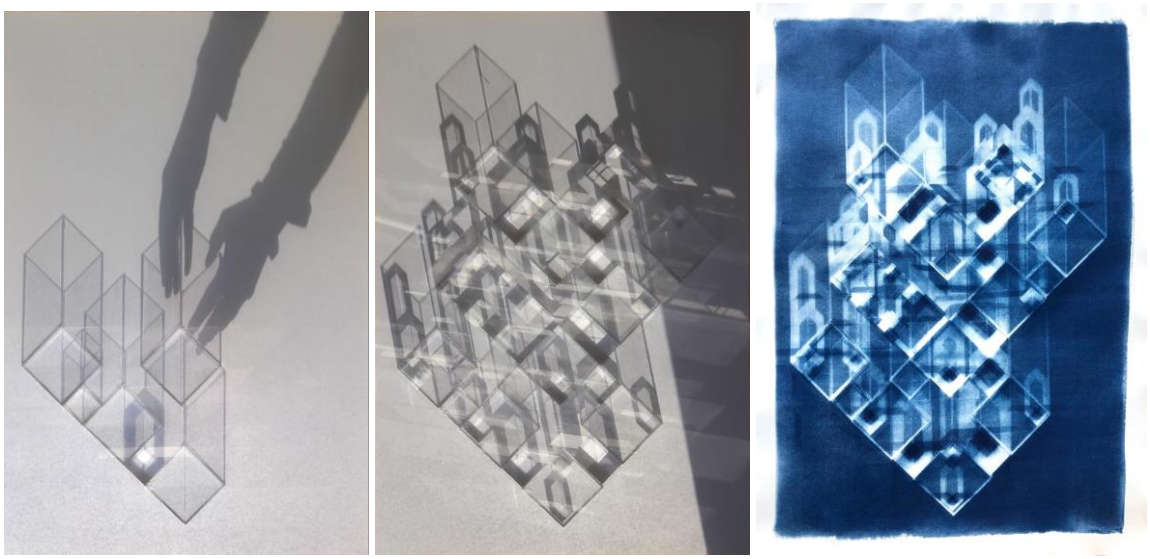


Figure 4-71: Axonometric Portrait 6 – setup, two days' time-lapse overlaid, cyanotype
https://vimeo.com/397768778 https://vimeo.com/397766748

This last arrangement, made in February 2020, attempts to break away from the largely symmetrical and balanced previous versions, spreading the nine 100mm acrylic cubes across the picture plane. A density of line, light and shadow is achieved in the centre of the arrangement, while edges are allowed to pull away. The strategy of taking down the arrangement was different to the set-up – all the solid acrylic blocks were removed first, leaving the nine cubes casting their wireframe shadows across the picture plane. Each cube was individually removed, to the final, and original bottom centre one. This revealed an elegance to the arrangement with purely large cubes, without the density of visual information provided by the addition of acrylic blocks. It also led to a series of still images that contain much of Necker's original perceptual ambiguity. At the time of writing, this is the last experiment in this series and suggests a direction that goes back to simpler configurations with an attempt to further explore the perceptual ambiguity in reading moving images, as well as still ones.

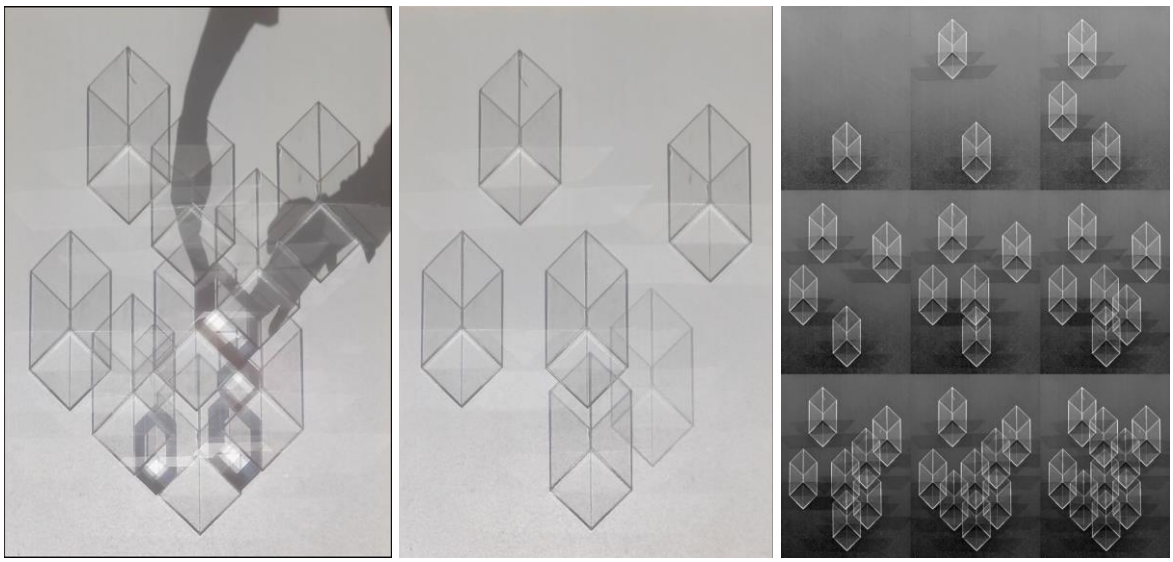


Figure 4-72: Nine cubes, Axonometric Portrait 6 cyanotype
https://vimeo.com/397766520 https://vimeo.com/397772790

The following experiments were produced in December 2019 and January 2020, using both sizes of the smaller injection moulded plastic boxes. For the first version, the arrangement process started with an edge to edge placement of the larger size of box, but the limited quantity of boxes resulted in a process of removal and relocation as the arrangement proceeded, extending the area covered by the whole composition. The time-lapse footage was overlaid with a scan of one of the cyanotype prints, doubling the images of the shadows, presenting them as simultaneously fixed, and fleeting.

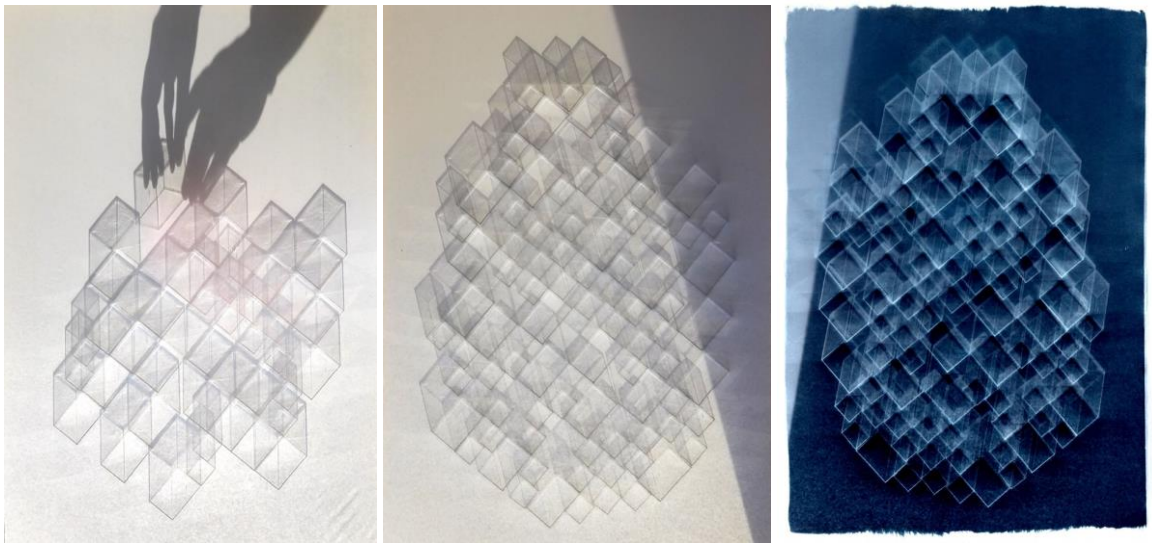


Figure 4-73: Small boxes 1 – setup, two days' time-lapse overlaid, cyanotype film
https://vimeo.com/390188923 https://vimeo.com/390263516 https://vimeo.com/390189203

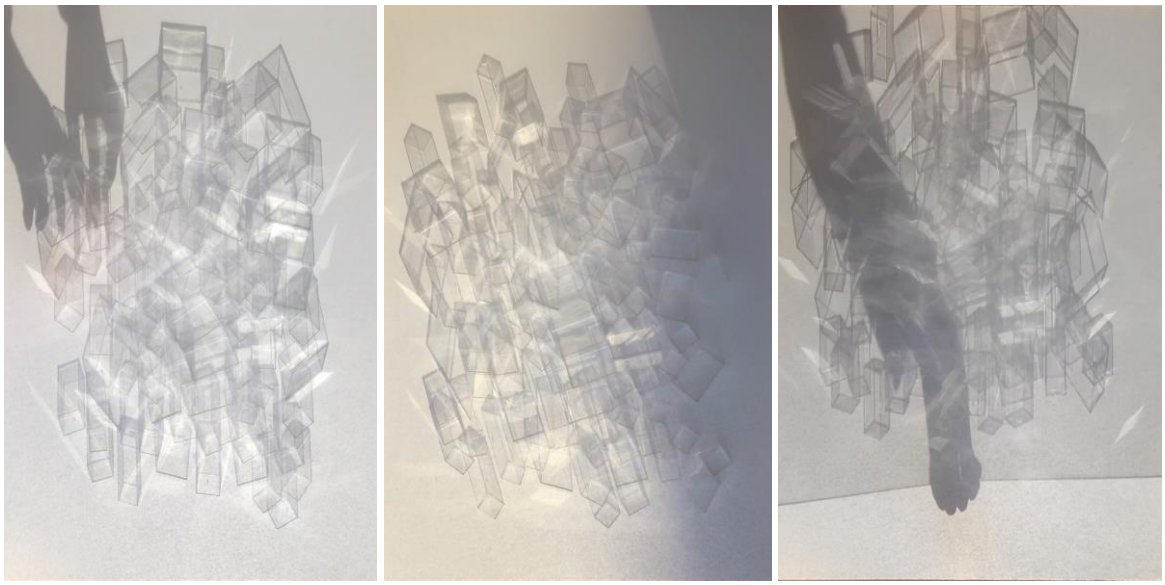


Figure 4-74: Small boxes – ordered to disordered, removing for cyanotype
https://vimeo.com/390194789 https://vimeo.com/390273075 https://vimeo.com/390273161

After filming for several days, rather than take down the arrangement in an orderly manner, I "messed" it up, to generate a "jumbled"[146] arrangement. The footage of this

[146] An earlier accident with the precarious filming assembly resulted in the acrylic cubes and blocks tumbling to the ground, so revealing a beautiful quality to the acrylic objects when in a disordered "jumbled" form. This led to a new strand of cyanotype work, to act as a counterpoint to the rigid

process exposed the level of control and decision making to make such a “disordered” composition, undermining the apparent opposition between the two types of imagery. I also recorded the removal of the whole assembly to produce the disordered cyanotype prints, revealing more of the underlying process at work.

While appearing smooth and decisive, this next arrangement was still largely generated as it progressed, and in relation to the limitation in the size of the screen, and the number of plastic boxes available. Once the two interlocking squares were formed the second layer treated these as “terraced houses”, the “second storey” placed towards the outside edge (street), raising to a third storey at the corners. This particular use of an architectural language was not pre-determined, rather arising in response to the first formal, instinctive decisions.

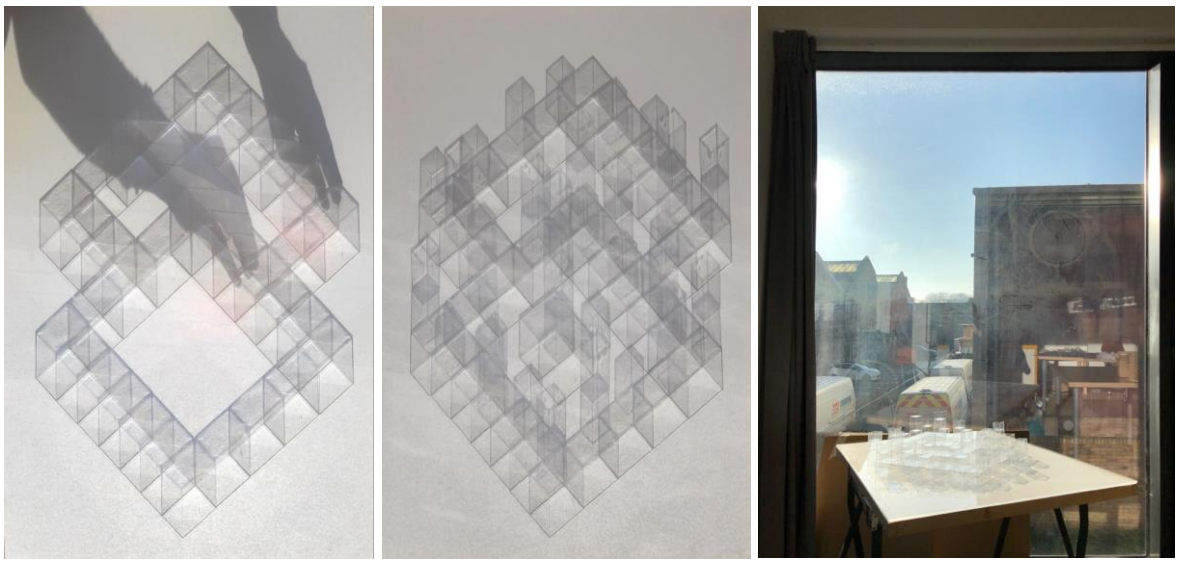


Figure 4-75: Small boxes 2 – setup, time-lapse
https://vimeo.com/390307595 *https://vimeo.com/390322416*

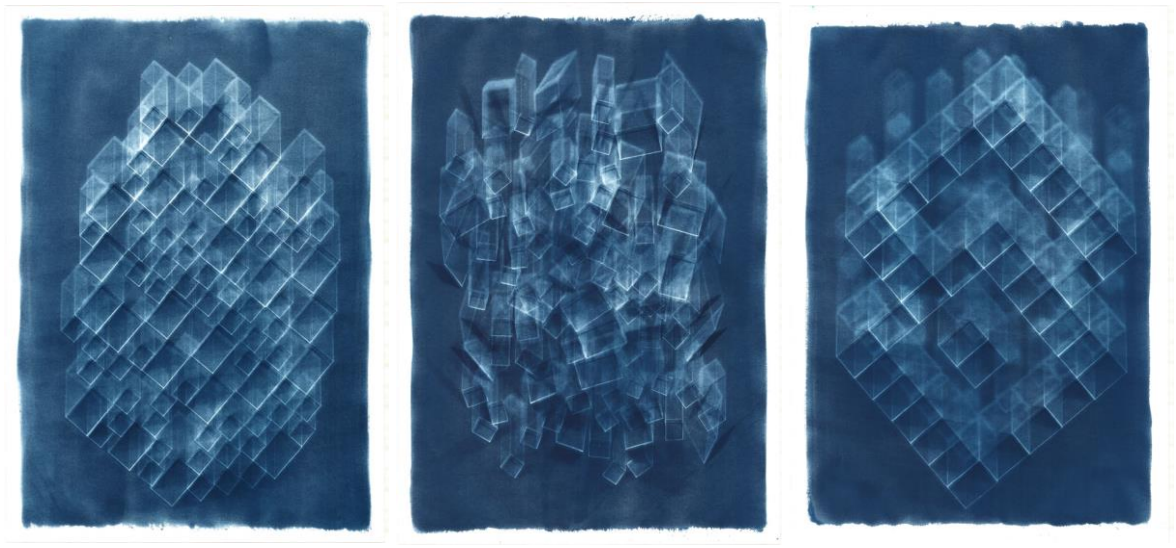


Figure 4-76: Small boxes cyanotypes

order to the other pieces, which subsequently influenced the filming work.

4.6.3.7 Final design of the back-filming apparatus

By January 2020 the design of the filming apparatus had been developed to its (as yet) final version. Filming using the low winter sun necessitated the option to have the picture plane titled towards the sun. Castors were added to allow easy movement of the whole assembly.

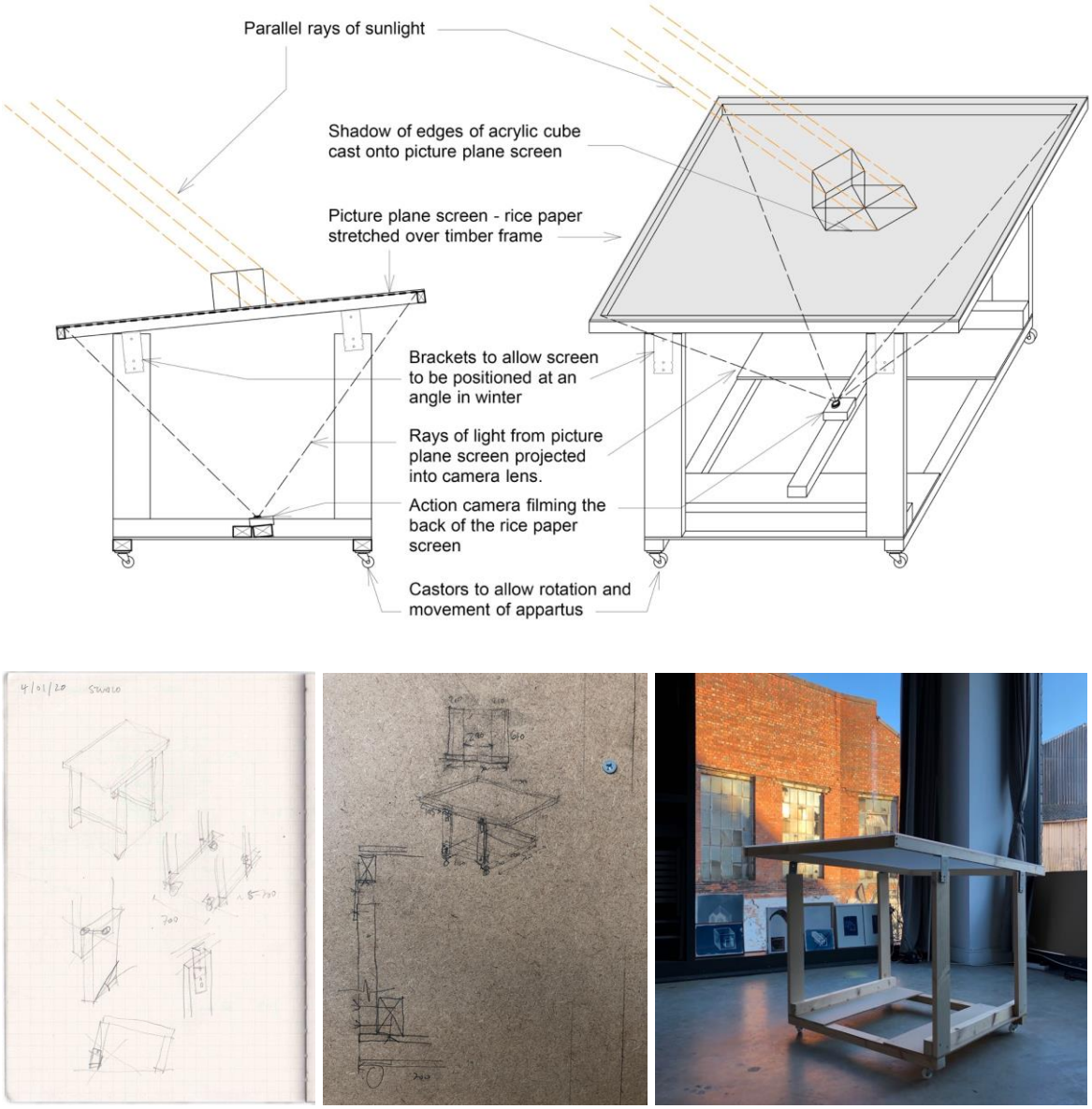


Figure 4-77: Drawings and photograph of the final back-filming apparatus

The process of making this hybrid work continues, the two processes of making, along with their respective performative practices, inform the development of this project.

4.7 Space in space

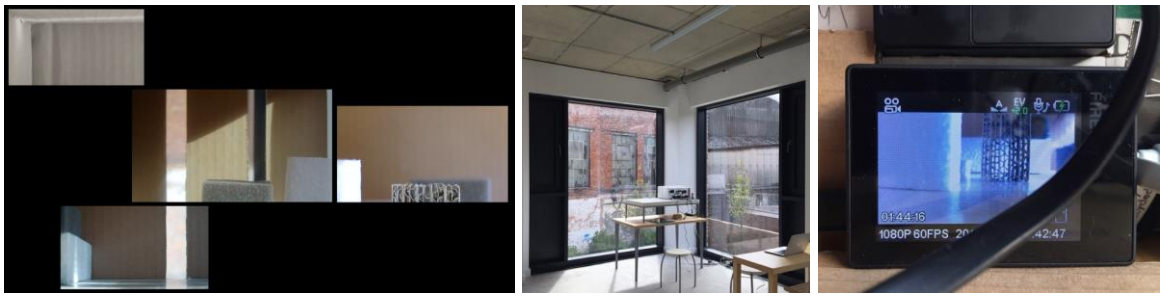
This work started as a continuation of the earlier experiments to film simultaneously with more than one camera (shown in section 4.4.1.2), and a desire to incorporate something

of the fragmented imagery present in architectural drawing practices. As this work developed, it began to more explicitly acknowledge the processes at work in the model making and filming, and the spaces in which these take place. As such, this work made visible the performative nature of the transdisciplinary practice of architectural moving drawing. It also revealed the complex nature of the relationship between built space and represented space, and the location and activity of the viewer, drawing this into the interpretation of the work, incorporating apperceptive processes into this reading.

4.7.1.1 Multi camera tests

As previously discussed, in architectural drawing a building is always presented as fragments, the different orthographic slices, elevations and three-dimensional views, across a range of scales, working together to support the perception of the whole in the mind of the reader. I sought to counteract the expansive wide angle view of the action cameras' default lenses by filming with multiple cameras fitted with various zoom lenses to obtain differentially scaled images.[147] The first project in this section (undertaken from June to October 2018) continues the found object strategy, using several "box rooms" as the basis for multi-camera filming.

https://vimeo.com/357840362



https://vimeo.com/357806994

Figure 4-78: First multi-camera model with cameras positioned in the back wall
First filmed in my home office, and then in my Croydon studio, I slightly altered the original model, cutting windows opposite the cameras, so that a view of the factory wall adjacent to the studio could be seen.

A significant shift occurred at this point (in November 2018) as I decided to film myself, in my studio, producing the work.[148] This included the process of me making a new model,

[147] https://architecturalmovingdrawing.com/category/multi-camera/
[148] This project preceded the work filming the acrylic cubes and blocks and was the reason why I also filmed the projected shadow of myself setting up and taking down those arrangements.

the interior of which I would film, through to the setting up of the cameras, and finally the box as an object in the uninhabited studio while its internal cameras collected footage. The overview “documentary” footage revealed several significant aspects of the work that continue to be developed in current projects, and which have subsequently embedded the performative nature of my practice at the heart of this thesis. Firstly, the overview footage positioned me, the transdisciplinary practitioner, as the producer of the work. In showing my construction of the model it acknowledges that this is a made artefact, and that I have used disciplinary (architectural) skills in the design and manufacture of this scaled room.

Figure 4-79: Filming the process of model-making and filming the model

The footage records my manipulations of cardboard, and my contemplative pauses where I make decisions about the model as I produce it, including where best to cut window openings into the room’s walls. Then, as I move to set up the cameras to record footage within the model I draw upon my technical knowledge as an artist filmmaker. It also introduces a human figure into the work, but the human (and female) figure is the creator, and as such, in this imagery, the subject. This counterbalances the model imagery, which is without human occupation,[149] partly though necessity (model people are static and normally plastic), but also though a concern about the complex and political aspects of *staffing* architectural imagery. Neither Thomas Demand nor James Casebere use representations of the human figure in their model photographs – Casebere identifies that the absence of the human figure in the work encourages “the viewers to place themselves within the image, playing an active part in completing the work” (McFadden, 2011: 57), and I would concur. Similarly, Hans Op de Beek sees his “Staging Silence” films (2009; 2013; 2019) as providing “such dormant decors onto which the spectator, in the absence of other figures, can project himself as the lone protagonist” (Op de Beek, 2009). In Oliver Boberg’s models of fictionalised versions of normally uninhabited, everyday places he sees that in the lack of the human figure “when somebody's standing in front of the image, the film, or the picture, he or she shall project himself or herself into the picture. And I don't want to have any identifying figure in it, this would be some kind of quotation or to romantic paintings where you have figures in the pictures and you have to use these figures as identifying figures.” (Museum of Arts and Design, 2011)

[149] In subsequent work with models a live view out through the model’s windows sometimes includes footage of people.

Figure 4-80: Making the model, setting up filming, dismantling.
https://vimeo.com/357832925 *https://vimeo.com/357834748*

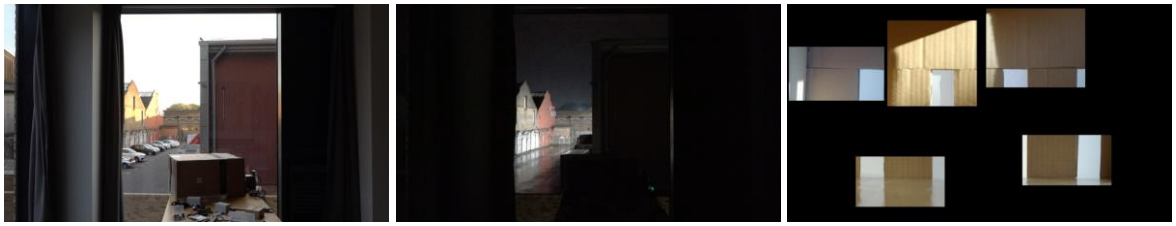


Figure 4-81: Studio day and night while model films, final multi-camera edit
https://vimeo.com/357833516 *https://vimeo.com/357884558* *https://vimeo.com/357807419*

The footage also emphasises the place in which I make the work – my studio. In the night-time imagery the space of the studio is reflected in the windows. Other aspects of my wider practice, such as the 1:1 cyanotype prints which were pinned to the walls at that time, are superimposed with the faint view of the carpark beyond the studio windows. In this imagery of me making a model room, within the room of the studio, which itself has a relationship to other spaces beyond the studio, these nested spaces provoke a question of scale and of what constitutes “real” space.

4.7.2 Studio 310 model

Building upon the previous project, the next significant shift in this work involved the making of a model reconstruction of the room in which I was working, rather than making a model room whose size and proportions were dictated by a found object. This move would strengthen the ideas around the representation of space, and the scaled relationship between model and full-sized space.

In January 2019 I undertook a residency in a studio in my old art and architecture school in Perth, at the University of Western Australia (UWA).[150] Studio 310 was a south-facing room on the third floor of the building, and although direct sunlight is normally a condition that I seek in order to film models, the solar gain in the north facing studios made these rooms too warm to work in at that time of year. The row of windows at the far end of Studio 310, with sliding louvered screens to control the light, were its defining feature and which I sought to explore in the work. The local fruit and vegetable market provided an

[150] https://architecturalmovingdrawing.com/category/uwa-architecture-studio-310/

appropriately sized cardboard box,[151] which I brought to the UWA studio, along with a limited range of other found cardboard, model-making tools, and cameras. As the row of windows echoed those of Snow's *Wavelength*, I set up the primary camera at the back of the room with an orthographic view of the windows, and, with reference to *Wavelength*, decided to slowly increase the zoom of the camera for the duration of filming. Several action cameras placed on and around the worktable filmed in more detail the process of making the model.

Figure 4-82: Studio 310 – room, camera and model construction https://vimeo.com/413125596

[151] A PDF provided plan dimensions – having neglected to bring a tape measure to determine the room's height, I used architectural visual estimation survey processes (based on the dimensions of my own body) to estimate this dimension. The box was already correctly sized for the width and length of the room at a scale of 1:25 but needed cutting down to match the room's height.

The completed model was positioned against one of the windows so that it received the same light and view as the actual room. I set up several action cameras with a number of differing zoom lenses, set at different focus ranges, in the back wall of the model.[152] The material, and therefore constructed nature of the model was very apparent in the imagery, but the "live" view of the tree canopy and the real sunlight which entered through the window served as a counterpoint to this visible artifice.

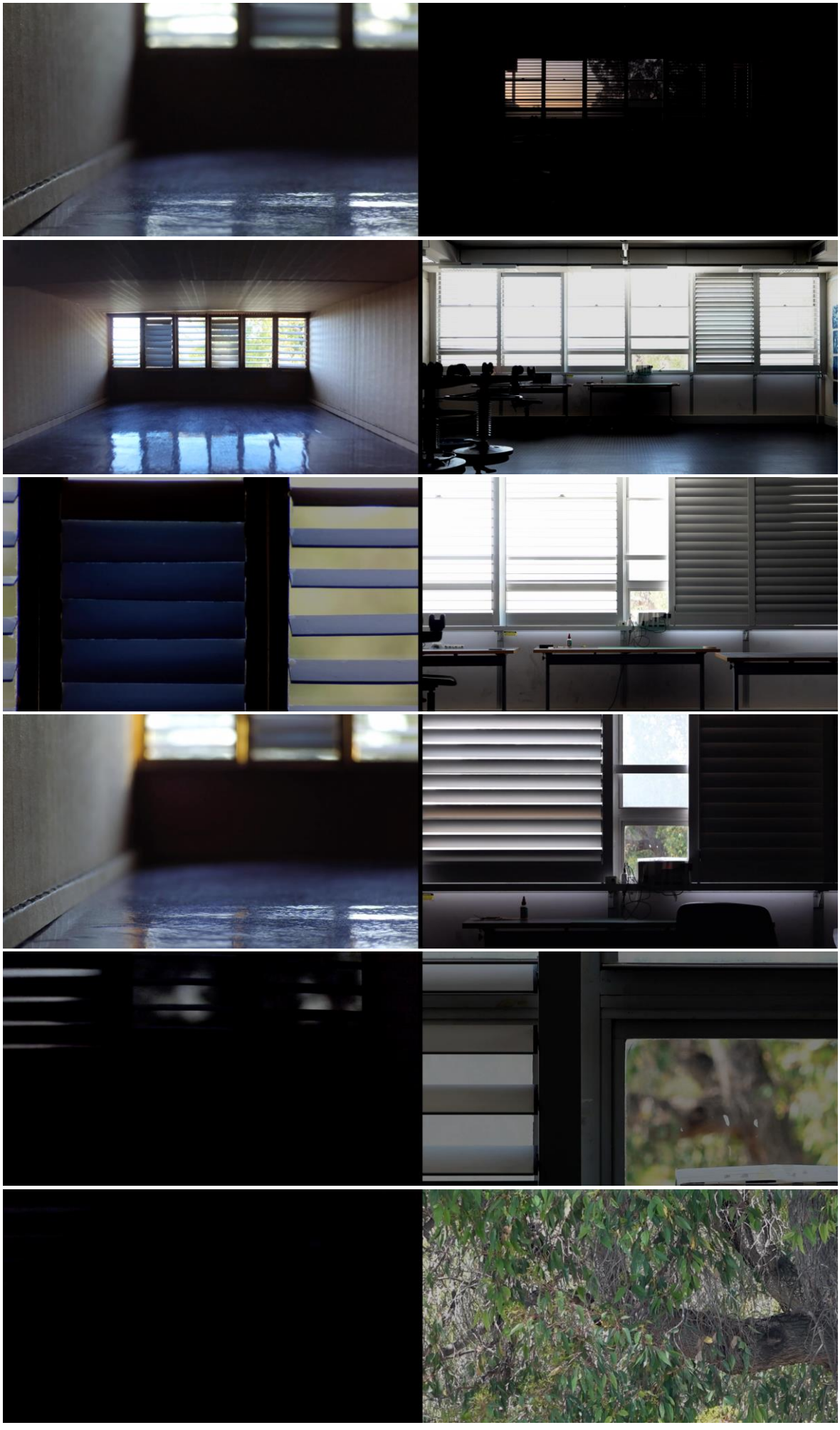
Figure 4-83: Action cameras filming in the back wall of the studio 310 model

The following edit (completed in January 2020) places the model footage side-by-side with imagery of the real room with the model located within it, taking the viewer from dawn to dusk in the model space and "real" space. On the left, quick cuts between the different cameras reveal details of the model, with sunlight and daylight playing across these constructed surfaces, the view of trees through the window defining the space beyond. On the right a slow series of steps of zoom level bring us closer to the model (positioned in the single clean pane of window), and in another move referenced from *Wavelength*, the exposure changes to alternately emphasise the details of the interior or exterior. Each screen exits the viewer from its respective "room" with a different strategy – in the model, we leave via the drawing in of darkness as all natural light fades, and in the studio the zoom continues onward though the window, leaving us in the canopy of the trees beyond.

The two screens of imagery – each connected by primary architectural elements, the touch of the sun, and the view of trees through the window – challenge the idea of real and virtual space. Both spaces on screen are "real" – they are made of matter, existing in four dimensions – and yet what is on screen are representations of these spaces. For both model and room imagery the viewer "reads" space, sees a room in both, and anticipates a form of bodily dwelling on the other side of the screen.

Figure 4-84 : "[1:25] Studio 3:10"
https://vimeo.com/383317911

[152] This camera placement provided a good stable location that cameras could be removed from and returned to. It also allowed the screens of the cameras (for those that had them) to be seen while filming is on-going, rather than needing to check each camera via a smartphone app.



4.7.3 Phoenix Gallery Timeframes

In February 2019 I was part of a three-day group project titled “Making Representations”[153] at the Phoenix Studios Gallery in Brighton with five fellow TECHNE students,[154] artist-researchers whose work all touches on questions of representation – architectural, filmic, mathematical, linguistic and photographic. The project culminated in a half-day symposium consisting of performances and workshop activities,[155] and concluded with a discussion of wider issues of representation, followed by a public exhibition opening.

My contribution to the exhibition was a continuation of the *Studio 310* methodology, but in a more public setting, exposing the performative nature of the work to an audience. I produced a new, site responsive work, titled “Phoenix Gallery Timeframes” which focussed on the relationship between representational artefact and architectural space, and the viewer’s agency in both. Over the first two days of our residency I worked near one of the gallery’s windows (visible to the street, the ramp into the building, and people who came into the gallery itself) constructing a 1:20 scale model of the main gallery space. I filmed myself undertaking this performative activity, as well as the wider gallery, over the three days of the project.

https://vimeo.com/321812119 https://vimeo.com/321794926

Figure 4-85: Phoenix gallery model process
Shopping trolley transport for box monitors; developing model in gallery window; time-lapse footage of making the model and the three days in the gallery.

[153] https://architecturalmovingdrawing.com/2019/03/02/making-representations/
[154] Bill Leslie, Eleanor Suess, Charlotte Warne Thomas, Katie McCallum, Felicity Hammond and Dean Kenning. TECHNE is an AHRC Doctoral Training Partnership programme.
[155] For the symposium, Bill Leslie and I undertook a joint workshop with participants making films using a combination of Bill’s sculptures (made to be filmed), Felicity Hammond’s montaged “backdrops”, and a collection of my own “found objects”. Participants were able to experience first-hand the translation of scaled artefact (sculpture/object/image) into a new spatiotemporal construction though the act of filming and then viewing the new films.

Once the model was complete, I set up action cameras to record its interior space, including the change in natural light and the view of the real space of the street beyond the windows. For the exhibition opening, the 1:20 model remained in position, with its back wall opened up so that visitors could see inside the model, including the small cameras which dwelt in its scaled space. The time-lapse footage recorded in the model over the previous night and day was shown on analogue box monitors positioned around the gallery, and a real-time feed from one of the cameras was projected in the adjacent room. The imagery on the monitors and projector was ambiguous as to its depiction of a "real" space vs a constructed representation – the inclusion of real lighting and street view contributed to this sense of ambiguity. As Hal Foster suggests in relation to James Casebere's images, these images "may even lead us to question the very order of representation – the hierarchy of essence over appearance, thing over image, original over copy, model over simulacrum" (Foster, 1983: 203).

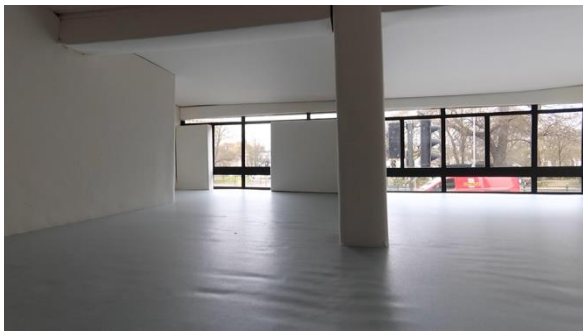
Figure 4-86: "Making Representations" opening, live model view https://vimeo.com/326306891

The exhibition audience demonstrated a high level of engagement with the scale model and live-projected feed from the camera within the model. Younger visitors discovered that they could insert their hands in the space between the model and the window, resulting in "giant" hands appearing in the live-projected model view. This inclusion of the scale model in the main gallery space allowed viewers to easily make the connection between the three-dimensional scaled space of the model, and the flat, but moving imagery on the screens.

Figure 4-87: Phoenix gallery model with action cameras https://vimeo.com/326325243

https://vimeo.com/326334137

https://vimeo.com/385522738



https://vimeo.com/385524136

https://vimeo.com/326306301

Figure 4-88: Phoenix gallery model footage and installation

Models of art galleries are more normally made for curatorial purposes (Hoptman, 2012) – a digital or physical model providing a virtual space in which to plan the exhibition before the physical space becomes available, or, like an architect, to test alternatives quickly and easily that would be difficult to undertake at full size. In this instance, the model of the gallery (and the performance of making the model) became one of the works within the gallery space. Once completed, its interior views, provided by the miniature cameras, served to empty out the gallery, providing a “live” view of the space without its artworks and human occupants.

Until this project, I did not intend to display the models I make as part of any final exhibition of the work – their role was conceived as the generator of the footage, which would then form the final output. However, the physical and material nature of this small artefact (despite it being a hurriedly constructed model made from “found” materials”) was such a strong agent in the experience of the work that I aim to continue this strategy in future projects.

4.7.4 Studio F23 model

This project was initially conceived prior to the *UWA Studio 310* and *Phoenix Gallery* models but wasn't undertaken until March and April 2020, thereby becoming the final project of this thesis.[156] The risk of being prohibited from using my studio in the Covid-19 crisis prompted the start of the work, and then undertaking it while social distancing and in effective self-isolation via the nation-wide lockdown, gave another layer of significance to the act of undertaking this solitary work to make a replica of my physical workspace. My world had shrunk to my home and the studio (and the five-minute drive between the two), and all my professional and personal interactions (beyond my household) were via mediated technology, bringing us virtually into each other's homes.

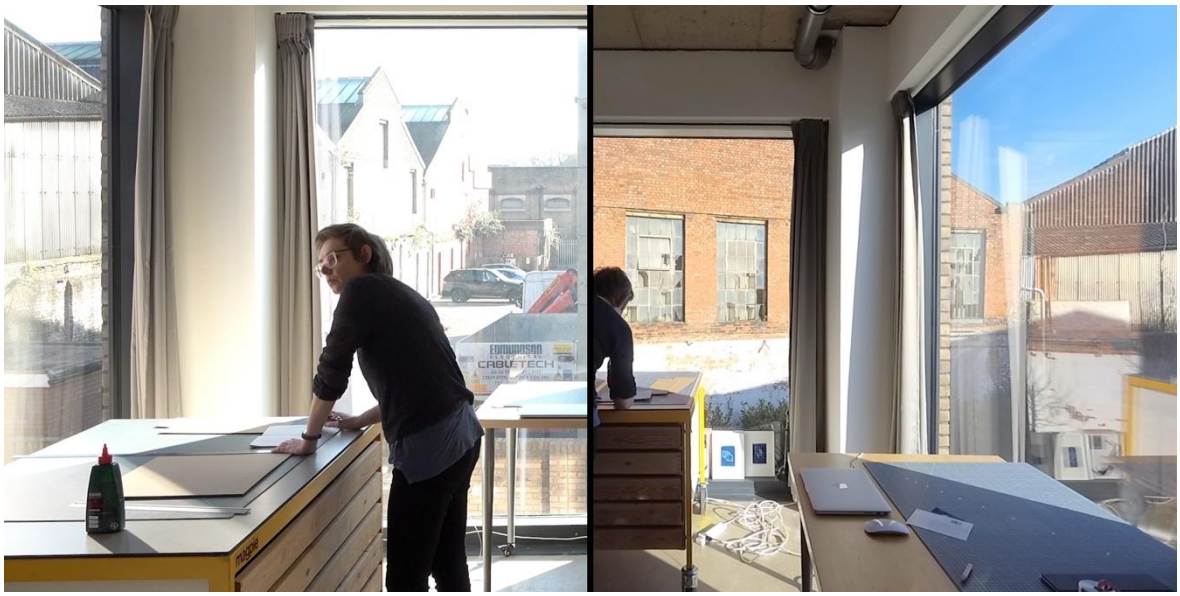


Figure 4-89: Making and filming the 1:15 Studio F23 model
https://vimeo.com/414246247

In this context I built a physical "virtual"[157] version of one of my two "real" worlds, understanding more and celebrating the material nature of this precious space. I needed to be more acutely aware of my own bodily presence and actions in the studio, ensuring that in the act of working in this space I couldn't contribute to a worsening of the pandemic.[158] My work making the model, and the ever-changing views of, and activities within, the exterior spaces beyond the studio, was recorded by two video cameras positioned perpendicularly, covering my workspace of plan-chest and table.

[156] https://architecturalmovingdrawing.com/category/studio-f23/studio-f23-model/
[157] For an extensive discussion of the evolution of the term "virtual" see Friedberg (2006: 7-12).
[158] I undertook a risk assessment, and strictly followed the studio management company's rules, to ensure that this activity presented no additional risk of transmission. Trips a few paces down the corridor to the toilet became conscious movements, with careful handwashing and avoidance of door handles. Entering and exiting the studio building required the use of the provided hand gel, an act that I had previously only associated with hospital visits. The notion of "work" was also critical to this activity – this aspect of my work (as a practice-led researcher) could not be undertaken from my home, which was especially true for this site-specific project.

Figure 4-90: model-making, soffit M&E fittings, empty studio model view

The 1:15 model was made with a limited palette of materials – the paper, card and plastic were assembled using standard architectural model-making techniques of cutting and gluing,[159] and was based on a CAD plan of the survey I had made on the day I moved in to the studio.[160] The detail of the exposed mechanical and electrical services and fittings on the studio's walls and ceiling, along with the rough lines of the soffit's cast concrete formwork scored into grey-board, and the view out of the studio windows, gave the model and its imagery a level of convincingness. Upon completion of the model, the initial photographs resembled the studio at the point I moved in, in contrast to the inhabited working space the studio has become. This empty (small) space felt charged with the possibility of actions that could take place within. I made scale replicas of my large plan-chest, one of my studio tables, and the fish-tank vitrine mounted on a drawer shelf and trestle legs. I then constructed 1:15 versions of the 100mm acrylic cubes to make cyanotypes inside the model on top of the replica furniture. I recorded this process of re-

[159] While not a standard architectural scale, 1:15 was chosen based on the high level of detail it would enable me to model, while keeping the overall size of the model manageable. The sheen of the polished floor was achieved by rubbing and buffing candle wax over grey board, and the same candle was used to wax red thread to produce the wiring for the smoke alarm. Soil pipes were constructed from painted drinking straws, lighting units made from scratch from tracing paper and card.

[160] This survey process was recorded in footage used for the Factory Wall *40º Celsius* exhibition installation project.

enactment – my large 15:1 scale hand enters the perceptually full-sized space to place the cyanotype paper and cubes, then removes the print after the exposure is completed. The final prints are then hung on the model studio walls, so beginning the process of inhabiting this virtual, but simultaneously real space.

Figure 4-91: Model plan chest, acrylic cubes, and cyanotype reconstructions
https://vimeo.com/410959769 | https://vimeo.com/410959899 https://vimeo.com/416603262

The uncanniness of the out-of-scale hand entering the model (similar to that in Op de Beek's *Staging Silence* films) is expanded by the construction of a scaled version of the studio model (15 times smaller, so a scale of 1:225), sitting on the 1:15 replica table, thereby providing another reference to my own occupation of and activity within the studio. Within this model of the model, another model (now at 1:3375 and only a few millimetres on each side) sits on a 1:225 table. These layers of replication and self-reference destabilise the reading of the imagery. The model of the model affords a "realness" to the model in which it sits. The model of the model of the model disrupts the reading of scale and the understanding of real vs unreal space even further. A (slightly out of scale) toy wolf stands next to the model table which holds the model of the model, reasserting the artificial nature of the wider room. The "real" view beyond the model and room's windows additionally confuses the reading of each image.

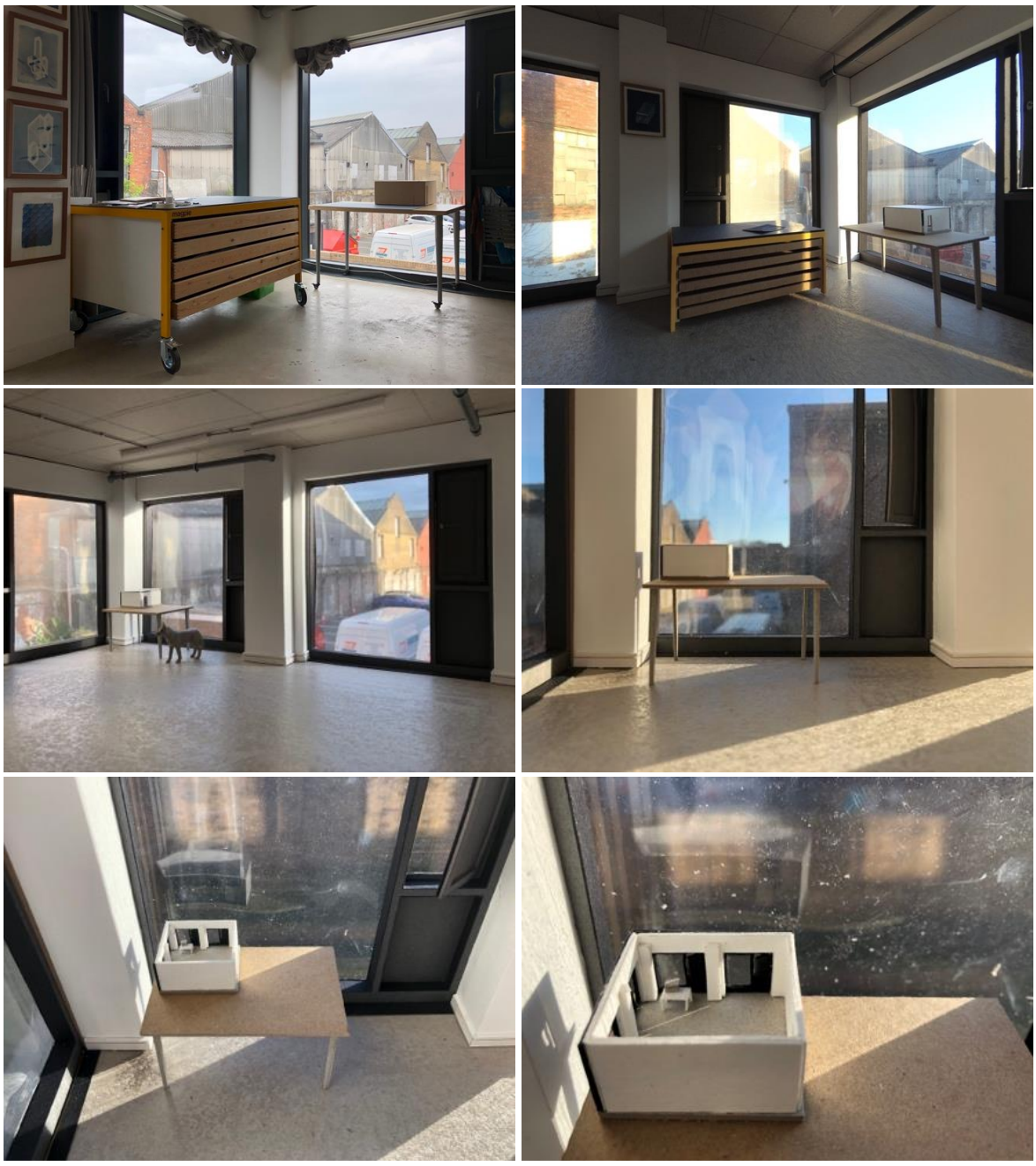


Figure 4-92: F23 studio model, model of the model, model of the model of the model

Figure 4-93: Studio F23 model – cameras on cardboard plinth bodies

The video cameras are held atop a series of bespoke card “plinths”, extending their bodies, raising their mechanical monocular eyes to view from a 1:15 human eye level. These hybrid bodies dwell in the room scaled to fit their diminutive form, standing in for the bodies of the filmmaker and viewer. The back of the model folds down, to allow manipulation of the cameras, and in doing so opens up a view of this small space to the full-sized occupant of the original studio. As discussed in relation to the Nauman doors and *Projective Views* reconstruction models in section 4.2, the “embodiment-relation” (Sobchack, 1992) between filmmaker and spectator and the physicality of camera and screen becomes especially complex in the filming of architectural models. Due to the scale differential the filmmaker cannot enter the space of the model with her own body, but none-the-less still has a bodily relationship to the real space of the model and can physically access this space not only though vision, but also with her hands. Replacing the joint inhabitation of full-sized space by filmmaker and camera in normal forms of filmmaking, the architectural model filmmaker has a hybrid filmmaker/spectator embodiment relationship. While viewing the model room through the eye of the camera (and also the different viewpoints of multiple cameras) the filmmaker simultaneously overlays their direct, unmediated relationship to the model with that of the “instrument-mediated perception” (Sobchack, 1992: 178) of a film’s spectator. However, unlike a spectator of a film, the filmmaker’s control over the cameras provides a degree of volition to the experience that is denied to the viewer.

Unlike conventional cinema where the spectator has no access to the actual space of the site of filming, the scale and transportability of the architectural model allows it to be physically brought to a space where it can co-exist with a viewer who also views its architecture through pre-recorded and/or live footage. This offers the viewer an experience akin to that of the hybrid one of the filmmaker, enhanced by an opportunity to engage physically with the model, such as the playful interaction of children with the *Phoenix Gallery* model. Furthermore, if the model is a replica of the space in which it is displayed, and in which the viewer dwells, it diminishes the “‘echo-focus’ in the spectator's

perception of the world that marks the perception as mediated by an instrument" (Sobchack, 1992: 178-79)[161] – the edge of the frame of the filmic image, which normally marks the divide between the filmic space and the lived space of the viewer, is weakened. While not conflating the model space with the real, full-sized room it mimics, the viewer's sense of their "place of viewing" (Sobchack, 1992: 179) has the potential to become confused – aware of their own bodily inhabitation in the full sized room, they are also able to project themselves, through an "[appropriation or incorporation of] the machine as an extension of his or her own body" (Sobchack, 1992: 180), into the scaled version of that room, which they also experience from the outside with their own, (now) outsized, body. This doubling of self, of point of view, of scale lends a further opportunity for a feeling of the uncanny, with a conscious self-awareness of the processes of representation at work.

Figure 4-94: Studio F23 model and room, 4 views
https://vimeo.com/416653513

The above edit synchronises footage from the three cameras inside the model with that of one of the two overview cameras. The model of the model is positioned in the same location as the actual model, as is the table and plan chest model. The views beyond the studio windows are the same space, and the sunlight which moves though both real and model rooms is cast by the same source.

[161] With the term "echo focus" Sobchack is referencing Don Ihde who uses this term to refer to the awareness of a mediating medium while being absorbed in the content afforded by that medium. Ihde illustrates this concept with the example of drawing with chalk on a blackboard – "The chalk is only secondarily an 'object,' while more primarily it is absorbed into my experiencing as an extension of myself. It is true, that the chalk is not totally absorbed in that I have what might be called an 'echo focus' in which I feel simultaneously a certain pressure at the juncture fingers/chalk with which I feel at the end of the chalk. Nevertheless, in the primary focus it is the board which I feel" (Ihde, 1975: 271).

I am continuing to use the model as a virtual version of the studio, to consider what other performative practices can be created/recreated within this space/site, and this work will continue beyond the completion of the thesis.

I am also using the model for the purpose that architects normally make scale models of proposed architectural edifices – to undertake something at a smaller size that would not be possible full sized, and which serves as a test or a prototype for that future project. At the time of writing, the model is allowing me to test the making of cyanotypes of the interior surfaces of the room, in an expansion of the camera/room cyanotypes in section 4.6.1.[162]

Figure 4-95: F23 1:15 model floor cyanotypes
https://vimeo.com/416603370

The method developed in back-filming shadows is also being applied to this model, to produce a moving plan view of the changing sunlight and daylight across the studio floor.

[162] These exposures are filmed by a camera hung from the model's wall, to avoid it generating a shadow on the cyanotype floor.

Figure 4-96: F23 1:15 model back-projection light on studio floor
https://vimeo.com/416595361

I intend to continue using the model to produce light studies using the above methods as the year progresses. In this strand of the project the process is an inherently architectural one. It demonstrates ways to make sunlight and daylight studies that are beautiful and compelling artefacts in their own right, rather than the technical diagrams that are more commonly used for this purpose, but which do not convey the inherent spatial impact and affect of light.

As I complete this thesis the worlds we all inhabit are very small. As the world changes into whatever form it may take, as it grows back to full size, this model will remain a remnant of one of those small worlds we all inhabited. As lockdown begins to ease, the model can be brought to other locations, taking this version of my working space out into the expanding world beyond.

4.8 Conclusion

The Studio F23 model project is a summative synthesis of my experiments filming models and is a prime exemplar of my thesis. The project is undoubtably transdisciplinary – overall it takes the form of an art project, one which utilises the hybrid processes that I have developed through the thesis, the making, photographing and filming of models, the awareness and inclusion of the performative nature and agency of my process. The work provokes apperceptive processes in the mind of the viewer – this self-referentiality is both an aspect of its functioning as an artwork, but also fundamentally explores and exposes the processes at work in architectural representation, around the perceptual construction of space.[163] This work provides a useful tool in considering the role of analogy in the relationship between representational artefact, perceptual space, and actual space. The performance of operations within the model (especially the existence of the model of the model) can be considered for their analogical relationship to operations in the room.

[163] The reading of the model and its imagery wouldn't work in this way if it was a CGI model – I assert that it needs the physical existence and the resulting uncanniness to do this.

The studio model also demonstrates how various processes of filming and editing that I have developed in earlier projects could be used in architectural practice – while my model is a reconstruction of a real space, the techniques can be applied to propositional models. Similarly, the filming of found objects, of things which look somewhat like architecture but cannot easily be confused with "the real" also show how the process is still successful without needing a "finished" model, thus demonstrating how this could work with rough sketch models. The nascent collaborations with Witherford Watson Mann demonstrate the potential for these processes in architectural practice. Ultimately, such collaborations, while producing interesting work in their own right, would offer a model for practising architectural moving drawing for a disciplinary purpose, and is a key way to disseminate the processes to architectural practice. The focus on my own acts of making highlight how performative practices, physical actions on the part of the architect or artist are critical to every project. The WWM footage is an early example of the relevance of this to architectural practice.

The work with filming inside models, and with back-filming and cyanotype printing of orthographic shadows has developed new techniques which can be used in architectural practice to investigate and communicate the impact of light in architectural space. The use of real sunlight and daylight, which, to all intents and purposes appears to be without scale,[164] allows the changing conditions of this architectural element to be embedded within representational artefacts. The use of multiple cameras offers possibilities for exploring fragmentation and detail in relation to a sense of the whole, analogically relating to this fundamental aspect of the distracted experience of space, as well as following the principles established in the use of representational artefacts to design space.

The back-projection projects have also demonstrated ways to produce non-perspectival time-based imagery by manifesting a primary "picture plane" to arrest and transform the light rays prior to them reaching the secondary picture plane of the camera sensor. The three-dimensional assemblages of clear acrylic boxes and blocks which rise up on the top side of that primary picture plane become compressed to orthographic projections, which are often ambiguous in their reading. The challenges first identified by Louis Necker in reading wireframe non-perspectival three-dimensional imagery is apparent in this work. The resultant moving images conform to the conventions of either sciagraphic or axonometric architectural drawing projection, depending on their orientation to the screen. The additional expression of depth in these images, resulting from the blurring of shadows as their source rises higher above the picture plane, impacts the point of "distinct vision" (Necker, 1832: 336-37) in the viewer's primary focus when reading the image, and thereby informs the interpreted orientation of the perceived three-dimensional object. This

[164] I have undertaken an experiment with differently scaled versions of the studio model to test that the resulting cyanotype exposure in each is the same.

work also highlights that the relationship between axonometric drawing projection and three-dimensional space goes beyond the diagrammatic. The indexical nature of this *imprinted* imagery links propositional, *constructed* axonometric drawing inherently to the three-dimensional world it projects.

These projects, themselves forming an ongoing and evolving art practice, demonstrate how the techniques, conventions, uses and reading of architectural representation can directly inform the subject and form of an art practice. With the inclusion of time-based media, they extend existing photographic and sculptural art practice which use architectural-type models. The space in space models also apply an architectural approach to site-based art practice and bring to the fore processes of perceptual spatial construction normally at work in the reading of architectural representation. Fundamental questions of scale, that are part of an architect's everyday process, become exposed to a wider audience through this work.

The experimental work in this chapter manifests processes of practising architectural moving drawing. It is in the performative nature of these transdisciplinary practices that disciplinary performative practices have been combined, and then from which they can be extracted. The nature of some of the work, specifically the space in space models, offers an opportunity for a transdisciplinary reading, communicating issues of architectural representation, alongside those of the profilmic and filmic time/space relationship, originating from concerns of structural filmmaking practice and theory.

Chapter 5

Conclusion

The work of which this thesis is a part began decades ago, arguably in my first viewing of Snow's *Wavelength*. It will continue beyond the submission of the thesis as my practices of making and writing continue to evolve. At this point in time, in the transitory present, located between memory and prophecy (Snow, 1967a; Frascari and Braham, 1994), the specific strands of my work over the last six years have been drawn together, to conclude the telling of this particular story. In the telling and performing of the story, the story has changed. What began as intention to more clearly define a type of hybrid practice output – the architectural moving drawing – developed into an understanding that architectural moving drawing was a practice rather than an object, a verb, rather than a noun.

I started the process faced with a question about which discipline I was working in, and as such, to which discipline my findings would ultimately contribute. The *subject* of the work was clearly architectural, but the *form* most closely resembled an art film practice. For me, my work was my work, the multi-disciplinary grounding and influences clear, and I questioned whether there was a need to identify a primary discipline. The issue was ultimately resolved as I began to more clearly frame my research project, initially attempting to ground it firmly in *one* of these disciplines, but ultimately finding it would settle in neither. Through the drawing in of an understanding of the value of *transdisciplinarity* (Stein, 2007; Jantsch, 1972) I was able to claim this in-between position, to see it as a strength, rather than a shortcoming, and use it as a fundamental foundation for what became the development of hybrid performative processes. As I go on to summarise the findings of the thesis, I will indicate in which *disciplinary* directions they can face, while also retaining the value of the hybrid processes and artefacts in their own right.

The lines of enquiry in the thesis emerged out of several contextual voids. While there is extensive research into architecture and narrative cinema, there is a paucity of material relating architecture to artists' film, and specifically practices of and those emerging from structural filmmaking. From that first viewing of *Wavelength*, it was clear to me that there was an inherent connection between these two fields, and substantial opportunity for using processes from the filmic practice for explorations of the architectural. Furthermore, while the techniques of architectural representation to design, propose, and dream the *three* dimensions of architectural space have long been established, the tools for an exploration of *time* are lacking by comparison, with the moving images in a CGI animated "flythrough" rarely used to address temporal architectural issues (Ratinam, 2012: 76-80; Clear, 2005), and also often poorly dealing with tectonic ones.

The notion of "architectural moving drawing" – a hypothetical construction at the start of the thesis – was a place to begin to dwell in those contextual voids. The aim of the thesis

was to consolidate the theoretical underpinnings for this idea, and to instantiate it as interlinked transdisciplinary methodologies for *reading* and *making*. The following two research questions were developed to direct the overarching project:

- How can a transdisciplinary perspective, grounded in both artists' film and architecture, be used to develop new methodologies for analysing time-based artefacts to undertake readings which focus on an architectural subject?
- How can disciplinary practices from artists' film and architectural representation be combined through a transdisciplinary practice to form new hybrid methodologies for architecturally focussed moving image production?

These performative practices (Haseman, 2010) of reading and making were then enacted, iterated, reflected upon and evolved throughout the duration of the thesis. The drafting of the artefact of this thesis was more than just documenting these practices as they developed – it was also a form of active work in its own right, a form of construction of knowledge, of understanding – by putting ideas down in writing they have become visible. As W.H. Auden noted about the process of writing in *The Dyer's Hand*, "How can I know what I think till I see what I say?" (Auden, 1975: 22) – so too the architect's sketched line or a fold of card in considering a design in development allows them to "see" what they are proposing, to draw the idea out of the mind and in front of the eyes, to have a conversation with themselves (Glanville, 1997: 38).

Through the course of the thesis the project of "constructing architectural moving drawing" was undertaken via a number of processes. Examples from my earlier moving image work demonstrated how, in my undergraduate fine art and architecture studies, I commenced combining techniques from artists' film practice, structural film in particular, with an architectural agenda and the conventions of architectural representation. As an emergent form of the transdisciplinary methodology of making that has been developed and consolidated in this thesis, this early work set the path for my continued art/architecture practice.

In developing a theoretical framework by which to contextualise my work I identified previously un-explored correspondences in ideas of the active viewer constructing meaning in the projective artefacts of structural film (Gidal, 1976: 1-2) and architectural representation (Evans, 1989: 19). Using these parallels, along with other disciplinary methods of interpretation, I developed a transdisciplinary methodology for making new, architecturally focussed *readings* (Power, 2015) of artists' film. This new methodology reflexively informed my understanding and development of my own hybrid practice, which reciprocally enhanced the theoretical framework. An extension of the ideas of construction in reading and viewing drawings and films led to the exploration of how notions of analogy might provide a model for the relationship between referent and sign, building (real or

perceived) and drawing, pro-filmic and filmic. This allowed the celebration of sameness-in-difference (Stafford, 2001: xvi), thus avoiding the trap of any *necessary* resemblance, simulation or verisimilitude, and affording greater potential for the mantic (Frascari and Braham, 1994), and perceptually constructive operation of architectural representation and filmic practice.

Taking this idea of analogy, I explored how qualities of uncanny (Freud, 2003; Jentsch, 1997) spatial experience could be manifest in the real time/space of the filmic experience, drawing upon both filmic and architectural understandings. Using Walter Benjamin's (2006) seminal ideas of distraction, tactility, habit and the optical unconscious in filmic and architectural experience, I explored how the extended duration in structural film might offer a film's viewer an analogical condition to that of spatial dwelling. I considered how, in the reading of such work the perceptual construction of a "new" space through the agency of an active viewer could occur. The role of sunlight as an active agent in the films was presented as a mechanism by which to haptically and temporally insinuate a viewer into the perceived space.

In furthering this exploration of light, the work presented in Chapter 4 developed strategies for filming architectural models, to produce a range of different moving image techniques. From the use of found objects that can propose architectures via the view of a miniature camera inhabiting its small space, to the use of multiple cameras to record a series of fragmented views, this work extends practices of model photography. It offers spatial imagery which embed the fourth dimension of time, and which through the doubling of real and virtual provides a level of spatial immersion greater than that of CGI imagery (Foster, 1983; Fobert, 2016). Scaled replicas of real spaces explored the uncanniness of such doubling and opened up questions in the viewer about the nature of representation. The development of back-projection techniques generated non-perspectival, orthographic imagery that follows the conventions of oblique projection and sciagraphy to compress the three dimensions of objects down to the two dimensions of a picture plane, which are then animated though the movement of the sun.

The textual analyses of Snow's *Wavelength* (1967b) and Smith's *Leading Light* (1975) demonstrated how new methodologies of *reading*, developed from a transdisciplinary perspective, have been able to offer original insights into such works. The tectonic and temporal agendas of these films were shown to contribute to the tectonic and temporal understanding of the spaces which were filmed, and subsequently interpreted, reconstructed, by the engaged viewer. Through this act of appropriation, the "non-subject" of the "empty" room became foregrounded, and in doing so the film *became* an architectural moving drawing. This new process of filmic analysis allows for novel readings of existing work, and also demonstrated how these films may act as precedents for an

architecturally focussed moving image practice, in either discipline of art or architecture.

The evolution of my moving-image practice – from the finished films and installations, though to the fragments of footage and edits that have been critical "sketches" in testing and iterating techniques – has demonstrated how processes and critical understanding from both artists' film and architectural representation can be combined within a hybrid art/architecture practice. These show how such disciplinary performative processes can be blended to practise architectural moving drawing in a transdisciplinary space. Furthermore, through the making of work which, in addition to its sui generis status, can also be framed both as an art practice and an experimental architectural practice,[165] it can potentially speak to both disciplines – these synthesised methodologies can be adopted by practitioners in either discipline as forms of *interdisciplinary*[166] practice. A way in to the work is provided via the embedding of characteristics of the familiar discipline, thereby also providing access to aspects of the *unfamiliar* discipline.

For artists who are interested in, for example, "the relationships between cinema and architecture and the ways that architecture is … produced, in film" (Site Gallery, 2012), my practices of making and writing expose something of the critical relationship between architecture and its mediating artefacts, and how such representational tools are used for architectural thinking and creation – this understanding is normally only available to those fully indoctrinated into the architectural discipline. By practising such transdisciplinary acts of making and discussing this work, as well as appropriating other artists' films through an undertaking of an architectural reading, I open up some of the field of architectural representation to artists whose work already has a strong relationship to architecture's mediating artefacts.

The nascent collaborations with architectural practitioners indicate how these transdisciplinary methodologies might go on to inform such disciplinary practice. Bringing techniques and attitudes from artists' film, in particular, structural film, to time-based architectural representation – for site and precedent investigation, design development or presentation of a completed scheme – provides a wider range of relevant strategies for relating the filmic tectonic to the architectural one. Filming models potentially offers an alternative to CGI renderings (Marrs, 2015), allowing architects to build upon their already established practices of photographing models. The explorations of back-projected shadow drawings reveal to architects the processes of projection at work in their drawing

[165] Transdisciplinarity can work across (Osborne, 2015; Rendell, 2013; Thompson Klein, 2004) as well as in-between (Grosz, 2001; Bremner and Rodgers, 2013) disciplines.
[166] A disciplinary practitioner is still grounded in one discipline while using practices, tools, and knowledge from another. Even when using transdisciplinary techniques, they are still inter- rather than trans- disciplinary, as they are combining techniques from their own discipline and another, which is not theirs.

tools, while also offering a new form of sciagraphic expression.

Expanding opportunities for such forms of disciplinary dissemination is one future direction for the research undertaken in the thesis. However, I believe the textual and filmic outputs of my transdisciplinary practices of reading and making, and the hybrid performative processes of their production, have a value in their own right, beyond their ability to contribute to existing disciplinary practices. Having firmly established my practice through the PhD all the strands of work have potential for further development. Strategies for editing in my films based on built architecture offer ways in which the model footage might be edited. The preliminary experiments with placing footage of a “real” space alongside that of its “virtual” model replica can be further expanded to explore how they can speak to the nature of representation and perceptual construction of space. The installations begin to more fully consider how the screen can function in space, and how scale and fragmentation may work with the various forms of moving imagery that I have been generating. The moving shadow drawing technique, including the recording of the performative act of assembling the “model”, has become increasingly incorporated with my cyanotype work, and this fruitful integration is one which will continue. As I finish typing these words I am anticipating returning to my studio, to continue this work, in a room with a doppelgänger of itself beside me, its small space, seen via a folded down wall and through its model windows, uncannily doubling the very room in which I work.

Finally, in the presentation of my work though this thesis, I have demonstrated concrete examples of practising both reading and making “transdisciplinarily” (Power, 2015). Through such modelling of these forms of practice, their processes and outputs demonstrate the value of such a transdisciplinary methodology, of how the grounding in and combining of several disciplines can bring new insights and processes.

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