

MANCHESTER
1824

The University of Manchester

ARCHITYPES

B.15: ARCHITYPES

B.15
MODELMAKING
WORKSHOP

ARCHITYPE:

The original pattern or model from which copies are made; a prototype.

B.15: ARCHITYPES

FORWARD BY DR RAYMOND LUCAS	4
THE ARCHITECTURAL MODEL BY PROFESSOR TOM JEFFERIES	6
INTRODUCTION	8
1. MASSING, SKETCH & CONCEPT MODELS	10
2. CROSS-SECTION & INTERIOR MODELS	22
3. LARGE SCALE, PROTOTYPE & DETAIL MODELS	36
4. PRESENTATION MODELS	44
5. PRECEDENT STUDY MODELS	60
6. MASTER PLAN & SITE MODELS	68
7. APPROACH, METHODS & MATERIALS	80

MODELMAKING HAS AN ENDURING IMPORTANCE WITHIN ARCHITECTURAL PRACTICE.

FORWARD

The eminent sociologist Richard Sennett, writes about the fundamental importance of *craftsmanship*. This craft element is crucial in architectural design, where the crafts of drawing and modelmaking continue to develop with every new technique and technology. The death of conventional model making is often heralded, replaced by computer models or 3D printing, but is premature: new materials, processes, and techniques add to the traditional and conventional, and the best model makers have a knowledge of which model making practices are appropriate where models become multi-modal and hybrid entities combining the qualities of analogue and digital, hand-made and machined.



Sennett takes the implications of craft to their fullest: demonstrating that there is a value in simply doing a job well: skills are not a commodity, part of a skills economy; skills are forms of productive problem-solving.

It is here that the persistence of model making in architecture becomes apparent. When making a model, architects are designing: resolving problems and refining approaches, finding forms and relationships.

We might ask the question: **'what is a model?'**

but it is more fruitful to ask, **'what can a model be?'**

A model can be a miniature or scale representation of a building used in either a developmental manner in order to explore the volume more coherently; or as a presentational tool, showing form in as clear and honest a manner as possible. Presenting a model is immediate due to its physicality: there are no options to pick the best side of the building, no complicated controls or camera angles to defy client interaction with a fly-through; it is a material fact and

can be interrogated and understood as such.

A model can be conceptual or schematic, showing an abstracted form of your thinking about an issue or problem, it can extract a small element for detail or the wider topographical and urban context.

Acts of imagination populate these spaces, in reading a model we move through from one space to another, constructing sequences of movement according to the logic inherent in the space rather than imposed by the architect. Above all, the model is honest and leaves the architect little room to hide things.

This book and exhibition charts the central role model making has in architectural education at Manchester School of Architecture. Our commitment to model making is a key feature of the school, always moving with the latest techniques and technologies at the same time as remaining grounded in the pragmatic craft of designing buildings.

Dr Raymond Lucas, Head of Architecture at The University of Manchester



B.15 MODELMAKING WORKSHOP





THE ARCHITECTURAL MODEL

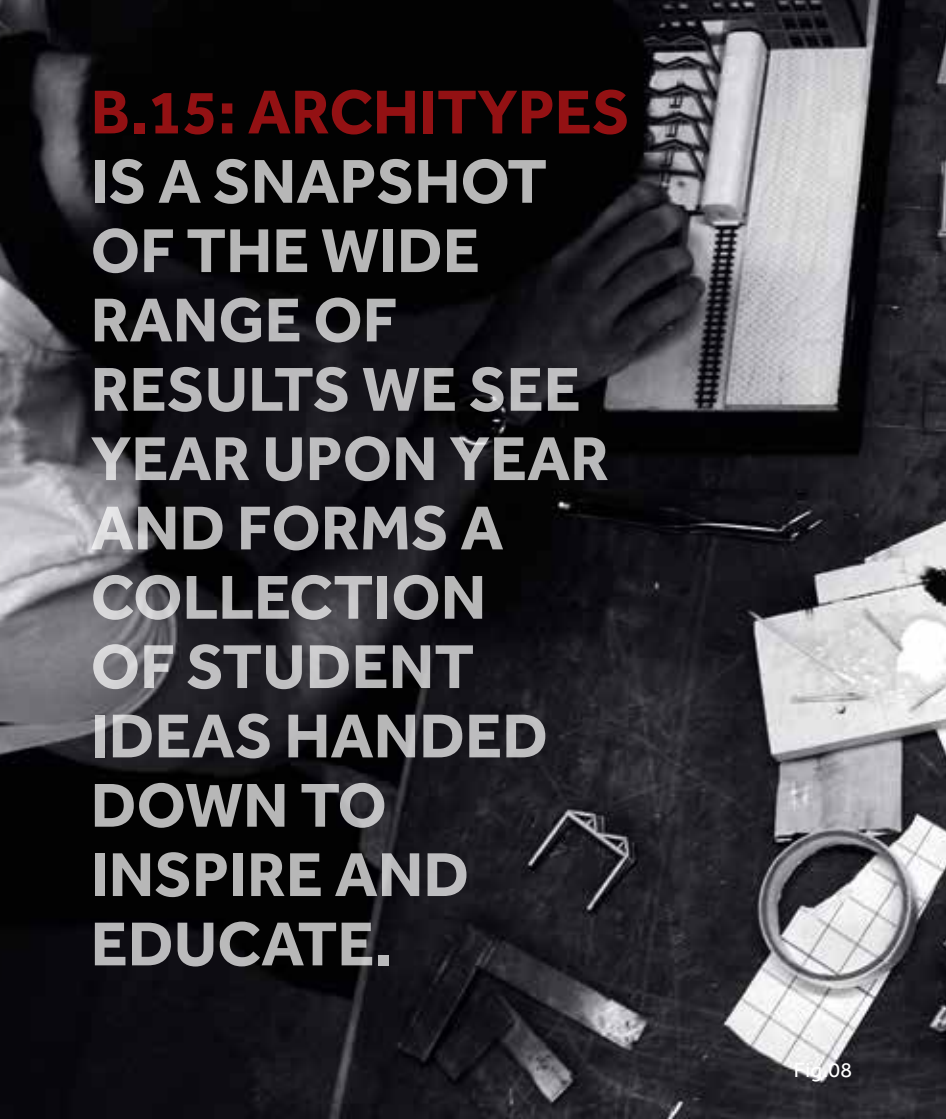
The architectural process of design demands the synthesis of numerous, sometimes apparently non-compatible questions within a conceptual and sometimes real space. The ability to take abstract issues and concepts and form an architectural response to these requires that the designer use a range of analytical and exploratory tools to produce a critically acute proposal. Writing, drawing and modelling architecture are means to both develop ideas and mediums through which these ideas can be tested. Writing enables abstract exploration, describing ideas that sometimes transcend space. Drawing is a notational and formal tool that describes relationships, composition, proportion and size. Modelling actualises the architectural proposal in real or virtual space, providing a medium through which spatial concepts can be tested and expanded.

The model exists as both a framing device for an overarching concept and as a means to explore the particular in a proposal. The model is both a descriptive and analytical tool. It can represent architecture as a formal whole or disengage specific aspects or details to provide greater understanding of these in relation to the larger whole. Uniquely, the model can embody the material quality of a scheme in ways that drawing and writing cannot. The model can provide deeper understanding of the real and conceptual engagement with the tectonic qualities that architecture embodies.

The Manchester School of Architecture actively promotes the use of the model as a critical part of both how design is represented and how it is developed. The scope and quality of making in the School is supported by technical expertise that is committed to deepening the knowledge of making as a tool for both communication and exploration.

This understanding embodies the full range of available techniques and processes, both traditional and digital, that can provide the means through which architectural thought and its realisation are enhanced through the process of making models.

Professor Tom Jefferies,
Head of the Manchester School of Architecture



**B.15: ARCHITYPES
IS A SNAPSHOT
OF THE WIDE
RANGE OF
RESULTS WE SEE
YEAR UPON YEAR
AND FORMS A
COLLECTION
OF STUDENT
IDEAS HANDED
DOWN TO
INSPIRE AND
EDUCATE.**

INTRODUCTION

Drawing on the feedback of our previous and first attempt to tell the story of modelmaking in 'B.15:45 Architectural Modelmaking Exhibition' of 2014, this reformatted and refined display hopes to continue with and to provide a fresh resource for current and upcoming students. Attention is not drawn to any particular method or material of making here. In tune with our approach to making as a whole, we feel the most successful student projects are a well-tuned mix of ingredients that are made appropriately to the task at hand. Similar to the projects a student may be faced with, these models are displayed in types or categories which help to define the purpose of construction. It is important to see these as guidelines within the parameters of the exhibition display that help us navigate as we might through a university modelmaking assignment.

Modelmaking today is often thought of in the past tense; as a fond memory or a childlike curiosity that is distanced from our everyday adult lives. With younger generations it is seldom thought of as many creative interests are dominated by virtual technology based escapism. For adults it is thought of as a tactile, toy-like study of ideals in the world as we see each it. In fact it is one of the few universally accessible acts that allow us, as willing learners, to engage with our thoughts in Three-dimensions with little room for any untruths as we examine what works and what does not through trial and error.

Computer technology has excelled in recent years to give huge potential to designers' which was previously thought impossible to achieve without great mental and physical commitment. Technology offers us ever expanding creative possibilities and with so many advances in this field there is little doubt that this revolution of design tooling is here to stay.

Yet, this is not the one-track vision of the future we are invested in.

The idea of the act of making being old fashioned is something we endeavour to address by explaining the important learning outlet modelmaking can give us as designers in an ever more fast-paced world.

Our interest lies in the quality of each individual learning experience; in our ability to operate with advanced understanding of both traditional and digital tools that successful modern craftsmanship requires. This means a well-rounded approach to ideas development that draws on tradition and importantly applying the oldest computer at our disposal – our brains, to truly solve the problems ourselves.

We believe that the use of modelmaking alongside other design development processes can enable us to integrate the lessons learned to produce outcomes that have multifaceted considerations toward achieving successes in a real world application.

Quality models are not measured in cost, method, material, size or complexity but in their ability to effectively tell a story to an audience and critically to ourselves as students of design.

Jim Backhouse & Scott Miller 2016

msa Manchester
School of Architecture

MANCHESTER
1824
The University of Manchester


Manchester
Metropolitan
University

MASSING, SKETCH & CONCEPT MODELS

:1

It is important to remember that the tool of modelmaking within architecture doesn't always have to appear 'complete'.

If a model has performed a role in directing the outcome of an idea then it, as a tool, can be complete even in rough, seemingly unrefined form. In the creation of massing and sketch models students will often produce quick pieces to communicate the overall form of an idea. This means a study of a particular form or structure that is yet to be refined. As ideas are improved upon and discussed through presentation perhaps more of these models will be produced to take an idea forward. The level of detail at this stage is often minimal with entire facades or buildings represented by simple block forms. This is because the area being focussed on, is that of the overall form rather than the 1:1 'how does it actually stay together?' questioning that follows later.

In bigger projects the process can continue to a point of closure, whereby a design is settled on and presented at a clear and high level of finish as a presentation model.

Whilst presentation models serve vital purpose in both education and commercial architecture it is often these sketch and development stages that are greatly appreciated by marking academics. This is because they clearly show the evolution of a concept as well as demonstrating an individual's skill in identifying problems and devising the most appropriate means of correcting them.

The ability to make from cheap materials gives this form of idea development a great range of possibility. Theoretically there is an infinite amount of resource to produce ideas from off-cut materials, recycled paper, card or even from redundant older projects meaning financial constraints should be little or no concern here.



'MODEL STUDIES'

Vun Loong Lee, 1992

A set of 3 model studies made using paper and wooden sticks glued and folded to create and explore forms. Cheap materials often make for more interesting forms when well presented as they demonstrate the complexity is not in the technology or cost but in the careful consideration taken to construct the form.

:1.1



'AN ARCHIVE OF FORGOTTEN VOLUMES' CAST STUDY MODEL

Cosmin Chirpac, 2016

Cosmin's project looked as various concepts revolving around the idea of positive space incastrated in the earth. In this case a tunnel shown here in the model as a framework incastrated within wax.

Made using 3D Powder printed element and cast wax.

:1.2



'THEATRE HYPAETHRAL' CONCEPT MODEL

William Priest, 2015

This model drew on the relationships Will observed in Bollington between decaying post-industrial areas in contrast with warm inviting interiors. Exterior space and context is consistently coloured with the burnt timber with the interior carefully clad in gold leaf.

Made using pine and twigs before being burnt and finished with gold leaf.

:1.3

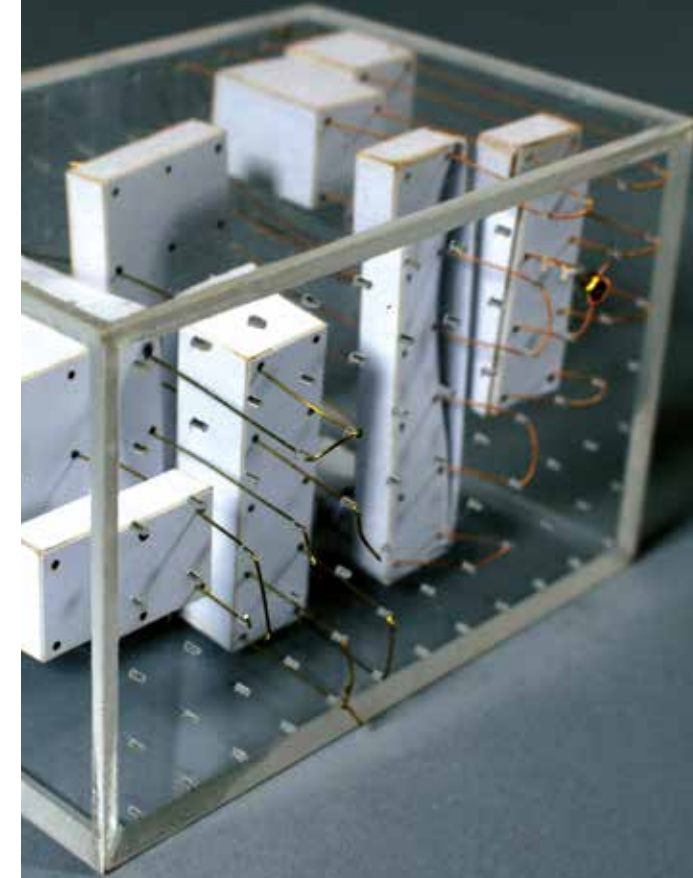
INTERNAL SPACE SKETCH MODEL

Sophie Smith, 2013

Paper forms representing potential functions are suspended in the internal space using wire.

Made using Acrylic, Paper and Wire.

:1.4



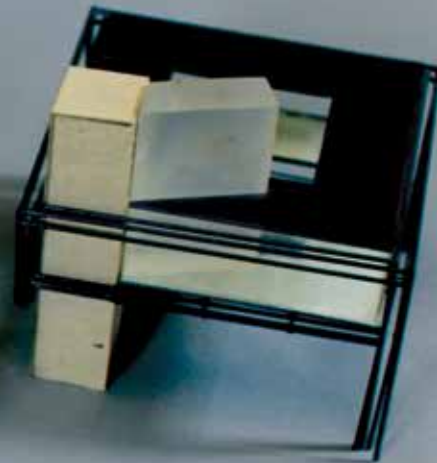
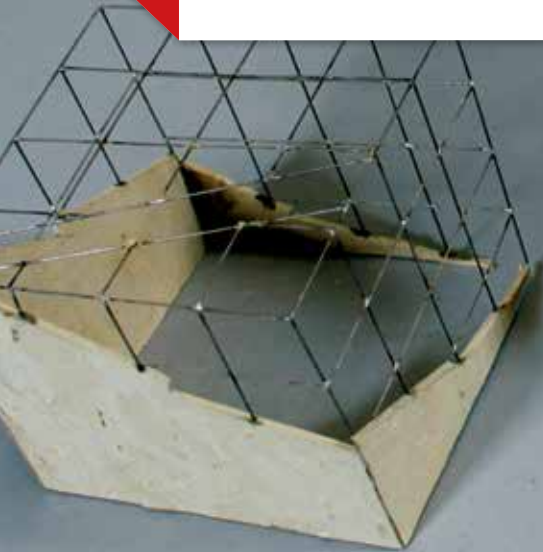
'THE OBJECT OF DESIRE' FRAME AND SPACE STUDIES

Nicholas Fung, 1999

Nicholas' focus for this project was looking at how the placement of a subject, in his case a new car, within a building could improve its appeal to a potential buyer. These are some of his early studies made to better grasp the use of space in a given cubic area.

Constructed from a mix of Steel Wire, Paper, Wood and Acrylic.

:1.5



1.6 SAN LORENZO MASSING AND SITE STUDIES

Ketil Rage, 2016

The site models were made for understanding the before and after alterations of the site, and how demolishing and reconstruction elements of the church affected the urban space around it.

The metal cast of the sacristy was made to understand the solidity of the proposal for the sacristy, as the sacristy itself is meant to be cast in solid bronze. Making the model helped Ketil to understand the difficulties in a casting process, as well as how the structure would work as one solid piece.

Made using Plaster, Cast Pewter and 3D Powder printing.

:1.6



SITE MASSING SAMPLES

Daniel Kempski & Peter Lee, 2016

This joint project looked at a large site redevelopment encompassing multiple construction styles. These were demonstrated using a series of massing samples three of which as shown here. These models help to explain questions of immediate context, arrangement and basic light/shadow effects.

Made using Jelutong Block, Laser-cut plywood, Wood Dye and Spray paint.

:1.7



EXTERIOR MASSING MODEL WITH WINDOW DETAILS

Valeria Szegal, 2016

This 1:200 exterior mass was created to study the interlocking court geometry and also explores window detailing in relation to context. The model was made to fit into a bigger site model.

Made using Cardboard and Paper.

:1.8



'NATURAL EVOLUTION AND DECAY' CONCEPT STUDIES

Natalie Dosser & Diana Muresan, 2016

This scheme sits in opposition to conventional architectural design, so it was necessary to keep this concept within the models, which are experimental in both form and materiality. Throughout this project Natalie and Diana aimed to keep an earthy, more imperfect quality within all the models they created, as this clearly demonstrated their concept.

Made Using Scrap Timber Strips, Wood Dye, Paper, Wire Mesh, Plaster and Plywood.

:1.9

1.10 FRAMEWORK STUDY FOR UNKNOWN PROJECT

Anna Woodeson, Thought to be Early 1990's

This Sketch model used wire and mesh to create the structural forms for Anna's design. Floor and stair masses are simply represented using paper with thin timber for other room details.

:1.10



CROSS-SECTION & INTERIOR MODELS

:2



Often the most technically challenging models, cross-section and Interior models allow us to cut through the skin of a building to expose its inner workings. The apertures and exterior form of a building can allude to its inner workings but it takes a more detailed look inside to reveal their intended function – practical or aesthetic.

Makers are often faced with the challenge of supporting forms which would normally have increased support elsewhere resulting in gravity defying forms. Interior models focus on the lived-in spaces and help to convey arrangement and the flow of users within a building.

In taking the time to correctly demonstrate the inner framework of a building or its structural form, students can learn a deeper understanding of their subject as well as effectively conveying the various layers that make up the construction to others.

Common working scales for these models are 1:100, 1:50 and 1:20. These scales afford a good level of detail that smaller scales would prevent whilst not requiring the extensive detailing or high material costs of a larger scale model.



'UTOPIAN COMMUNITY ESTATE' SECTION MODEL

Anton Tkachuk, 2016

Particular attention is paid to the number of materials used here in order to demonstrate the contrast between internal and external finishes for this proposed scheme. Finishes are kept clean though careful planning and detailing.

Made using Laser Cut Acrylic, Veneer sheets, Frosted Acrylic, Gold Spray Paint.

:2.1

2.2 'OUTREACH AND FUNDRAISING HUB' CORNER SECTION

Katie Williams, 2015

Katie's section model cuts through the main space and facade covered terrace of her scheme. She chose materials that closely reflected those of her design proposal for the actual construction. The section pays special attention to the wall and floor build-up as well as the roof detailing and parapet. Materials used are Teak, Birch Ply, Foamcore, Styrene, Vac-Formed Styrene, and Laser Cut MDF.

:2.2





KANTOROWICH CORNER SECTION

Scott Miller, 2014

This 1:50 model of our own building was produced for promotional purposes but serves as a good example of emulating its construction process using cast sections in plaster.

Made using hand-made patterns made from Ureol which were then moulded to create plaster casts on the individual building elements.

:2.3



OXFORD ROAD 'WELCOME MAT' SECTION MODEL

Daniel Vella, 2016

Daniel used a mixture of grey board, plywood and corrugated cardboard to convey the industrial feel of his scheme across three levels. Selected elements and scale figures are coloured in accordance to the rest of his design scheme to provide a common theme throughout.

:2.4



'ROWING QUAYS' STRUCTURAL SECTION

Vicente Fuster, 2015

This 1:50 model aimed to show key elements of the scheme in particular looking at construction ordering. Foundations were made using cast plaster to support I beams and columns and in turn the building envelope.

Made using Plaster, MDF, Styrene, Cork and Corrugated Cardboard.

:2.5

2.6 MODULAR CONSTRUCTION DETAIL SECTION

Bryn Lee, 2013

Built at the appropriate scale of 1:50, Bryn's detail model uses a variety of different media to illustrate how different types of component would join up through his design. Whilst the detail model only represents a small portion of his building, it is clear that the construction and component assembly would remain consistent across site and therefore a more extensive model at this level of detail is unnecessary.

Made using ABS 3d printed components, hand-made Timber components, Timber Strips, Acrylic and a CNC cut Teak base.

:2.6





'THE SOCIAL CONDENSER' PROJECT FAÇADE
SECTION MODEL

Matthew Jarvis, 2014

Matt used this detail section to demonstrate how the framework of his design related to the outer glazing façade. Components were created using laser cut Acrylic in a variety of colours to match the patchwork glazing scheme of Matt's design.

:2.7

'PEACOCK MUSEUM' CROSS SECTION MODEL

Mahishini Vasudev, 2015

This 1:50 section presented the problem of defying gravity due to the cantilever section placement. The model is cleverly anchored into its base to allow the overhang to appear self-supporting.

Made using Styrene strips, Acrylic, Grey board, MDF and timber offcuts.

:2.8

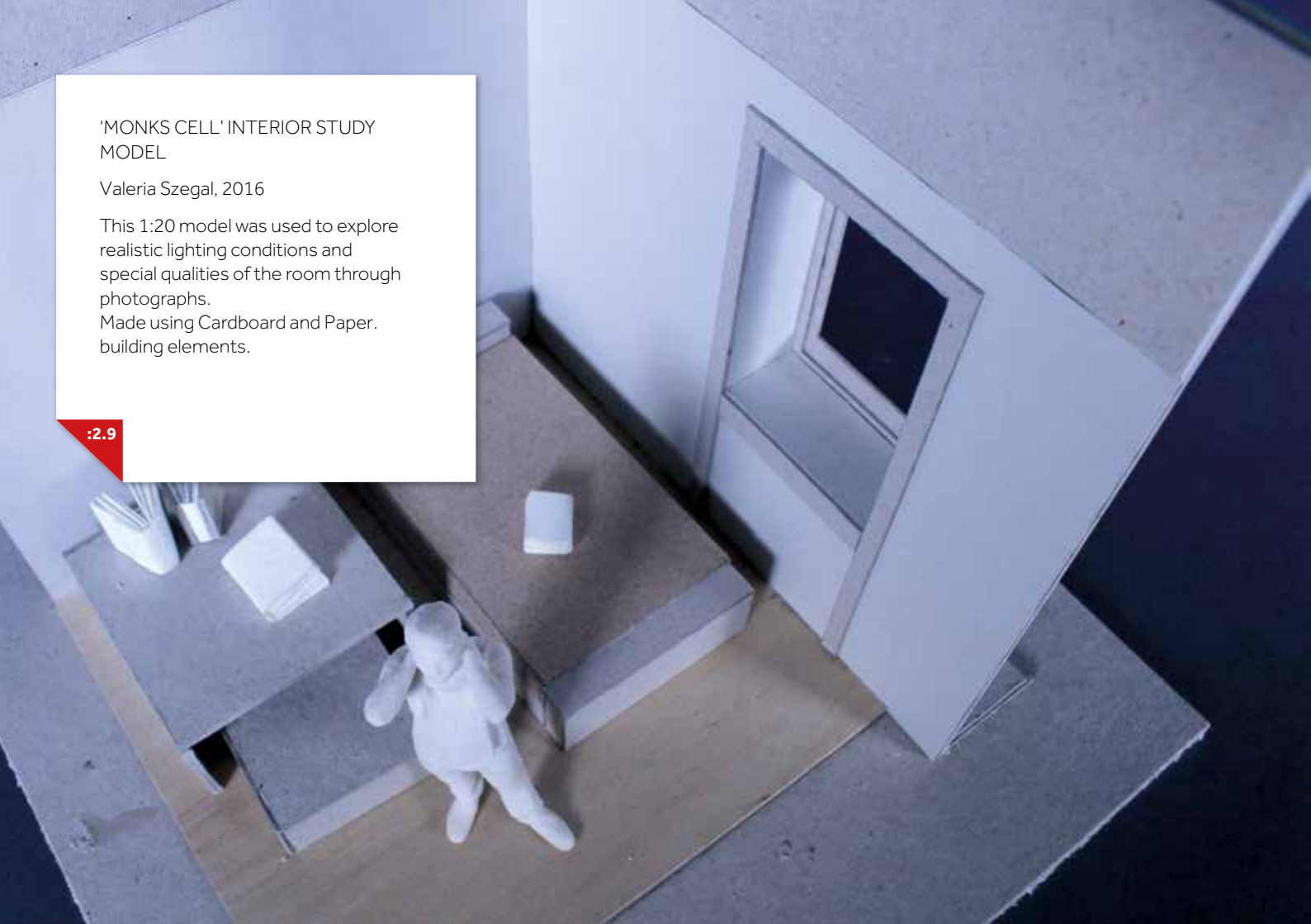


'MONKS CELL' INTERIOR STUDY
MODEL

Valeria Szegal, 2016

This 1:20 model was used to explore realistic lighting conditions and special qualities of the room through photographs.
Made using Cardboard and Paper.
building elements.

:2.9



'WORK AND PLAY: AN AGEING
COMMUNITY CENTRE' INTERIOR
SPACE STUDY

David Jones, 2015

David used a simple material pallet to express the difference between structure and cladding/lining. The intricate pattern is etched and laser cut out of grey board – very time consuming but effective. Handmade plywood elements describe structure.

:2.10





'GREENHOUSE PLAYHOUSE' CORNER SECTION MODEL

Akhil Mathew, 2016

This 1:50 model uses a range of materials and processes to convey new design proposals within the existing structure of a car park. Elements of the existing building appear as relative solids being produced using a combination of clay, 3D powder Printing and ABS Tubing. In contrast the new proposals are of a light structural assembly made using laser cut elements painstakingly assembled one piece at a time to give a detailed and complex result.

:2.11

'PROMESSI SPOSI' THEATRE SECTION

Sam Beddingfield, 2016

A 3d Powder printed model that conveys the different elements of this design in section. The facade detailing places Sam's feature drainage details in context as shown in the accompanying render and grey board details (see 3.7).

:2.12



LARGE SCALE, PROTOTYPE & DETAIL MODELS

:3



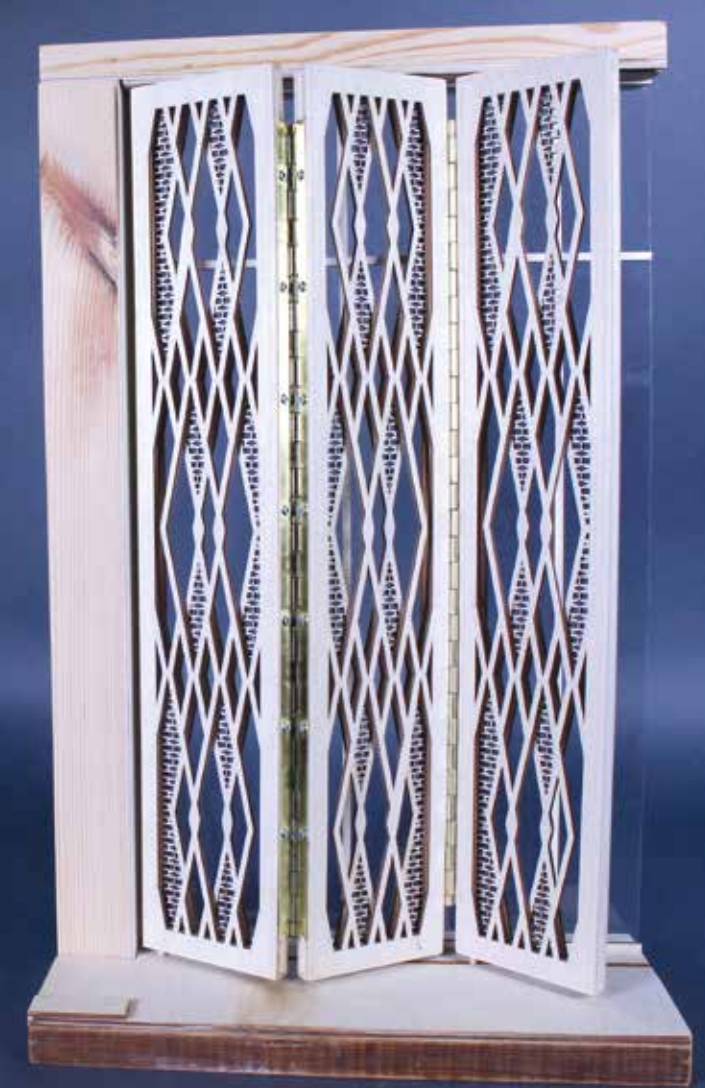
Large scale studies for architectural projects are an essential step in the refinement of a design and often find use, although not exclusively, in technology studies.

Whilst small scale models can help to demonstrate an idea of space they are less effective at conveying the actual conjuncture and material relationship between components.

This is where large scale or 1:1 modelling comes into its own. Whether it is in the form of an original design or studying a relationship to an existing piece, matching and pairing elements of construction together is an essential part of detailing in a successful scheme.

In addition to aesthetic requirements, there is the crucial question of whether or not a design will physically stay up! Testing this at smaller scales helps to clarify any issues and building up to a 1:1 detail will allow a more definitive understanding of a designs' validity in terms of its function within a building.

In commercial architecture completed details may be repeatedly modelled and finalised before mass production for use on site but not without rigorous testing. This process has become increasingly computer driven but even in major practice, details still begin life as a model.



'SEA VIEW COTTAGES' EMBELLISHED
SHUTTER DESIGN

Kathryn Valentine, 2015

This 1:5 prototype was produced to test and in turn demonstrate the functionality of Kathryn's shutter design which was a recurring theme in her proposal.

Made from Plywood, Laser Cut Plywood, Acetate, Brass Hinges.

:3.1

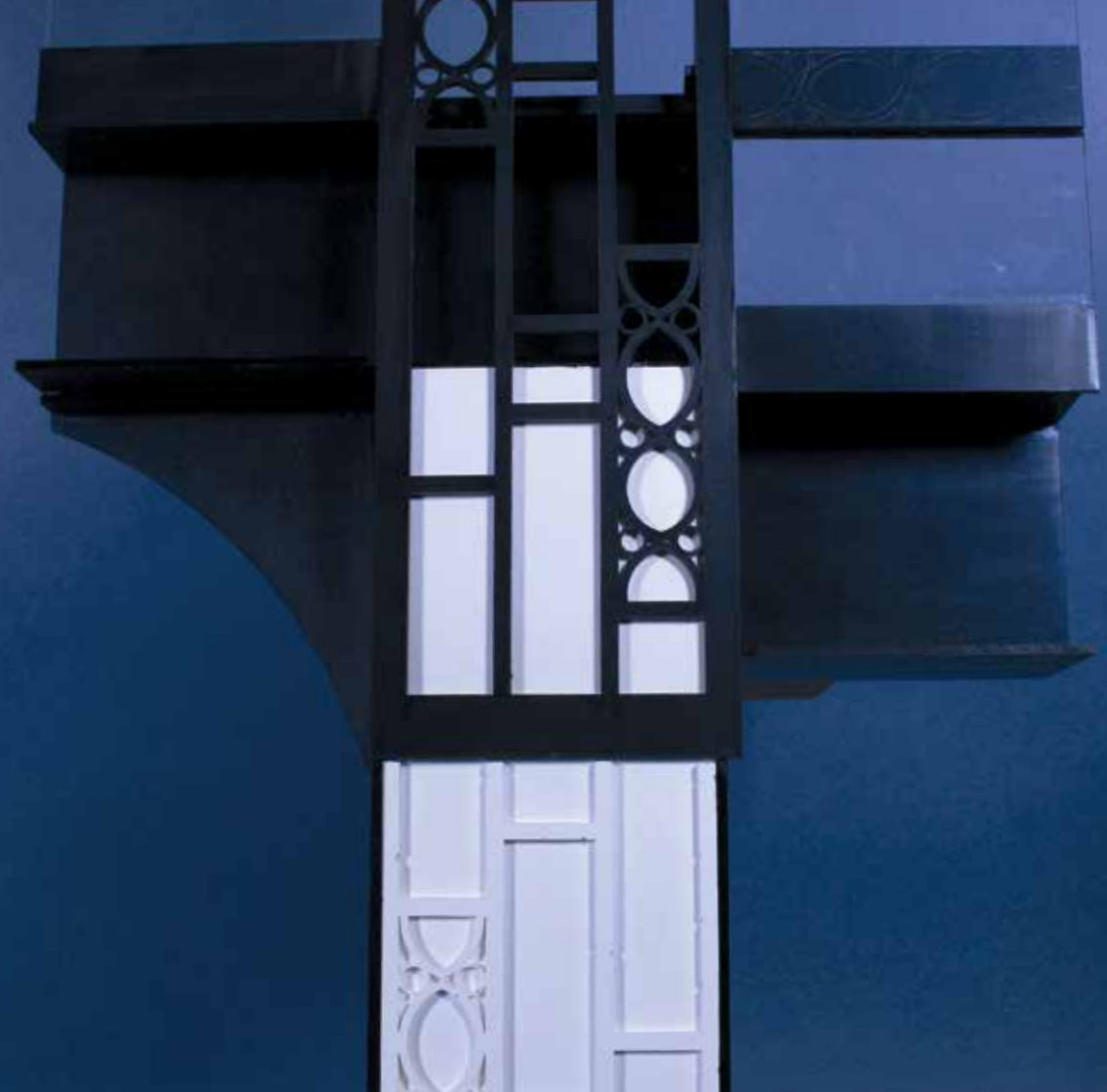
ORNAMENTAL COLUMN BALCONY POST DETAIL

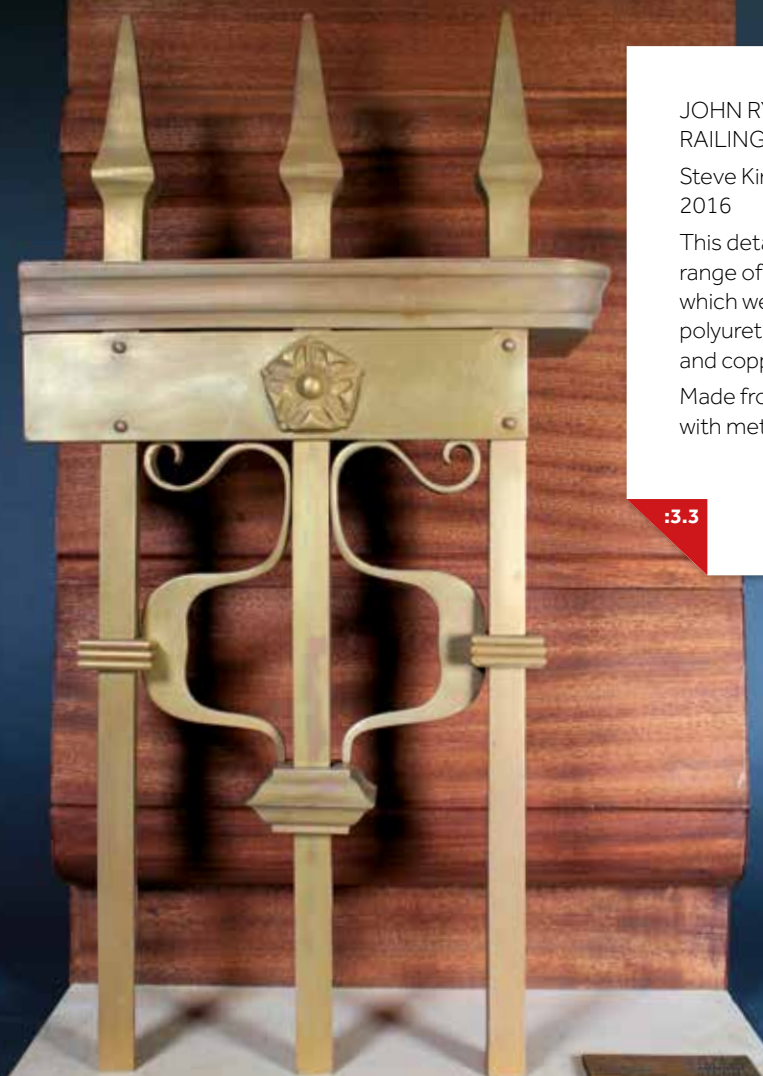
Bryony Preston, 2015

This project aims to demonstrate the integration of ornament into a functional and structural element of a building. The styling comes as a response to the Victorian beach resort of the seaside town of Colwyn Bay. The model mixes solid elements with finer details represented through cast plaster and laser cut formwork.

Made using Laser cut Acrylic, Plaster, Timber and Plywood.

:3.2





JOHN RYLANDS LIBRARY
RAILING DETAIL
Steve Kirk, Will Priest & Robbie Stanton,
2016
This detail was produced using a wide
range of mediums to create the forms
which were eventually cast using
polyurethane resin and a mix of brass
and copper powders.
Made from fast-cast polyurethane resin
with metal powders and CNC'd Mahogany.

:3.3



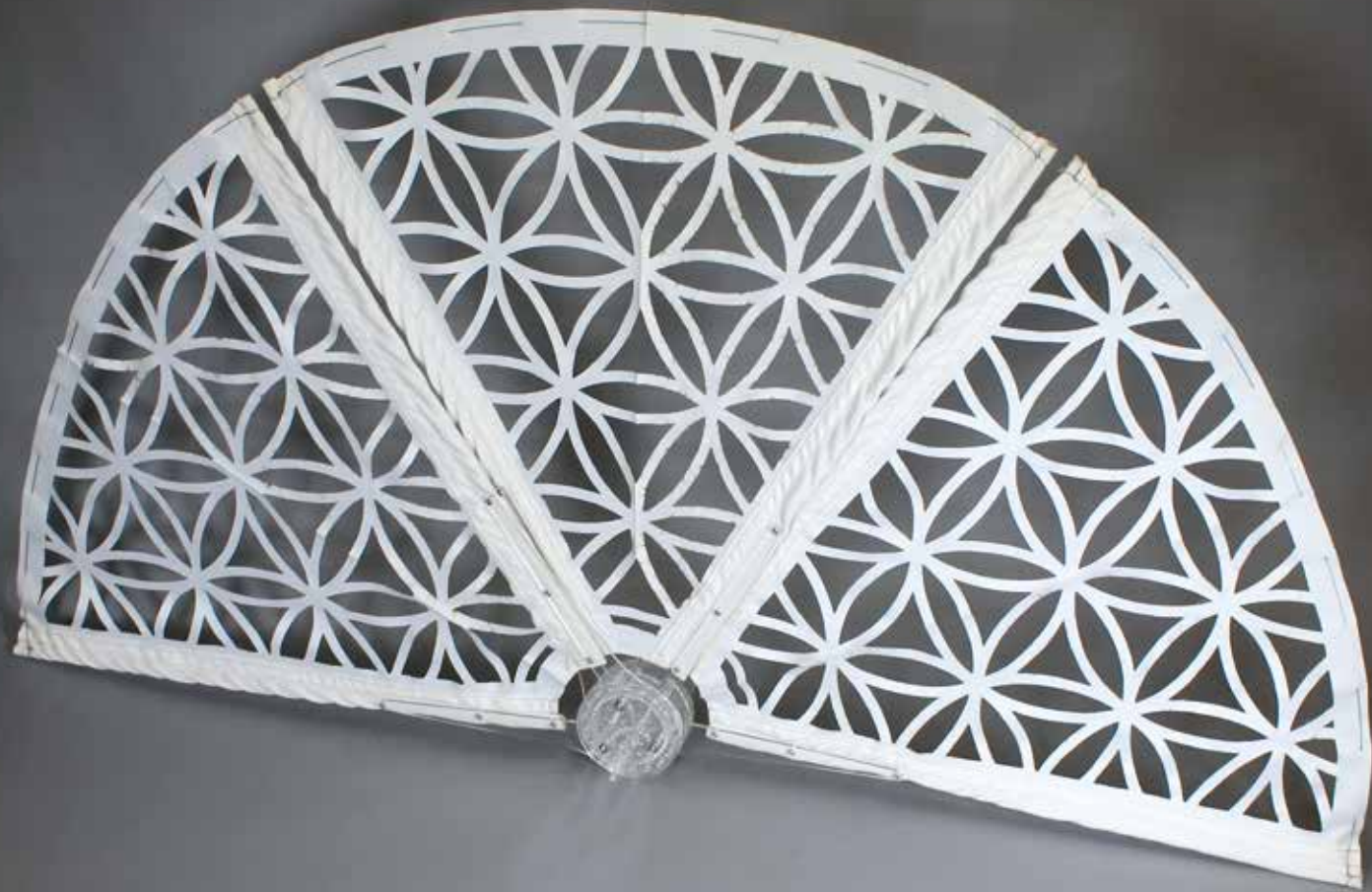
'HOME TRACKS BREWING HALL' BEER PUMP PROTOTYPE
Monty Dobney, 2016
This 1:1 prototype was designed with continuation of the
running ring pattern theme that Monty established earlier
in his project. The model uses ABS 3D Printing, Copper
Pipe, Copper Metal Powder cast into Polyurethane Resin
and Laser Engraving on the wooden tap handle. Other
models from this series are visible in case 4 and case 7.

:3.4

FUNCTIONING 1:5 DOOR HINGE DETAIL
Jana Kefurtova, 2016
This 1:5 detail section shows the function of a proposed
large scale doorway with ornate hinge detailing. The hinge
bracket itself is cast from pewter with the door elements
being made up from stained plywood and acrylic tubing.
The casting moulds and master model for this project
are on display in case 7.

:3.5





ERGONOMIC FAÇADE SHADE PROTOTYPE

Henry Faulkner, 2014

This project was a 1:1 study of how a proposed shading system could work if fixed into a building façade. The fan-like design allows shade to be cast when required by opening or closing in response to the elements. Made using laser cut fabric and Acrylic components.

:3.6

'PROMESSI SPOSI' THEATRE

Sam Beddingfield, 2016

This project shows the incremented details of a water drainage system that is integrated into Sam's building proposal. The drainage features make the building, a theatre, into a spectacle itself during rainstorms which would lead to rain being channelled down the facade through the ducting details as modelled here.

Made from layered Grey Board and imitation Gold Leaf.

:3.7



PRESENTATION MODELS

:4



These models are show pieces, made to deliver a well-rounded representation of an idea with a high level of finish. Whilst the journey before display can include, or focus on certain aspects of a design there is no more effective way of demonstrating a completed scheme than a presentation model.

What is important to note here is that:

ANY model type and ANY materials or methods can be used as a presentation model.

For example, if the role of a project is to prove a concept for better structural jointing, then a large scale detail model would perhaps be best suited. This could be finished to a high calibre, just like a completed usable component in a 1:1 building. Hence, it is important to remember that the appropriate use of particular models depends on the job they are required for.

In practice, more often than not, the finishes chosen for presentation models are in keeping with the overall branding or style of a project. Accuracy and cleanliness of presentation are paramount for the reputation of the practice because models are frequently used as sales tools, approval for projects, or to win competition bids. Whatever their use, presentation models play an enduring and fascinating role for people unable to resist the temptation to gaze and imagine the concept they see in front of them.

The presentation models shown in this collection are finished in a variety of styles with deciding factors being; the nature of their role, message, or aesthetic expression.

In many cases, having a well thought out presentation model is just as equal evidence of an idea, as a crisp render or drawing may be.



'NEULAND' PRESENTATION SECTION MODELS
 Daniel Kempfski & Peter Lee, 2016
 This series of 1:200 presentation models show in detail the construction arrangement of three of the proposed buildings for this ambitious scheme. The scheme is a response to the refugee crisis and aims to provide organised and effective resettlement by utilising large vacant areas of the industrial past in Dortmund.
 Made using Wood Stained Laser Cut Ply, 3D Powder Prints, Acrylic, Styrene and Cork Sheeting.

- A. 1:200 Hoeschbahnhof
- B. 1:200 Fluchtungsheim
- C. 1:200 Integrationszentrum

:4.1

'HOME TRACKS BREWING HALL' SITE PRESENTATION MODEL
 Monty Dobney, 2016
 The mix of finishing materials here reflects the desired contrasting thread that Monty was aiming to achieve with his design proposal. The site interestingly comprises a youth Hostel and Brewing House linked to an established Public house with an additional communal piazza space.
 Made using Laser Engraved Veneer sheet, MDF, Pine, Plywood, Cork and Styrene sheet.

:4.2

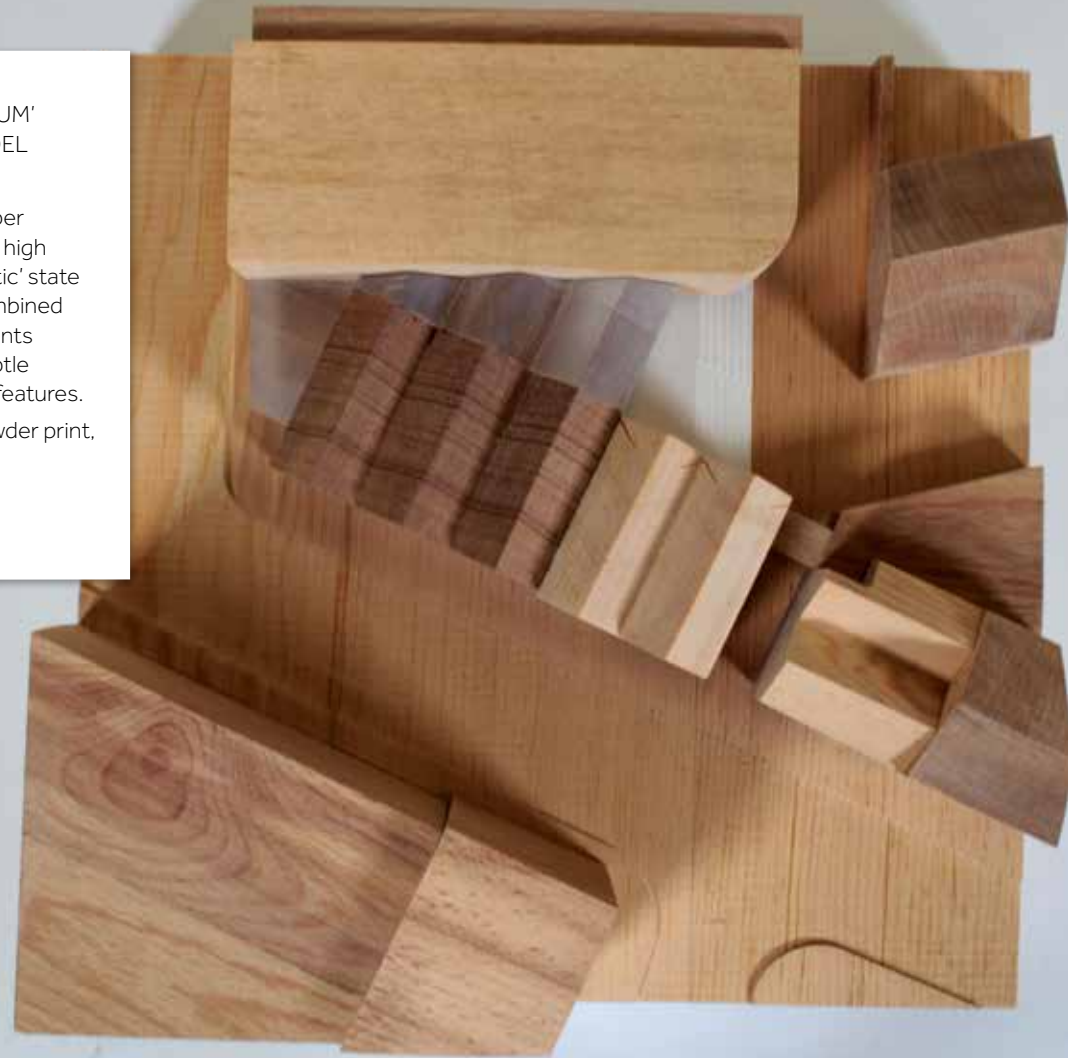
'COLWYN BAY CONSERVATORIUM'
MASSING PRESENTATION MODEL

Kristian James, 2015

This model used a variety of timber pieces to construct massing to a high standard and is left in its raw 'rustic' state as was desired. The massing combined with 3d printed and acrylic elements demonstrates a different but subtle integration of the proposed site features.

Made using Acrylic block, 3D Powder print, Pine, Beech and Mahogany.

:4.3



COLWYN BAY BOTANICAL GARDEN
MODEL SET

Ketil Rage, 2015

This simple but effective model set gives us an incremented 'zoom' into the form of the proposed structural form of a Botanical Garden proposal.

A. 1:500 site model w/ structure

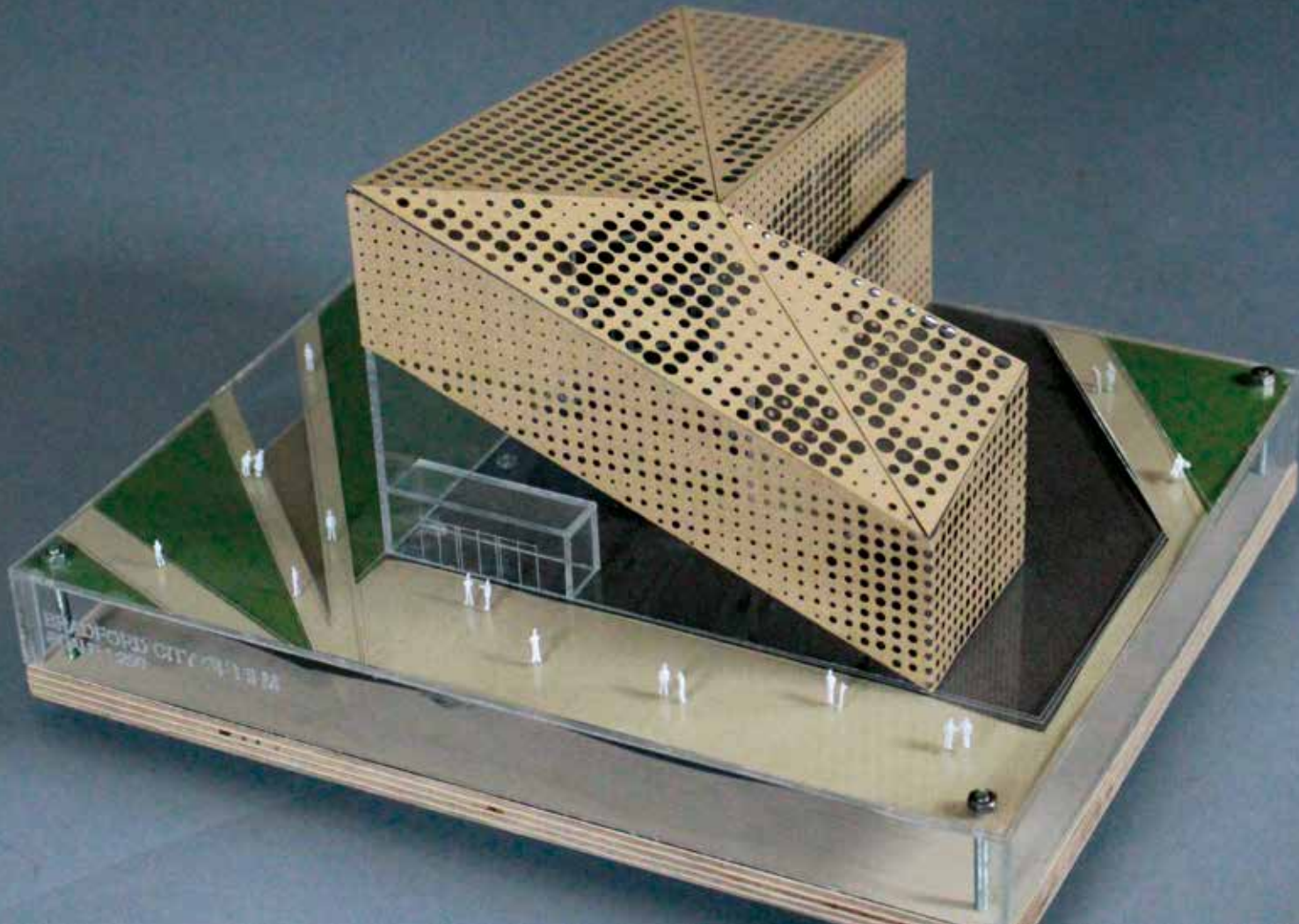
B. B. :50 bay of structure

C. 1:10 column base detail

Made from Wood Stained Laser Cut Plywood and Lasercut Paper.

:4.4





'BRADFORD CITY OF FILM' PROJECT

Lisa Kinch, 2013

The City of Film project explored the idea of developing international film studios in the heart of Bradford. This final presentation model used lights with perforated paper as proof of her concept that perforations could be used on the facade to create images.

:4.5

INGERSLEY VALE MILL MODEL

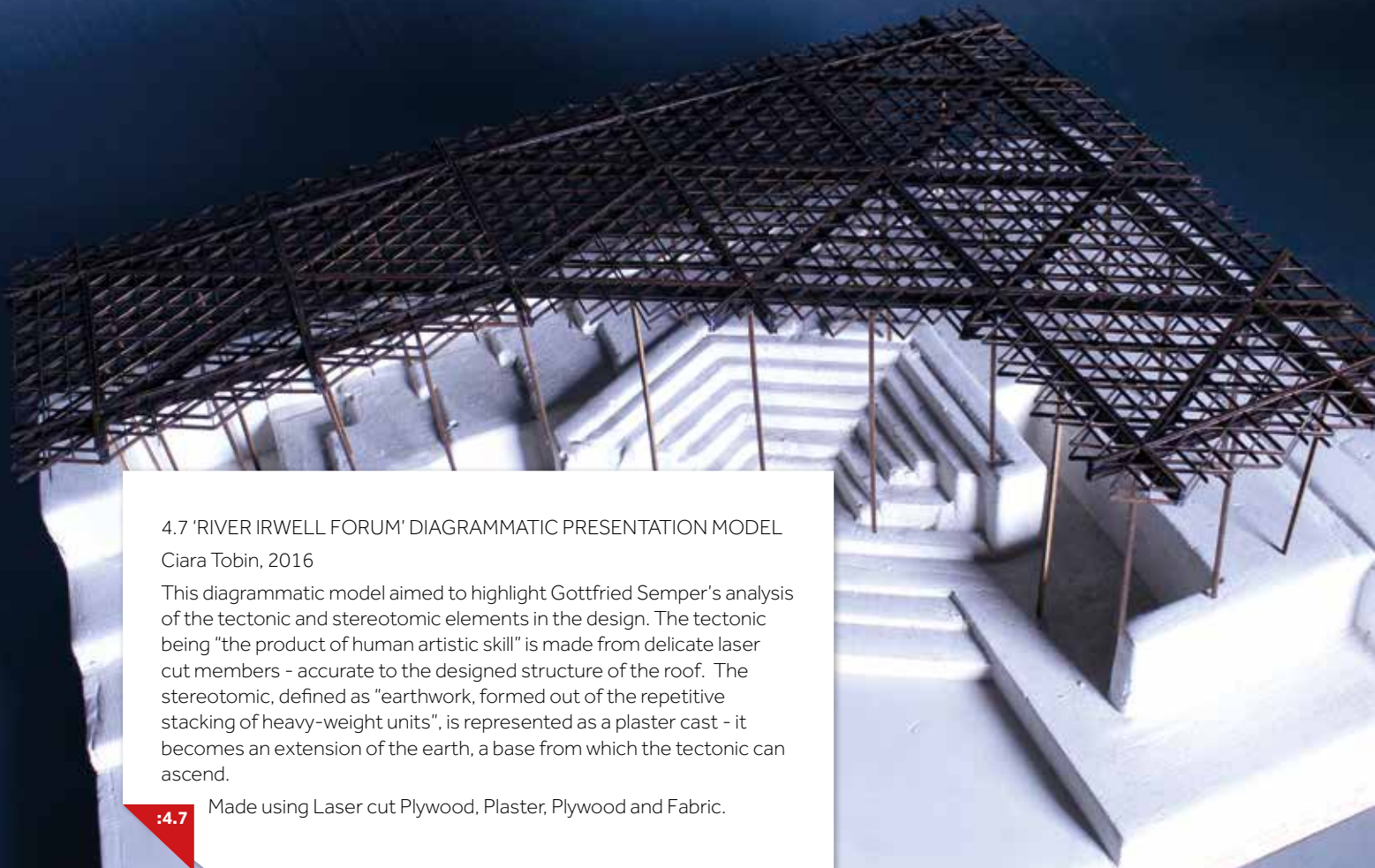
Jahan Ojaghi, Robbie Stanton & Sam Stone, 2015

The aim of this project was to highlight the 'ghostforms' of this derelict mill at night. This was demonstrated through the model using illuminated wire which cast shadows across the texture of the building fabric created from plasterboard.

Made using Laser Engraved Plasterboard with hand finishing, Plywood, Styrene Strip, Illuminated Strip Wire.

:4.6





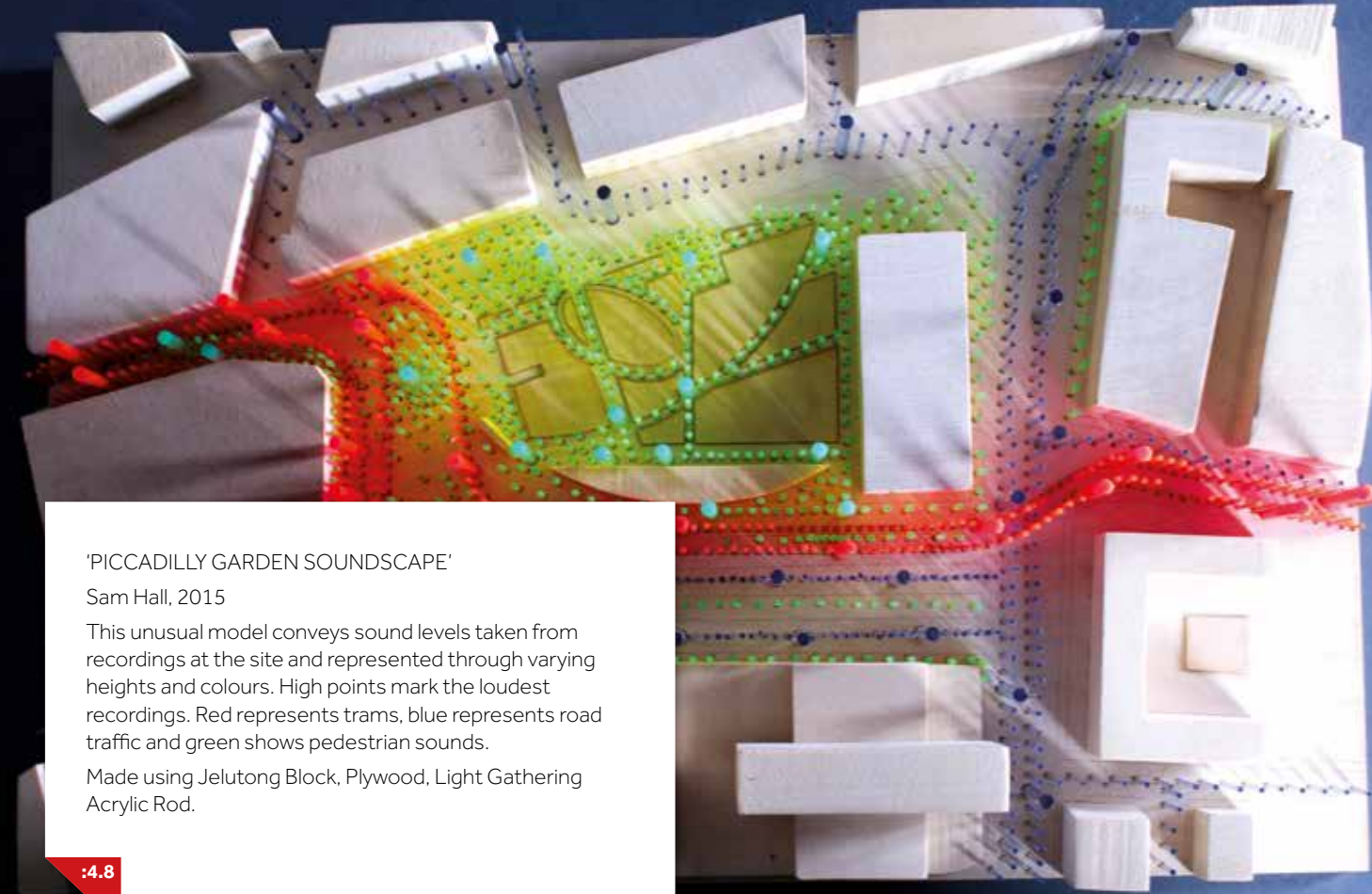
4.7 'RIVER IRWELL FORUM' DIAGRAMMATIC PRESENTATION MODEL

Ciara Tobin, 2016

This diagrammatic model aimed to highlight Gottfried Semper's analysis of the tectonic and stereotomic elements in the design. The tectonic being "the product of human artistic skill" is made from delicate laser cut members - accurate to the designed structure of the roof. The stereotomic, defined as "earthwork, formed out of the repetitive stacking of heavy-weight units", is represented as a plaster cast - it becomes an extension of the earth, a base from which the tectonic can ascend.

Made using Laser cut Plywood, Plaster, Plywood and Fabric.

:4.7



'PICCADILLY GARDEN SOUNDSCAPE'

Sam Hall, 2015

This unusual model conveys sound levels taken from recordings at the site and represented through varying heights and colours. High points mark the loudest recordings. Red represents trams, blue represents road traffic and green shows pedestrian sounds.

Made using Jelutong Block, Plywood, Light Gathering Acrylic Rod.

:4.8



'MANUFACTURING LOST CULTURE' PRESENTATION MASTERPLAN MODEL

Hajir Alttahir, 2015

This project looked at the idea of reproducing lost historical artefacts at medium to large scale using advanced modelling and 3D printing in order to preserve them. The technology used to create these elements of the model support the theory of the project by displaying artefacts produced through SLA Resin prints.

Made from Wood Stained Jelutong Timber strip,
Wood Stained Laser Cut Plywood, SLA Resin Print,
3D Powder Print, Acrylic sheet.

:4.9

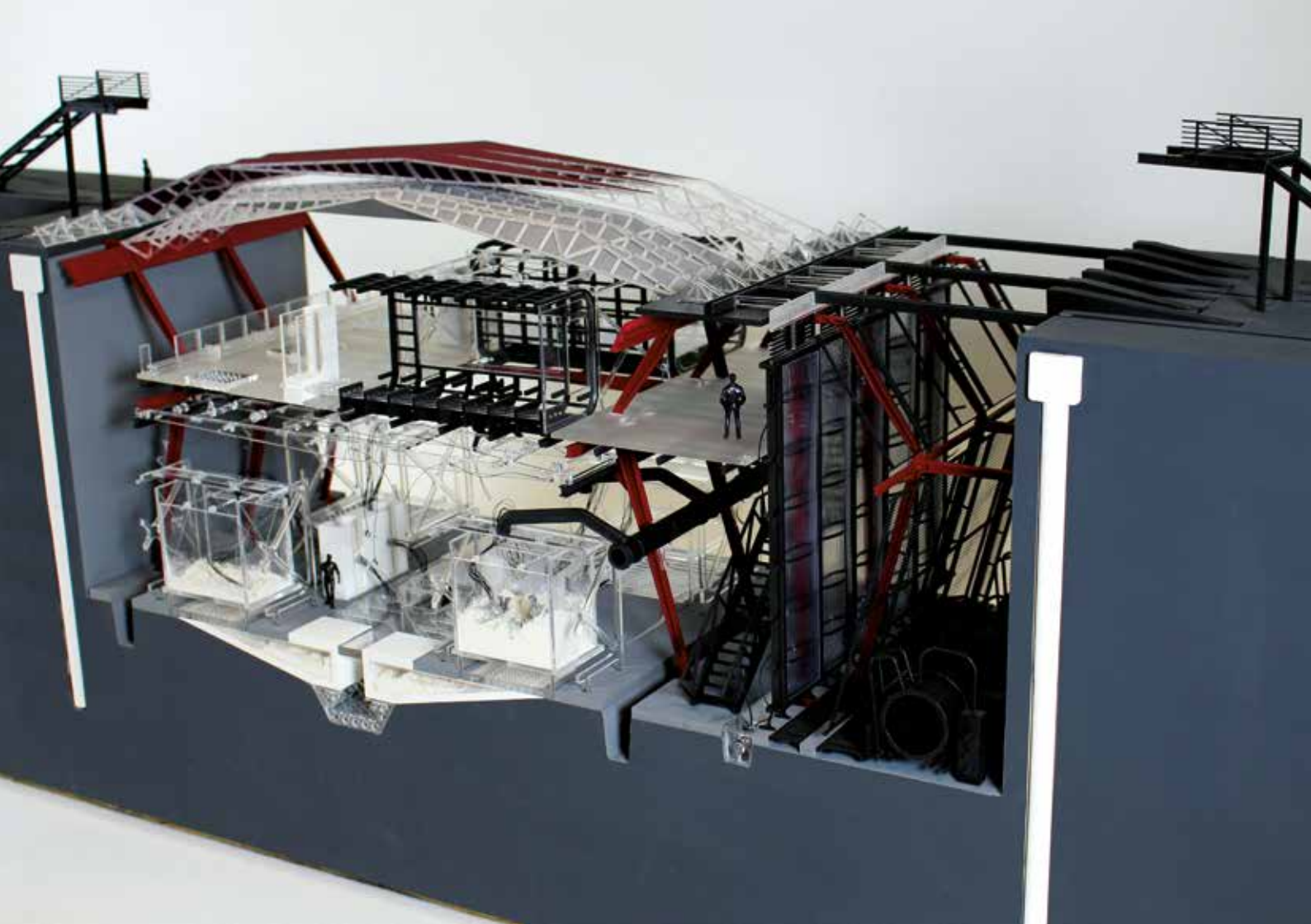
'INTIMATE ECONOMIES' PROJECT SITE MODEL

Aayu Malhotra, 2014

Aayu's 1:100 site model is made using tradition hand cut methods with card, paper and thin timber. Only elements which are repeated regularly across the model are produced, appropriately, using a laser cutter. Everything else was hand cut to suit.

:4.10





'TESTING THE MACHINES OF A THIRD INDUSTRIAL
REVOLUTION' PRESENTATION SECTION MODEL

Abhi Chauhan, 2014

Abhi's project looked at the very current idea of the future of housing which concerns rapid production through 3d printing technology. His model shows a cross section of a large scale 3d printing facility of the not so distant future. The model was made using a range of CAD driven processes in keeping with the theme of his studies.

:4.11

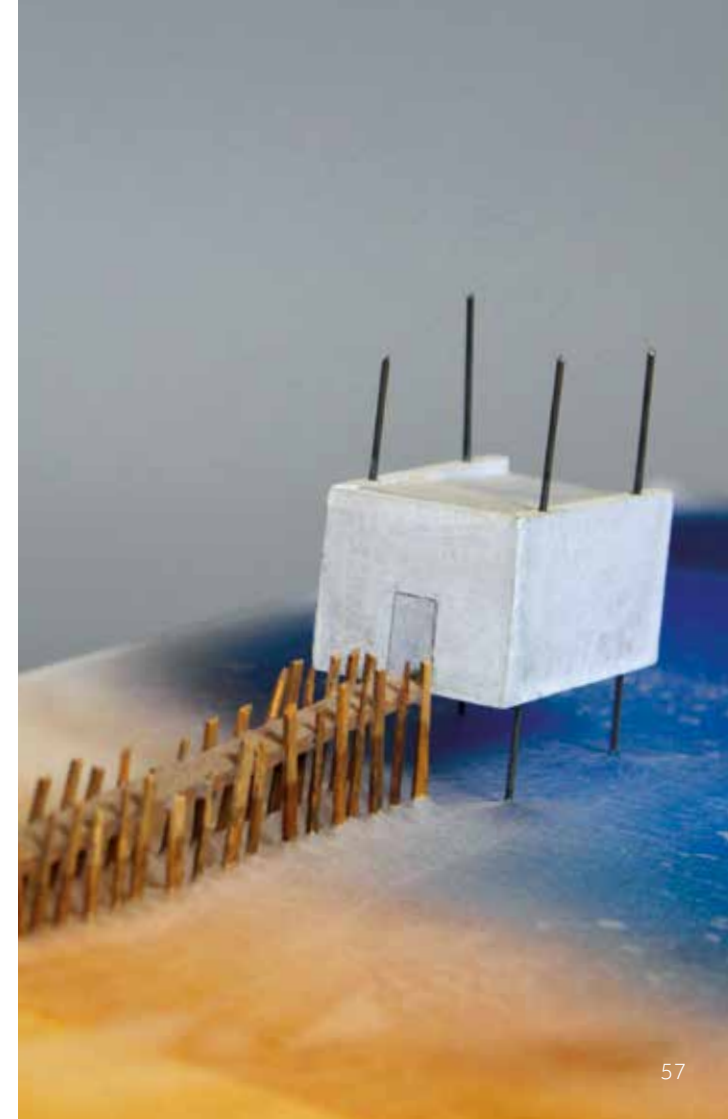
FORMBY BEACH BIRD OBSERVATORY

Nickolas Lui, 1995

This presentation model shows the full extent of this proposed site and the suggested 'journey' to be made through the building spaces.

Made from MDF with Acrylic and Timber detailing. Water represented using melted wax and pigment.

:4.12

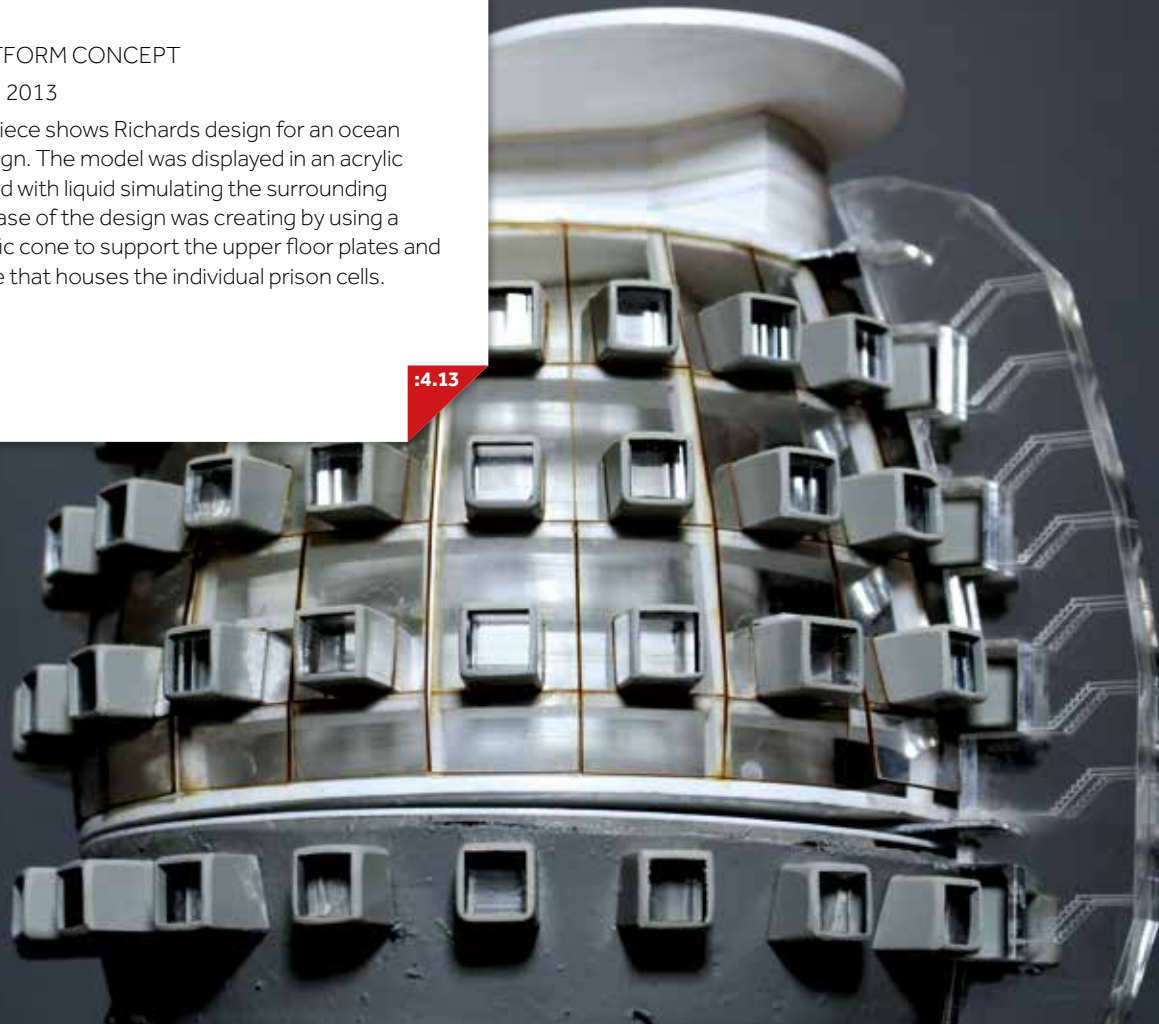


PRISON PLATFORM CONCEPT

Richard Owst, 2013

This striking piece shows Richards design for an ocean prison rig design. The model was displayed in an acrylic tank to be filled with liquid simulating the surrounding ocean. The base of the design was created by using a modified traffic cone to support the upper floor plates and glazing façade that houses the individual prison cells.

:4.13



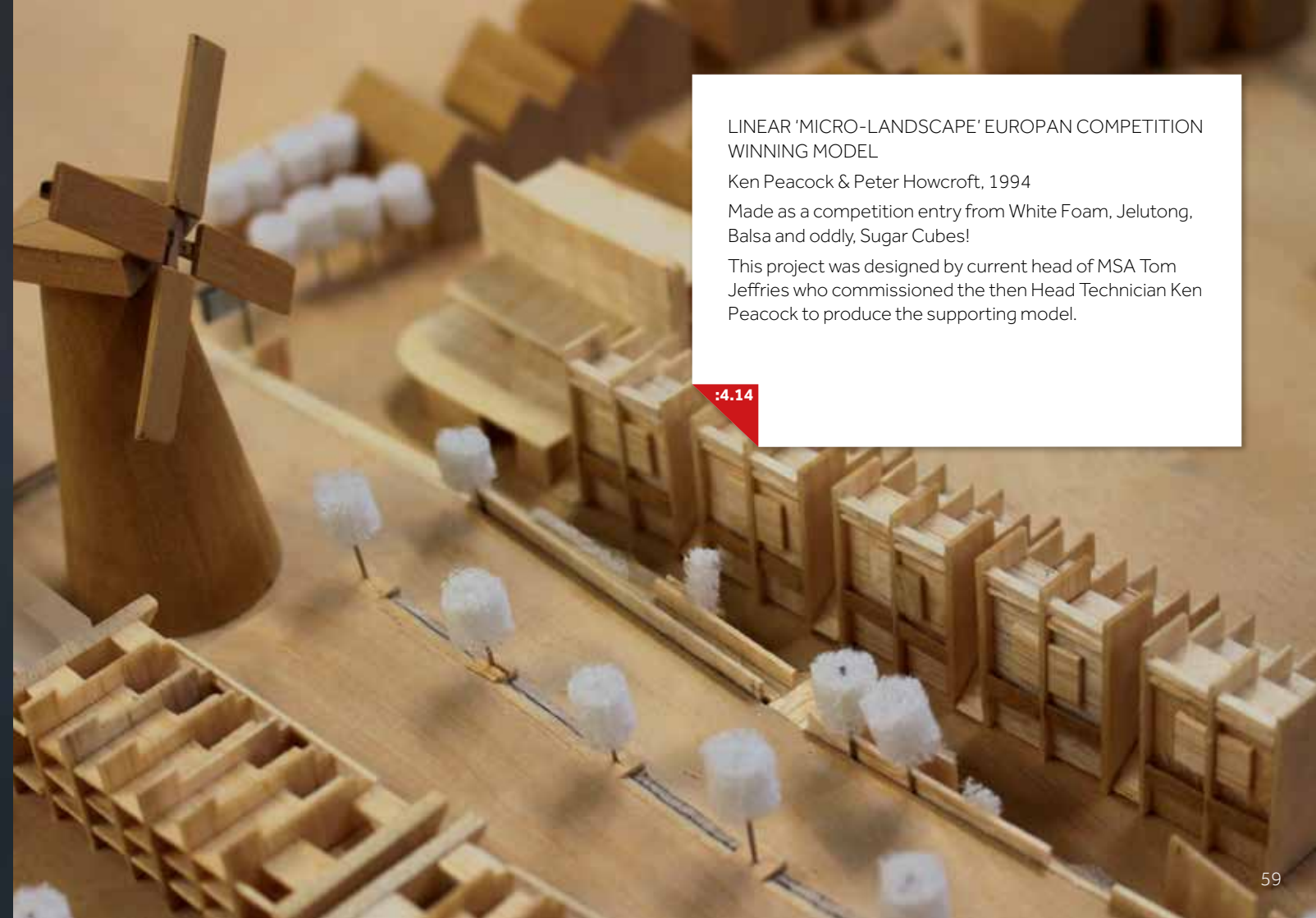
LINEAR 'MICRO-LANDSCAPE' EUROPEAN COMPETITION WINNING MODEL

Ken Peacock & Peter Howcroft, 1994

Made as a competition entry from White Foam, Jelutong, Balsa and oddly, Sugar Cubes!

This project was designed by current head of MSA Tom Jeffries who commissioned the then Head Technician Ken Peacock to produce the supporting model.

:4.14



PRECEDENT STUDY MODELS

:5



In order to understand how contemporary attitudes to architectural design have evolved, it is important to look at past works. An effective and valuable part of this process is the study of exemplar projects which have become notable in the field, with their varied approaches to solving the issue of space. Rather than focussing on the written and two dimensional drawn aspects of these designs, students producing models will get a greater understanding of the shapes and voids which create these spaces. Creating models provides a tangible experience of a subject that would otherwise be on the page of a textbook, or through a group of images.

In creating these studies we can demonstrate our understanding of the site as well as testing our accuracy and skills in making.

Models might feature full interior representations with the ability to be disassembled and allow the study of internal details. These models can be passed around during lectures and help to share understanding of a subject area. Other models may focus on specific sections or details of a precedent perhaps focussing on their form or craftsmanship.

As with any field of study there is a great deal of importance placed on the past successes and indeed the failures. With this in mind the role of the precedent model has to be considered essential in the foundation education of any up and coming student of architecture.



UNIVERSITY OF MANCHESTER MAIN QUADRANGLE
ARCHWAY

Mary Oon, 2016

Architects: Alfred and Paul Waterhouse

Made using Laser Cut MDF and Acrylic, Hand finished MDF,
Paper, 3D Powder Printing.

:5.1

THE SCHRODER HOUSE

Julia Sutcliffe, Graham Goldspink, Louise Walker & Nicky
Hawkins. Circa 1992 -98

Architect: Gerrit Rietveld

Made using Handcut Cardboard, Handcut Foamcore,
Acrylic, Steel wire, Styrene strip.

:5.2





VILLA SAVOYE

J. FitzHugh, T. Bradley & L. Johnson. Circa 1992 -98

Architect: Le Corbusier

Made using Handcut Cardboard, Handcut Foamcore, Paper, Acrylic.

:5.3

'TATLIN TOWER' STUDY

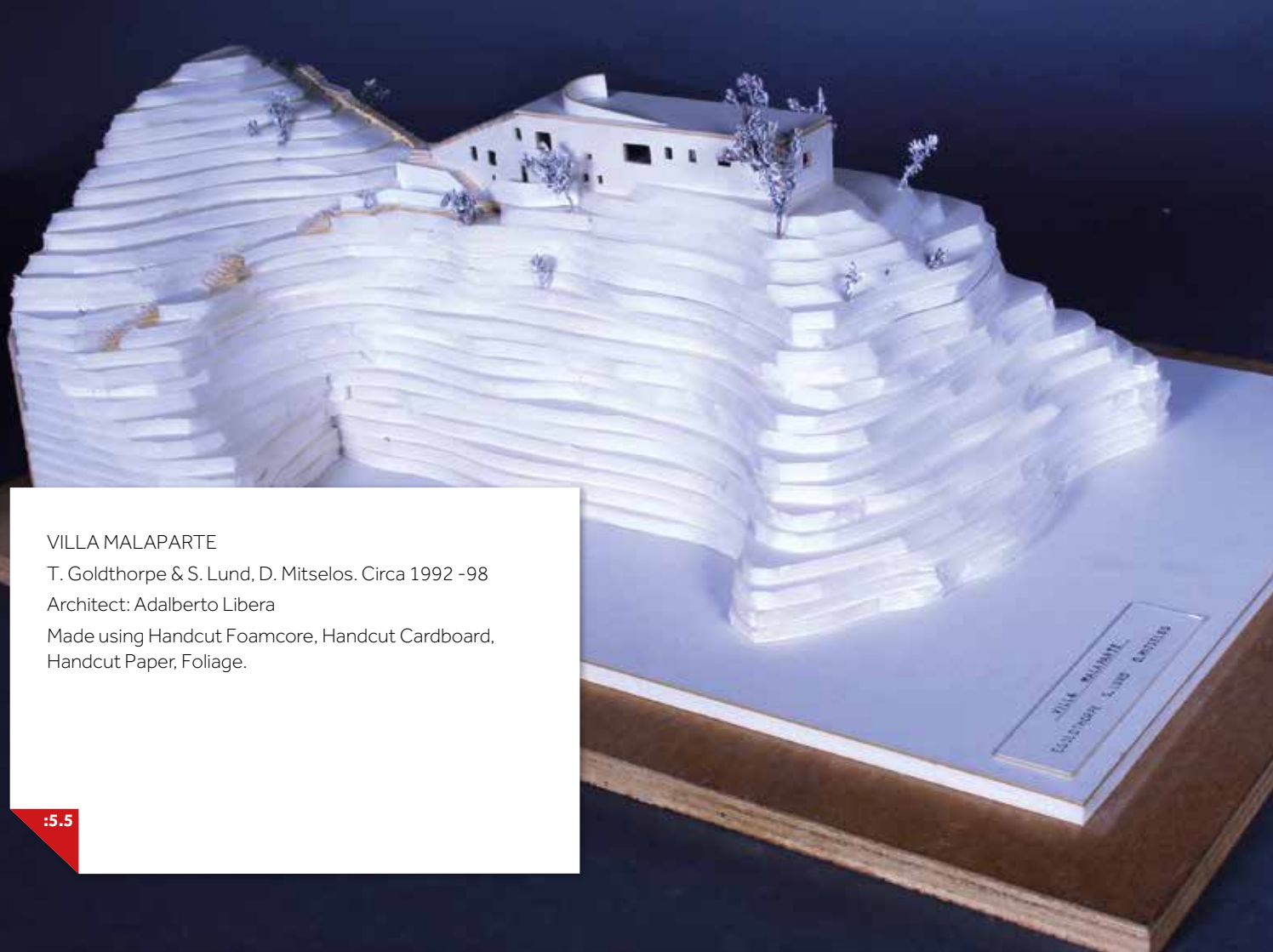
J.E. Beresford, G.M. Perring & A. Simpson, Circa 1992 -98

Architect: Vladimir Tatlin

Made using Mild Steel Strips, Solder, Cardboard, Plywood Base.

:5.4





VILLA MALAPARTE

T. Goldthorpe & S. Lund, D. Mitselos. Circa 1992 -98

Architect: Adalberto Libera

Made using Handcut Foamcore, Handcut Cardboard, Handcut Paper, Foliage.

:5.5

'RONCHAMP' STUDY

Conan Ball, Kam Leung Cheung, Suzi Heape & David Loga,
Circa 1992 -98

Architect: Le Corbusier

Made from Polystyrene Foam, Cardboard, Paper, Modrock.

:5.6



JOHN OWENS BUILDING ENTRANCEWAY INTERIOR SPACE MODEL

Sophie Hodges & William Wilkinson, 2016

Architects: Alfred and Paul Waterhouse

Made using High grade laser cut paper, Leather, Brass Binding Screws.

:5.7



MASTERPLAN MODEL & SITE MODELS

:6

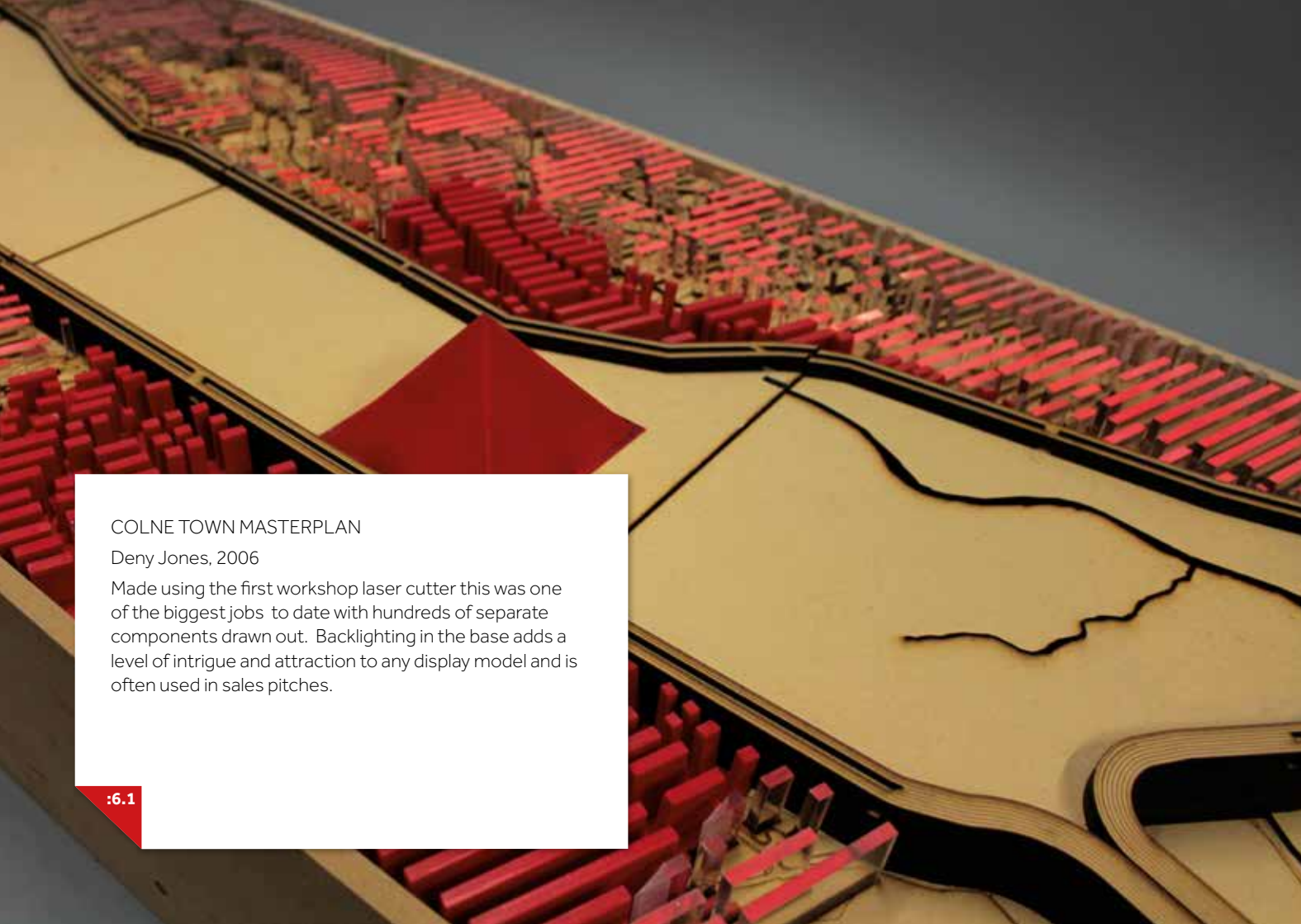


Master plan modelling involves the representation of an area much bigger than an individual site. For example, a complete town or village would convey the existing structures that make up an area, whilst a smaller scale city master plan could be used to highlight key buildings over a larger area.

The effect here could be of a varied spectrum of applications. We are able to test the impact of our ideas in the broader scheme during the development but tailor the final outcome to suit a desired argument. This could mean subtle differences between old and new to tone down impact or equally accentuate contrast depending on the intention.

Whatever the scale, coverage or finish of a master plan model, its purpose is to present context. By demonstrating the physical arrangement of a proposal in context, we are able to get an indication of its possible impact on an area. This is primarily a construction of massing, rather than a more in depth urban-fabric study.

A larger detailed model might look at materiality and the finer aspects of a design. For ongoing projects master plan models can be useful in providing a rigid context to demonstrate new proposals for a chosen site on the model therefore, when used at a design stage, these models tend to have a long and varied life.



COLNE TOWN MASTERPLAN

Deny Jones, 2006

Made using the first workshop laser cutter this was one of the biggest jobs to date with hundreds of separate components drawn out. Backlighting in the base adds a level of intrigue and attraction to any display model and is often used in sales pitches.

:6.1



'A PLAN FOR THE FUTURE' BLACKBURN TOWN CENTRE MASTERPLAN

Jim Backhouse, 2004

1:1000 Scale model showing the proposed changes to Blackburn town centre as part of a major regeneration scheme. Made using laser cut Acrylic and MDF.

:6.2



'ARCHITECTURE OF THE PROCESSIONAL CITY', MANCHESTER MASTERPLAN

Alex Cook, Amelia Hunt, Brodie Kane, Dip Wan Cheung,
Georgina Mitchell, James Taylor Foster, Linxin Li, Olivia Paine,
Peter Chinnock, Phillipa Seagrave, Raphae Memon & Tom
Brownill, 2013

This master plan was made as a group project for the
currently unused Odeon Cinema site near St. Peters Square
in Manchester. The model formed the centre piece of their
final exhibition with individuals proposals displayed on the
walls around the model. The group used Jelutong Block,
Laser cut ply and Plywood to make up their base.

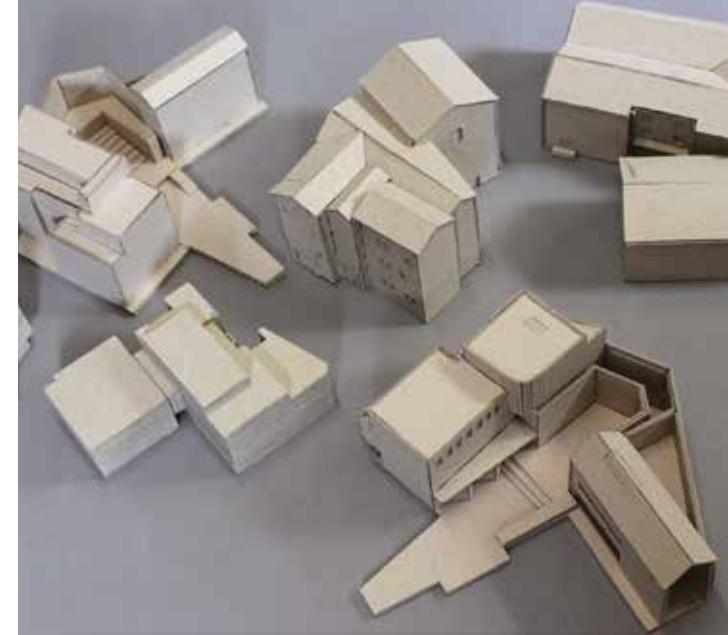
:6.3

VENICE, CAMPO SAN MARTINO SITE MASTERPLAN

Charlotte Rosier, George Yallop, Harry Brown, Jenna Kinsey
& Tom Bend, 2013

Made using Jelutong block this 1:200 massing master plan
centred is on the Venice Arsenale. The greyboard focus
of the site allowed different sketch models to be displayed
and discussed in context.

:6.4




VENICE CARD SKETCH MODELS

Tom Bend, Charlotte Rosier, 2013-14

This series of greyboard models was developed and
refined with the use of the accompanying masterplan
model which provides the site context for presentation.
Greyboard is used to quickly manipulate design ideas
and in this case be displayed in a defined context space
represented by Jelutong massing of the site.

:6.5



'NEULAND' DORTMUND PRESENTATION MASTER PLAN MODEL

Daniel Kempfski & Peter Lee, 2016

This 1:2000 masterplan model began life as a working model allowing for the site layout to be debated and modified before being finished to a higher standard for presentation at the end of the year. The Model shows the site context relating to Daniel and Peters other works displayed around this Display.

Made from Ureol 'Chemi-Wood' Modelboard and Wood Stained Laser cut Plywood.

:6.6




DARSENA, MILAN SITE PLAN

Sam Beddingfield, Hannah Bellerby & Jana Kefurtova, 2016

This shared site model was made to a presentation standard whilst serving as a variable model to allow each group member to display their proposal.

Made using 3d Powder Printing elements, Wood Stained Laser cut plywood, Frosted Acrylic, Lichen.

:6.7



'TEMPUS LIBRARY—CONNECTING CITY ROOMS'

Andra Calin, 2015

This project keeps context representation to a minimum by representing only the key buildings and the proposed corridor between them.

Made from Steel, Lasercut acrylic, Stained Timber blocks.

:6.8



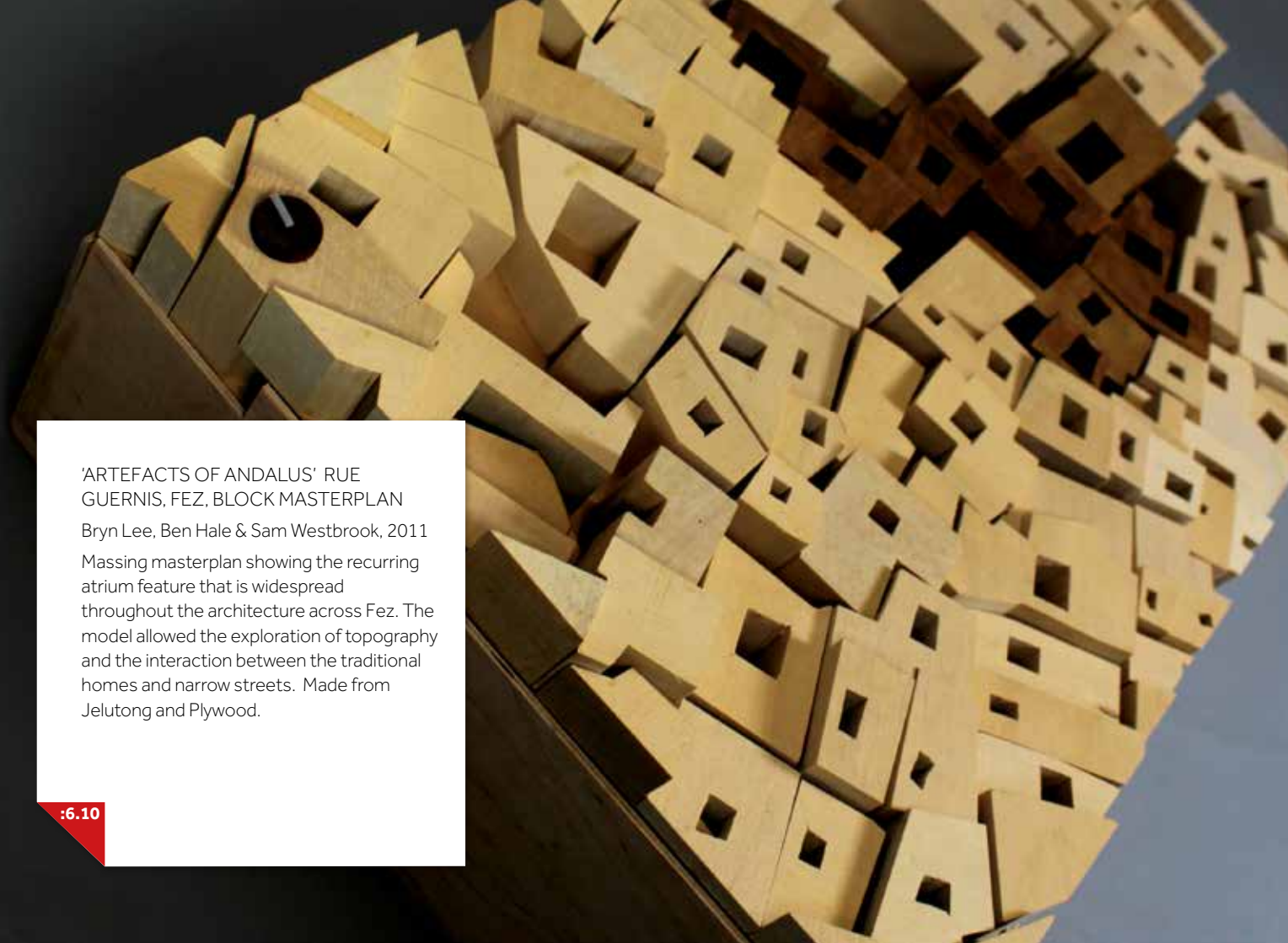
CAIRO/EL-HASSAIN BLOCK
MASTERPLAN

Unknown, Thought to be early 1980's

This model uses well finished jelutong block combined with several lathe turned components.

Cork is used for both the base layer and representation of trees and vegetation across the site.

:6.9



'ARTEFACTS OF ANDALUS' RUE
GUERNIS, FEZ, BLOCK MASTERPLAN

Bryn Lee, Ben Hale & Sam Westbrook, 2011

Massing masterplan showing the recurring atrium feature that is widespread throughout the architecture across Fez. The model allowed the exploration of topography and the interaction between the traditional homes and narrow streets. Made from Jelutong and Plywood.

:6.10



'SHOP TIL' YOU DROP' MASTER PLAN
Rowland Blanch, 2012

1:2500 Scale model of Burnley town centre showing the introduction of retail outlets to increase footfall and activity amongst housing. Made using laser cut acrylic and 3D printed ABS.

:6.11



**APPROACH,
METHODS
AND MATERIALS**

:7

Having the right approach to a task is the first step to successfully integrating the lessons learned from modelmaking into our design work and visa-versa. Being clear about our intentions doesn't always come quickly and may take time to be refined through material experimentation or advancement of the overall design process.

There are so many means of creating at our disposal today that it is important for us to identify our requirements before committing to a method wholeheartedly. It is good practice to trial different materials and process ideas as a project advances even if the outcomes are not directly useful to your current project, the lessons learned can be used or avoided in future works should you come across similar needs for representation.

In this category you will find a selection of material and process examples available to us when producing ideas through models along with some varied presentational approaches.



A. 3D POWDER PRINT, WOOD DYED POWDER PRINTS, ABS PLASTIC PRINT AND SLA RESIN PRINT

Steven Msowoya, 2016

A selection of massing variants used to discuss design iterations made using three types of 3D printing, before and after ABS support removal and experimenting with wood dye after powder printing.

B. 3D POWDER PRINTED JUNCTION DETAILS

Akhil Mathew 2016

These elements were 3D printed to allow for fixing of Styrene Strip I beams across a large detailed section model. The components have been infiltrated with cyanoacrylate (superglue) to improve their durability. See these elements in context with Akhils Section model in case 2.11.

C. UPPER BROOK STREET CHAPEL 3D POWDER PRINT

Nick Bowker, 2016

This 3d Printed model has been infiltrated with cyanoacrylate (superglue) to strengthen it as it was regularly handled as part of group discussions on the site. Models that have been infiltrated this way have a slightly different colour appearance to those that are left in their raw powder state which may or may not be desirable for your project.

D. JELUTONG BLOCK MODEL, ENGRAVED VARIANT AND TIMBER MASSING MODELS

Massing can easily be represented by block materials such as Jelutong blocks or offcut smaller pieces of timber depending on the requirement. There are no real rules for this but makers should be conscious of the purpose of their piece to avoid costly large pieces of timber.

- Jelutong Block model by Anton Tkachuk 2016
- Laser engraved Facade Detail on Jelutong Block from Atelier group 'Common Ground' 2016.
- Massing samples made from Plywood, Mahogany, Acrylic and Painted Timber blocks.

E. PROCESSIONAL CITY MIXED MEDIA CONCEPT

James Taylor-Foster, Raphae Memon & Cheung Dip Wan, 2014

Described as *"an attempt to model temporary intangible urban space (a moment of climax in a procession) and all of the connections between the built environment and the corporeal movement of the body of people."*
- James Taylor Foster

Concept Model featuring Jelutong Block, Laser Cut MDF, Plywood and ABS Plastic Print.

F. ABS MASTER MODEL, SILICONE MOULD AND RESIN CASTS WITH METAL POWDER

Steve Kirk, William Priest & Robbie Stanton, 2016

This group utilised 3D printing to recreate this detail from their railing study (featured in the Large scale and Prototype models case) which was then moulded in silicone before being cast in fast-cast polyurethane resin with metal powders to give a range of solid metal appearances.

G. TESTING PATTERN TYPES AND APPLICATIONS

Monty Dobney, 2016

This series of development tests led on to a prototype for a beer pump which can be seen in the Large Scale, Prototype & Detail Models display case.

Laser Cut Cork – Thin sheet of cork outlining the scheme pattern then fixed onto a

CNC'd Grey Board – Layers of Grey Board were glued together then Monty's pattern CNC cut into the surface.

Gel flex – A re-meltable moulding material that can be repeatedly re poured after melting. This is a strong advantage although less durable than silicone moulds which cannot be reconstituted.

H. UREOL 'CHEMI WOOD' MASTER MODEL, SILICONE MOULD AND 1:50 PLASTER CASTS

Scott Miller, 2014

Master model component made from Ureol 'Chemi Wood' modelboard which was then moulded in silicone to allow for multiple plaster cast elements. The completed section model of the Kantorowich building can be found in the 'Cross-section & Interior Models' case of the exhibition.

I. 1:5 HINGE DETAIL CAST

Jana Kefurtova, 2016

This master model (ABS 3D Print and Laser cut Acrylic) and heat-resistant silicone mould produced a pewter cast that is part of Jana's detail model featured in the Large Scale, Prototype & Detail Models case.

J. Laser Cut Formwork, Silicone Mould, Plaster Cast Relief Detail

Bryony Preston, 2015

Once a form has been created a simple way of creating a mould is to create a block mould around the form. In this case silicone has been cured over the form then used to create plaster relief casts the application of which can be seen on object 3.2.

:7





K. 1:200 SECTION MODEL AND MODEL COMPONENTS

Daniel Kempfski & Peter Lee, 2016

This model shows how layering components can be used to build up detail levels to a high standard.

Components shown include Cork sheet with laser engraving, Styrene sheet, Laser cut plywood, Laser cut acrylic and 3d Powder Printed train carriage.

L. EXISTING STOCK STRIP AND SCALE ITEMS

Many model elements can be made from exiting stock that saves a lot of time with everyday features or building design. Various shapes and sizes of strip material are readily available as are standard scales of figure, vegetation and transport.

:7





STAGES OF CASTING A PLASTER CAST FACADE MODEL

Oliver Pozegic, 2016

The master model is created from layers of laser cut and engraved scrap acrylic. Details are made using additional strip tubing, epoxy filler and hand sanding. The silicone jacket is displayed alongside the master featuring an MDF insert to reduce the amount of silicone used along with a plaster backing piece. Cast are shown with two different pigments and additional detailing of a laser cut plywood doorway.

:7.1





'STACKED CITY' PRESENTING MODELS AS SETS – ALEXANDR VALAKH

As any project that uses models to develop and enhance ideas, there are several key stages to be documented as part of a student submission. This model set, made by Alexandr Valakh uses a consistent style throughout that clearly links his models together making them easily identifiable as his work. This is a very effective way of showing a good level of understanding in a project because it encompasses a range of scale models to explain elements of his design. Many of Alex's ideas originated as CAD driven forms which gave the option of many variations through parametric scripting. To progress these ideas into a conceivable building meant a lot of refinement through modelmaking that informed changes to his script and design details.

In addition to his submitted models, the actual making of them became a project within its own right with his model studies being recorded as part of his thesis submission. Alex considered this making aspect so integral to his overall design conclusions that it was treated as a key tool for development.

7.2



ABS PLASTIC 3D PRINT, 1:2500 SCALE SITE STRUCTURAL MODEL

Alexandr Valakh, 2014

This model shows the block unit assembly that could form the inner arrangement of the proposal. As AIaex's' design is fluid depending on use this is just an example of one possible arrangement of the structure. The entire model is printed in ABS Plastic but sits on a base designed to be consistent in style to the accompanying models in this set.

7.2
A

LASER CUT PLYWOOD & PAPER 1:200 SECTION MODEL

Alexandr Valakh, 2014

This section model is made up using laser cut plywood components with a skin of paper which was computer generated and broke down into shapes before being cut and assembled. Again this model is displayed on a base in the same style as the others in the set.

7.2
B



LASER CUT PLYWOOD & ACRYLIC 1:100 STRUCTURAL INTERIOR MODEL

Alexandr Valakh, 2014

This is the largest scale model in the set demonstrating the individual unit size in relation to scaled figures. Without this tangible link it is difficult to grasp the scale of this proposal making this model crucial in the series. This model is made up using laser cut acrylic and plywood components that have been extensively refined in AutoCAD and through earlier model tests.

7.2
C







EXHIBITION CREDITS

IMAGE CREDITS

1.3	William Priest	3.6	Henry Faulkner	5.9	Aayu Malhotra
1.7	Daniel Kempinski & Peter Lee	3.7	Sam Beddingfield	6.2	Derek Trillo
2.2	Katie Williams	4.1	Daniel Kempinski & Peter Lee	6.6	Daniel Kempinski & Peter Lee
2.7	Matthew Javis	4.3	Kristian James	7.1	Oliver Pozegic
2.8	Mahishini Vasudevn	4.6	Robbie Stanton	7.2 A.	Alexandr Valakh
2.12	Sam Beddingfield	4.9	Hajir Alttahir	7.2 B.	Alexandr Valakh
3.3	Steve Kirk, Will Priest & Robbie Stanton	4.10	Aayu Malhotra	7.2 C.	Alexandr Valakh
		4.11	Abhi Chauhan		

B.15: ARCHITYPES EXHIBITION 2016

Curated, compiled, written, edited and built by Jim Backhouse and Scott Miller.

Assisted by Saul Parker-Backhouse.

Additional editing by Louise Parker-Backhouse.

Graphic design by bdhuk.

All photographs by Scott Miller unless otherwise stated.

All models produced by Students of the Manchester School of Architecture unless otherwise stated.

© 2016 The University of Manchester and B.15 Modelmaking Workshop (Part of the School of Environment, Education and Development)

Selected text taken from 'B.15:45 Architectural Modelmaking Exhibition 2014/2015' © 2014 The University of Manchester & SEED B.15 Modelmaking Workshop

Humanities Building, Bridgeford Street
The University of Manchester,
Oxford Road, Manchester, M13 9PL.

ACKNOWLEDGEMENTS

Emma Carter-Brown, Rosie Williams and Staff at SEED/ UoM, Dr Raymond Lucas, Professor Tom Jefferies, bdhuk, Jonathan Lillie, Bobby J, Peter Leigh, Louise Parker-Backhouse, Dr Magic, John Miller & Bob at the Manchester Museum & All contributors who have allowed their work to be used for display.

FOLLOW OUR WORK ONLINE AT:
www.manchester.ac.uk/b15workshop

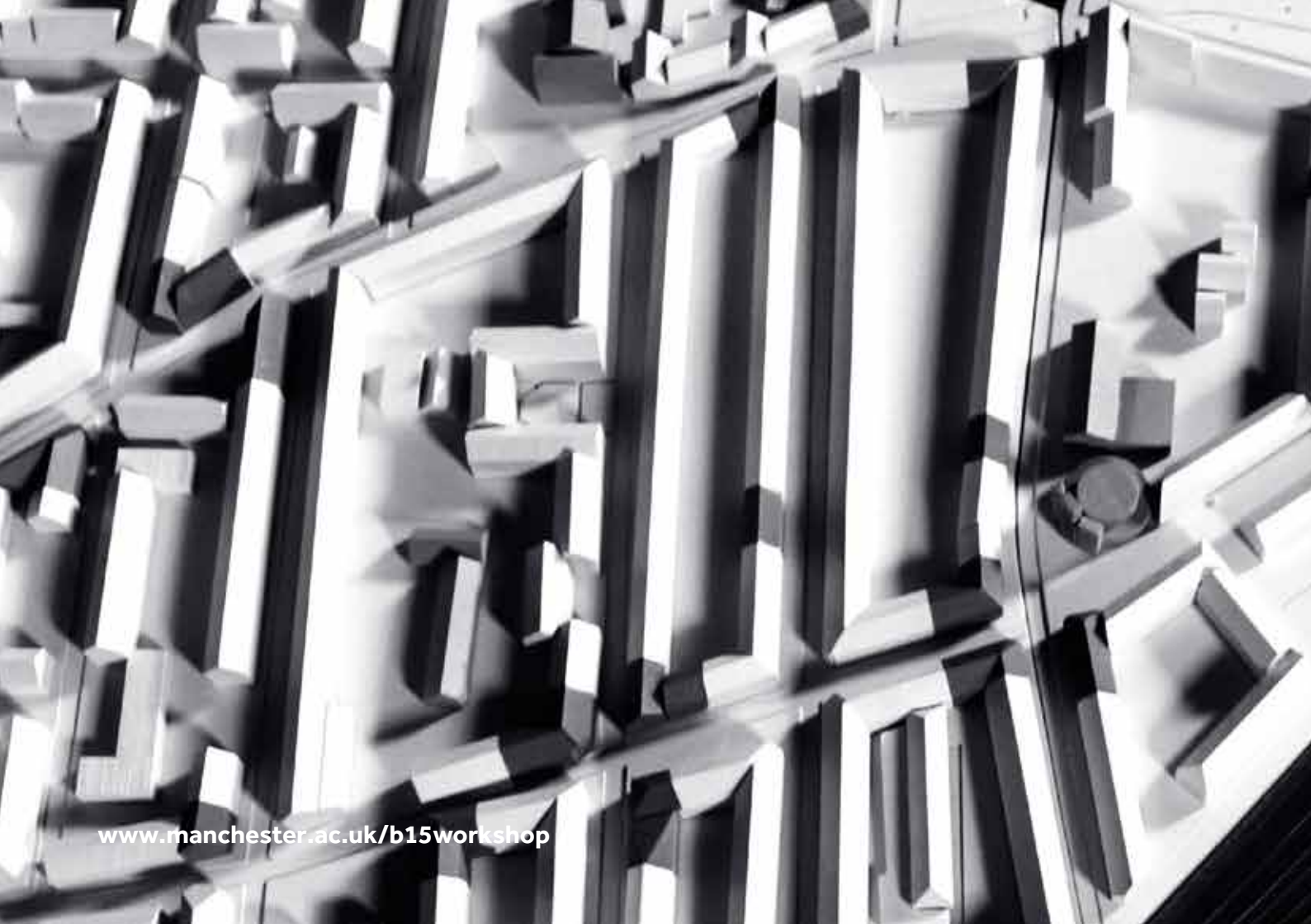
msa Manchester
School of Architecture

MANCHESTER
1824

The University of Manchester



Manchester
Metropolitan
University



www.manchester.ac.uk/b15workshop