

# Model making in architecture

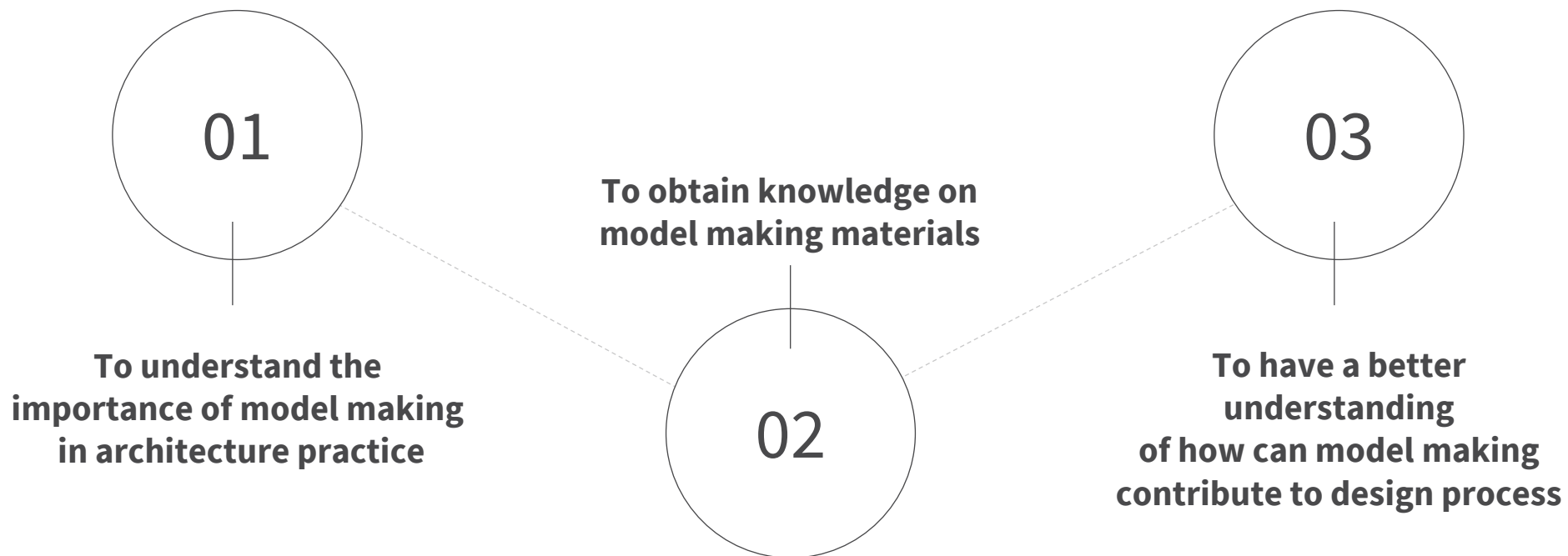


## **NBU Architectural Design 3**

A quick lecture on model making practice in architecture. The why, what, when and how do we get the most of model making.

October 2021

# Aim and objectives



# Learning outcomes

*By the end of the session students will be able to..*

1. Know which type of models to work on
2. Practice the 'thinking and making' process
3. Begin to understand potentials of model making in design process



Image: [alma-nac](#)

# outline

**1**

**Why do we make physical models?**

**2**

**What can we make?**

**3**

**Types of model making exercise**

**4**

**Common tools and materials**

**5**

**How can model making contribute to our design process?**

**6**

**When do we need to do it?**

**7**

**Step-by-step**

**8**

**Takeaways**

# Background

The French word *maquette* is probably the closest to the concept of what a model is.

A *maquette* is a demonstration designed to gauge general appearance or composition of the thing planned.

The *maquette* can warn architect of future problems, and can allow marvel, wonder, astonishment and surprise into the design process.





# Antoni Gaudi's Hanging Chain Models (1889)



# 1

## Why do we make physical models?

- Snapshots of architectural thoughts
- Quick test of ideas
- Verbal narrative
- Means of communication
- Exploring spatial interrelationships and sharing them
- Allowing for ‘happy mistakes’
- Sense of mass and scale
- Exploration of form

[Why make models? \(architectsjournal.co.uk\)](https://architectsjournal.co.uk)

[Insights: Why do architects build models? — Matt Fajkus Architecture - Sustainable Residential and Commercial Architects in Austin, TX \(mfarchitecture.com\)](#)

[Why We Still Build Models | The Architects' Take \(thearchitectstake.com\)](#)

## 2

# What can we make?

## Model typology

### TOPOGRAPHIC MODELS

- Site models
- Landscape models
- Models of gardens

### VOLUMETRIC MODELS

- Urban design models
- Models of buildings
- Structural models
- Interior design models
- Detail models

### SPECIALTY MODELS

- Furniture design
- Design of objects

Knoll, W., & Hechinger, M. (2007). *Architectural models: construction techniques*. J. Ross Publishing.



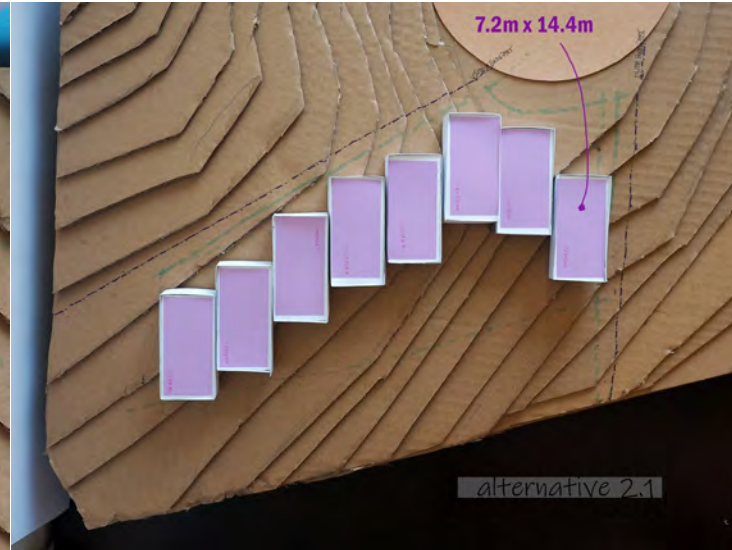


# Site model





# Site models



1:200



# Site models



1:50

# Urban design model





# Building model in bamboo architecture

BambooU campus, Bali



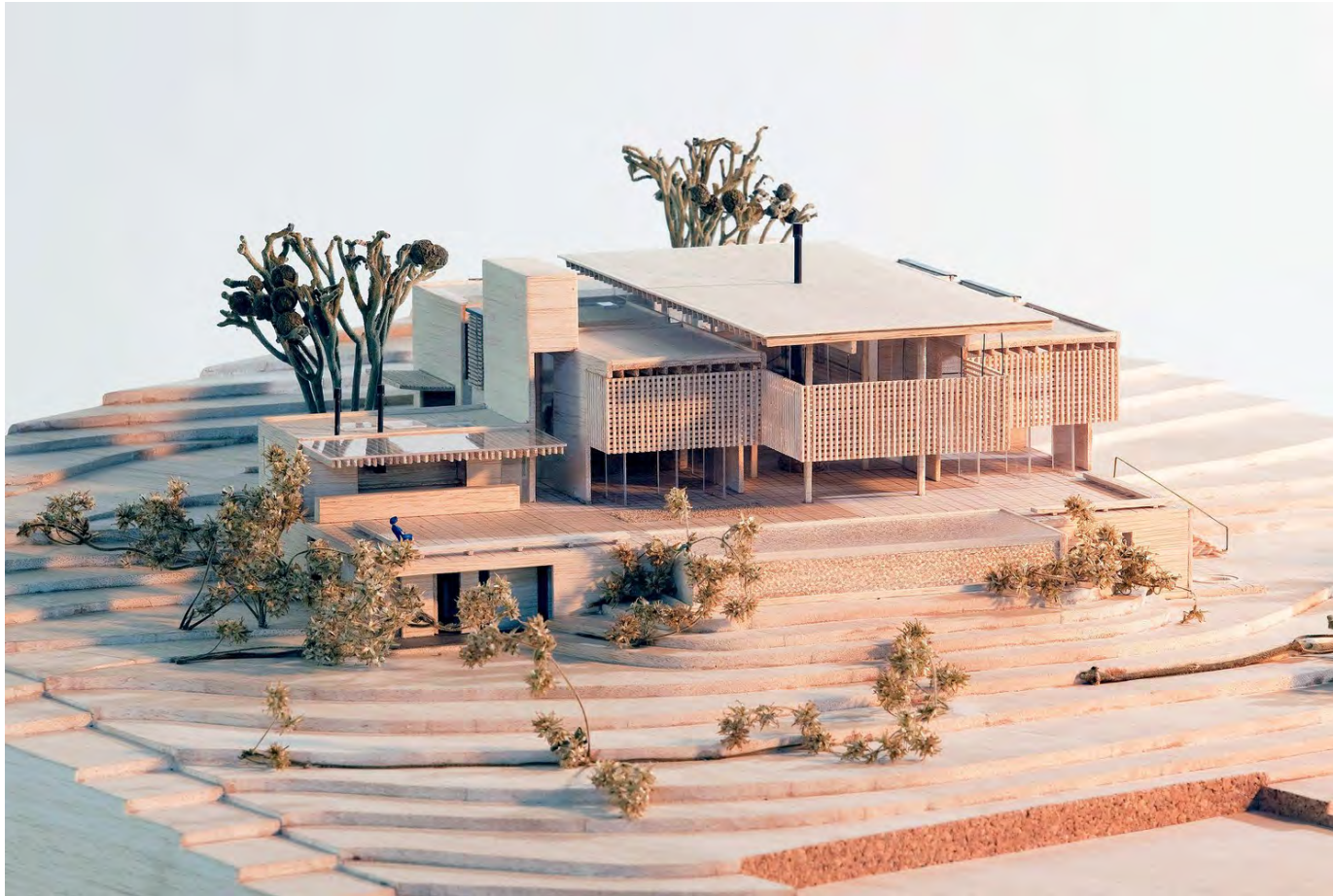


# Building model in bamboo architecture

Dragon Kitchen at BambooU campus, Bali



# Building model

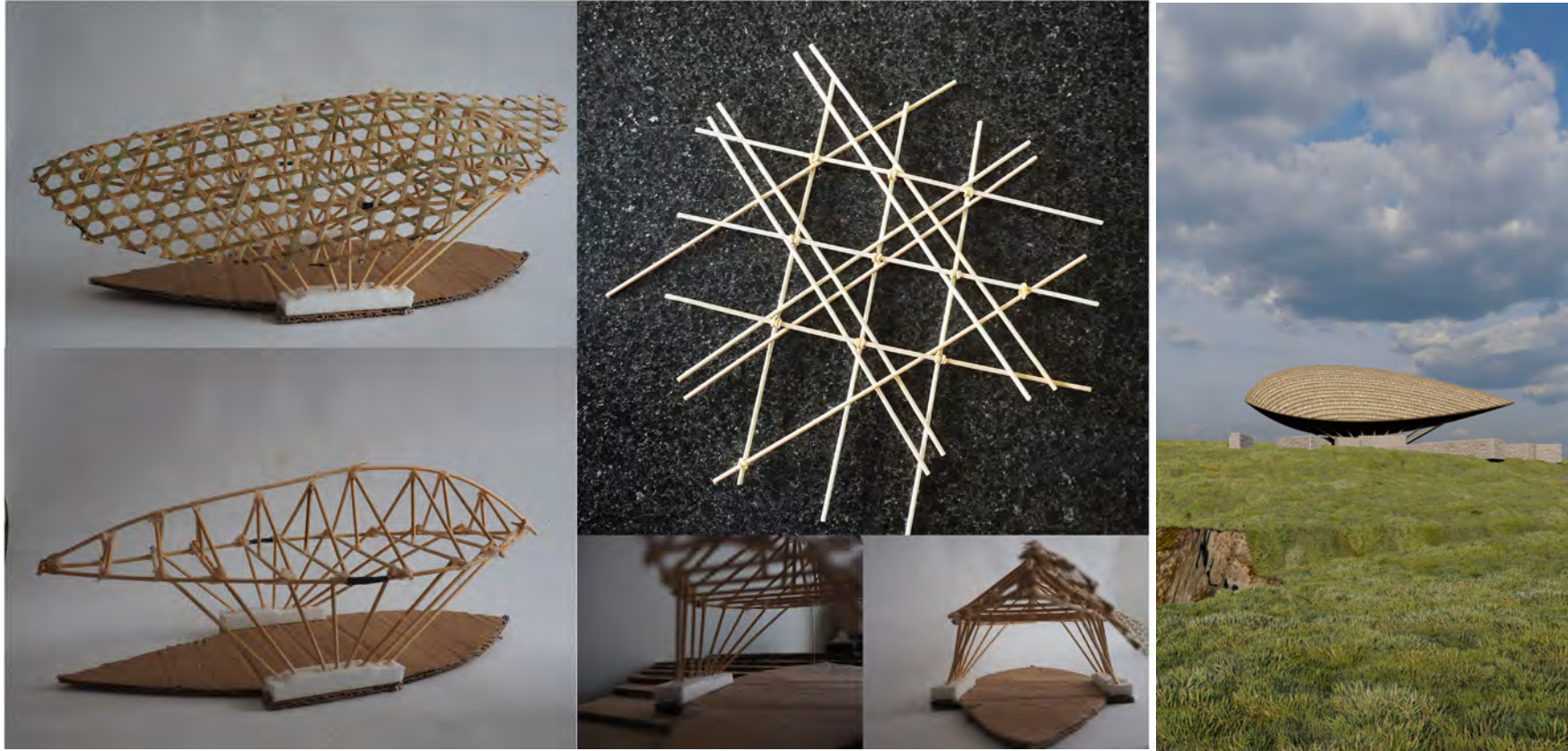


"House in Quinta da Baroneza / Candida Tabet Arquitetura" 01 Jul 2015. ArchDaily. Accessed 20 Oct 2021.  
<<https://www.archdaily.com/769473/house-in-quinta-da-baroneza-candida-tabet-arquitetura>> ISSN 0719-8884



# Structural model

Aerodynamics bamboo pavilion



# Detail model



Section Model – Wood | [JOSH BRANN'S PORTFOLIO \(wordpress.com\)](https://joshbrann.wordpress.com)



# Detail model





# What can we make?

- 110 INTRODUCTION
- 111 CONCEPT MODELS
- 114 SITE/CITY MODELS
- 119 BLOCK/MASSING MODELS
- 122 DESIGN DEVELOPMENT MODELS
- 129 SPATIAL MODELS
- 134 STRUCTURAL MODELS
- 140 INTERIOR ARCHITECTURE MODELS
- 146 LIGHTING MODELS
- 152 PRESENTATION/EXHIBITION MODELS
- 160 FULL-SIZED PROTOTYPES

# 3

## Types of model making exercise

### CONCEPTUAL MODELS

Using simple techniques and pliable materials. It shows ideas and often the most playful.

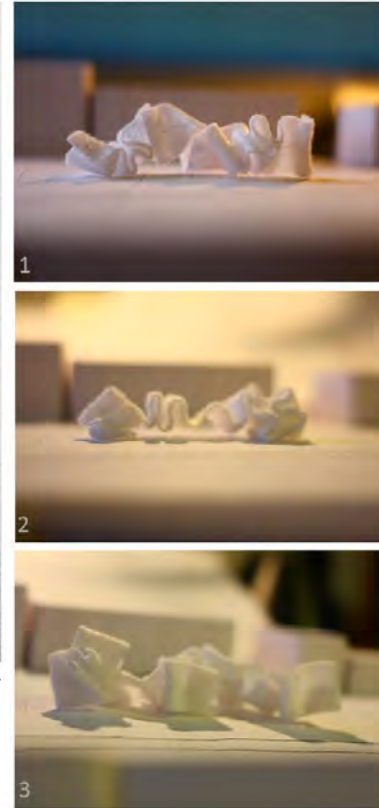
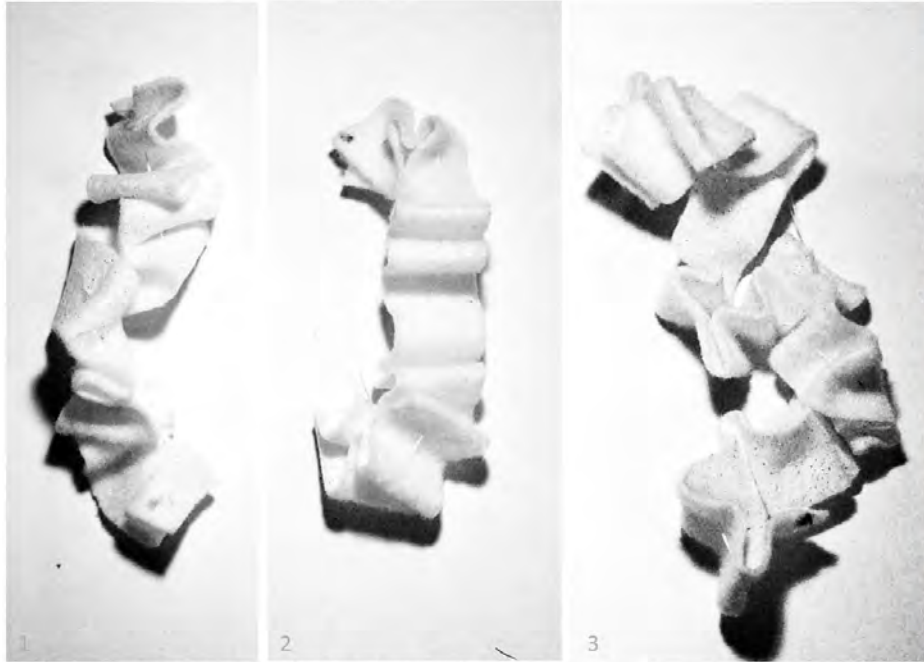
### WORKING MODELS

Without committing to final form of the project taking shape; form, composition and sequence of spaces are more clearly defined. Relationship with surrounding site is also exhibited.

### FINAL/PRESENTATION MODELS

Final design, made only for presentations: for competitions, submissions to clients and student design projects. They show accurately: topography and how design is sited within it, building materials and structural system.

# Conceptual model



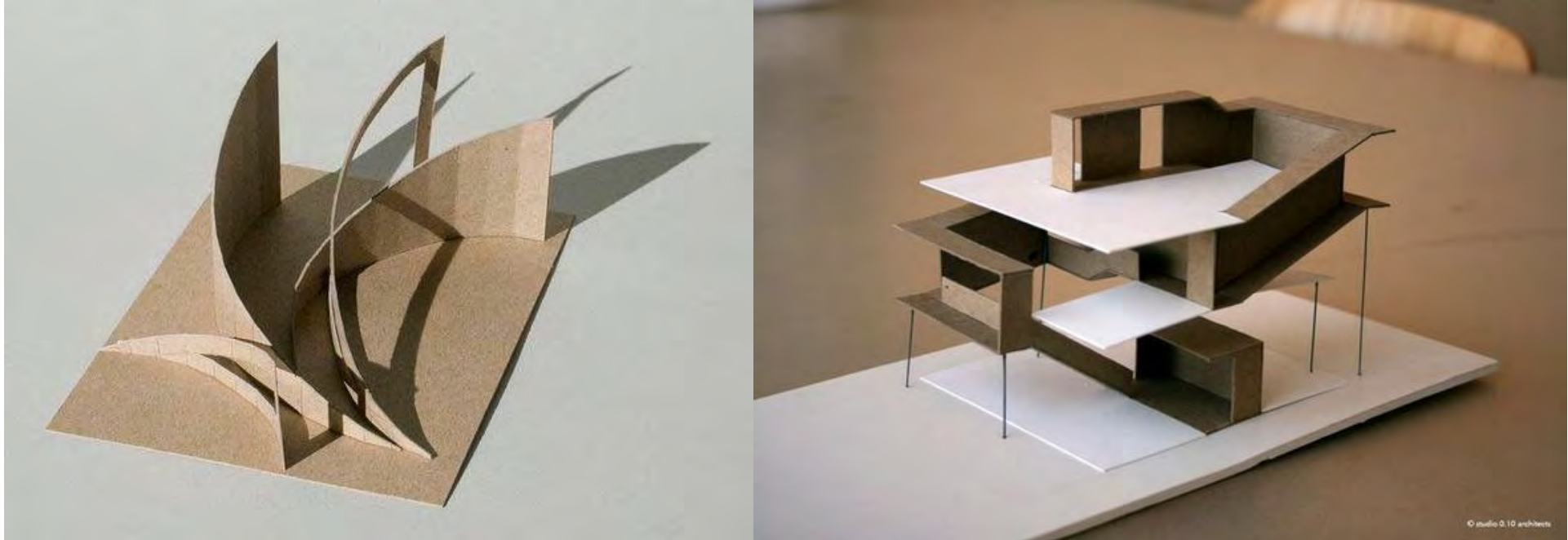
the first experiment is more about abstract exploration to get the sense of intimacy. this exploration is lack of architectural language, and to be explored further.

#1 ruffled and twisted ribbon

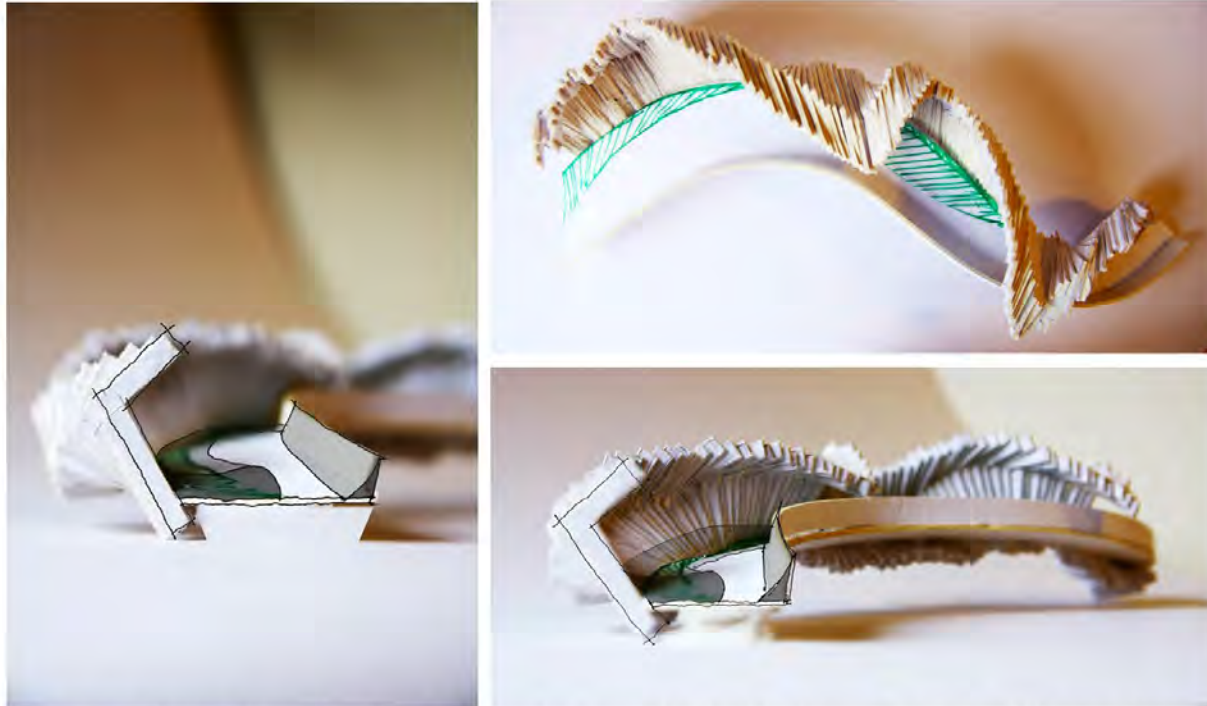
#2 ruffled ribbon

#3 two interlocked ribbons

# Conceptual model



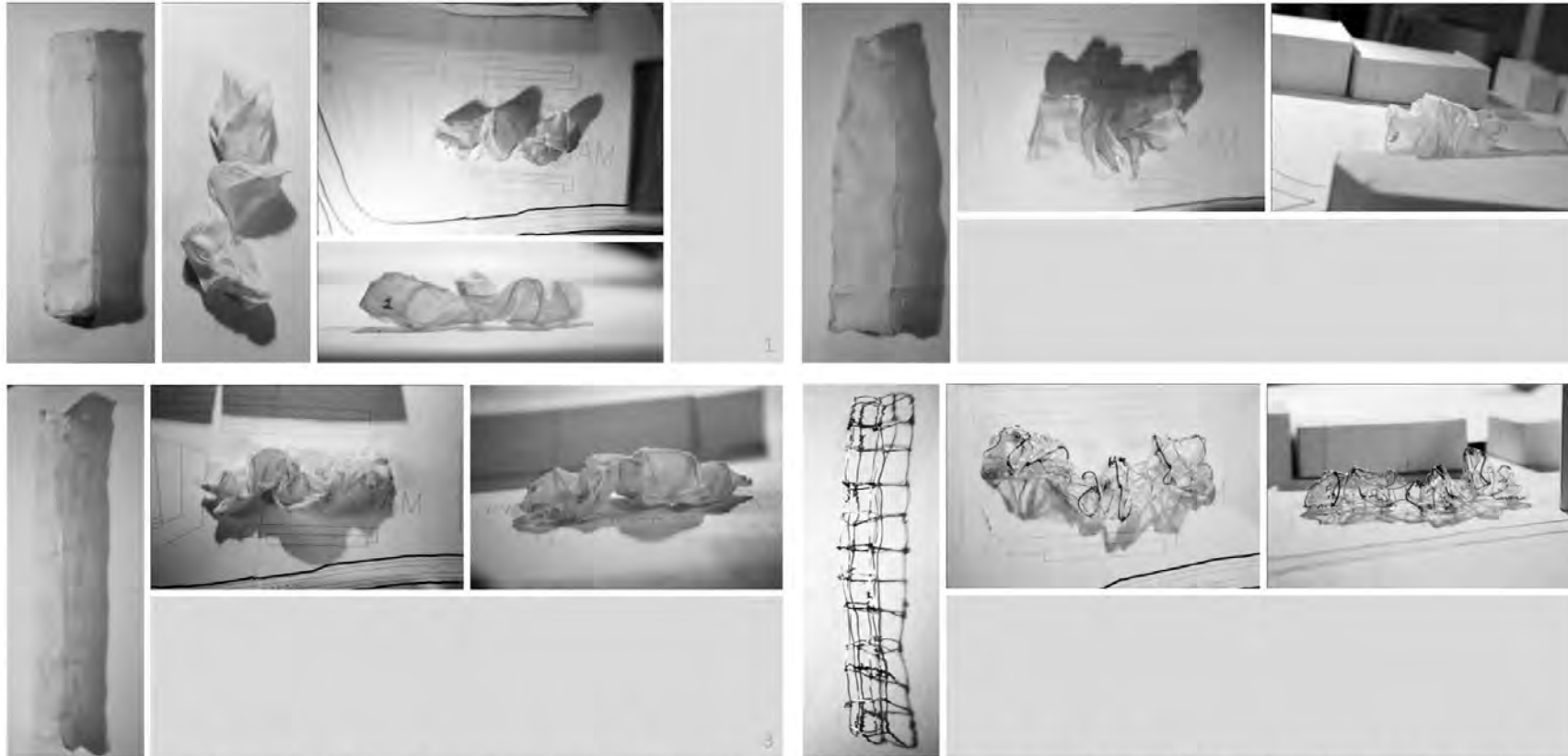
# Conceptual model



this was the chosen scheme from three conceptual schemes. the fixed bridge was a solution of the main site constraint, unimpeded river traffic. to be able to cater sufficient head room clearance, further encroachment towards the nature reserve was advised. a bridge as a dialogue with nature is the theme of this scheme. the dialogue was informed by the organic form+shape, re-used timber from site and its transparency. the scheme has seen the bridge as a PAUSED space (meeting place with sitting area).

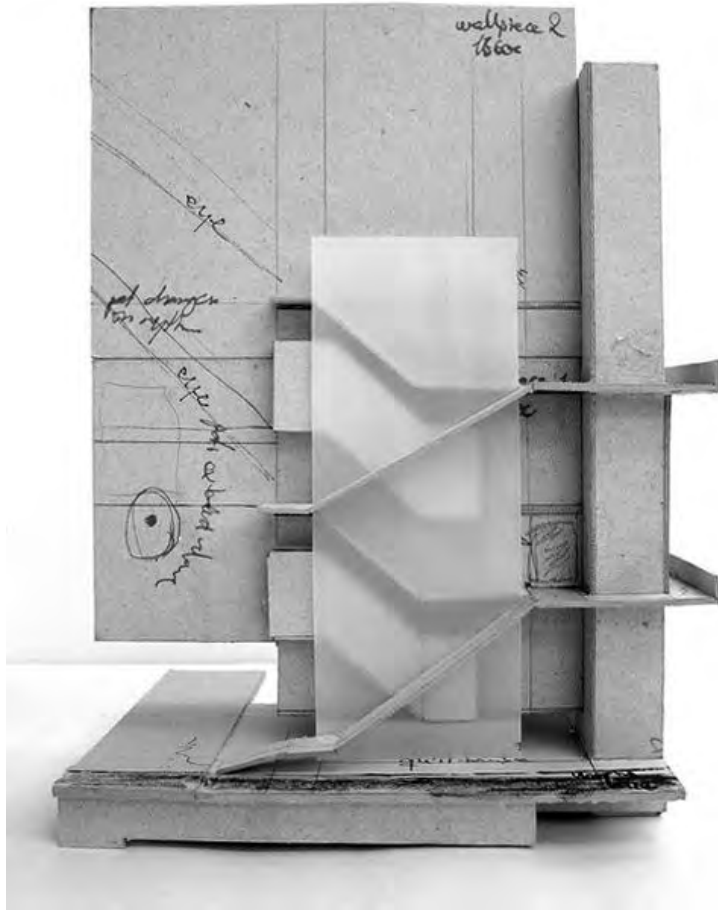


# Working model



architectural language is added to the second experiment, started with different basic three dimensional shapes. using the same technique of pleating, it is manually pleated. the outcome of this exploration is that simplification and rationalisation are needed, to make it as a buildable architectural piece. #1 started with shorter box #2 started with tapered box in one side #3 started with longer box #4 study of possible portal frames.

# Working model



# Working model



Exhibit Columbus: A New Era of Celebrating Design - Dwell

# Working model



ZHA exhibition in Shanghai (2021). Taken by Mia





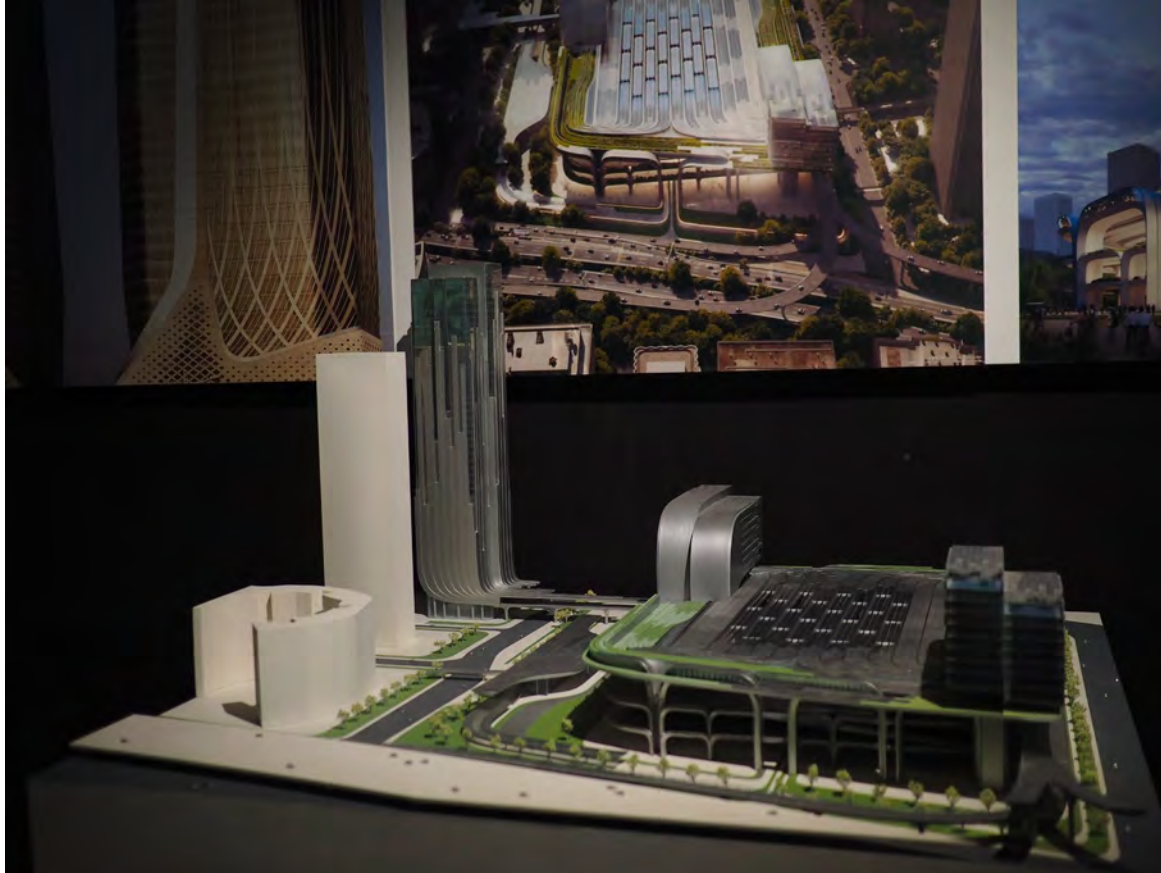
# Final model



ZHA exhibition in Shanghai (2021). Taken by Mia

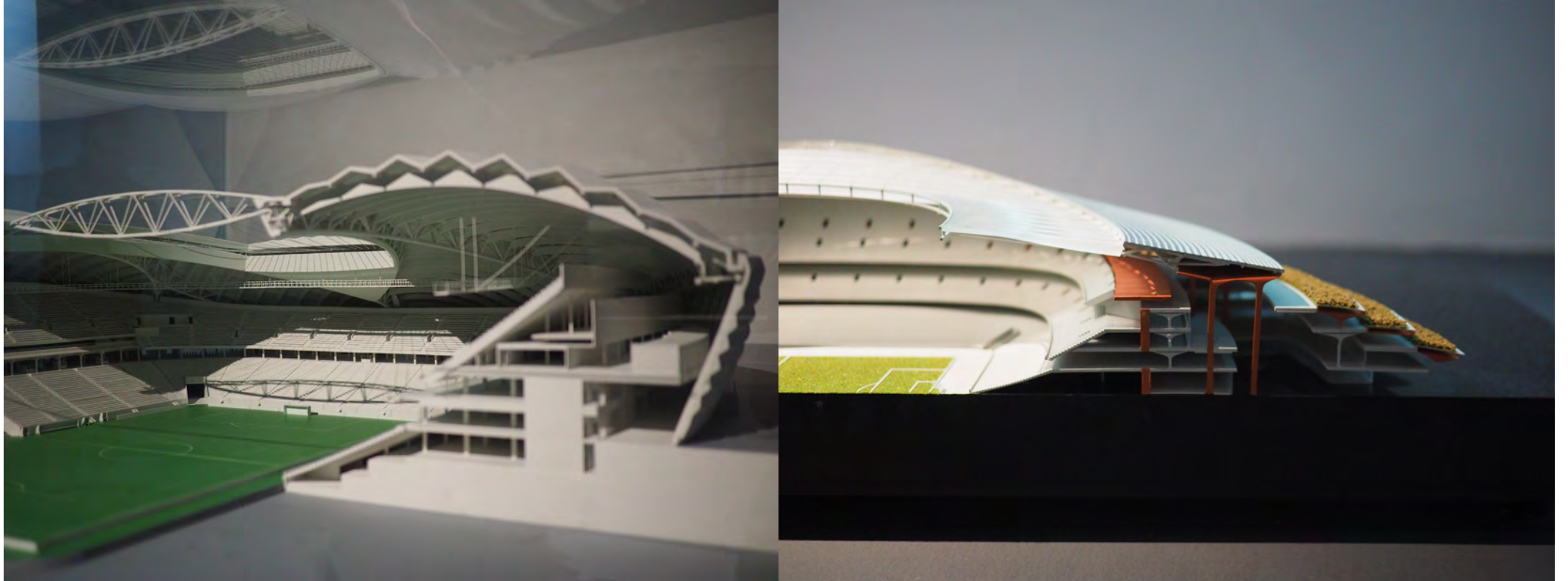


# Final model



ZHA exhibition in Shanghai (2021). Taken by Mia

# Final model



ZHA exhibition in Shanghai (2021). Taken by Mia

# 4

## Common materials



BLOG LEARN PORTFOLIO SHOP ABOUT CONTACT

### ARCHITECTURAL MODEL MAKING RESOURCES

One of the driving forces behind my desire to become an architect from a very young age, was model making. Architecture was one of the few professions where sketching and constructing scale models out of cardboard and balsa – what I viewed as playing – was not only acceptable but encouraged. Although many architects have abandoned physical modeling in favor of computer modeling I've kept it alive in my daily practice. I'm sharing the tools and resources I use to make models in hopes that the craft persists as not only a design tool but so we all can experience the pleasure of seeing the world from a different perspective.



PROCESS



FAVORITE TOOLS





# Common tools and materials



1. Basswood project pack
2. Chipboard .05" thick + .03" thick
3. Cardstock (grey)
4. Corrugated cardboard
5. Basswood strips
6. Mahogany strip 1/16" thick
7. Translucent Vellum
8. Mylar sheet
9. Sanding block
10. Guitar strings (wire accents)
11. 6" cork-backed metal ruler
12. 24" cork-backed metal ruler
13. Flat nose pliers (bending wire)
14. Wire cutters
15. Square
16. White glue
17. Hot glue gun (+ sticks)
18. Self-healing Cutting mats (12"x18" + 18"x24", taped together)
19. Kuru toga mechanical pencil
20. Copic marker (gray set)
21. Olfa 18mm Blades
22. Olfa L-2
23. Chisel blade (for cutting windows)
24. X-acto #11
25. Tweezers (sprung shut)
26. Heavy duty metal scissors
27. Razor saw
28. Mitre box
29. Gaffer's tape



# Common tools and materials (the minimum)



1. Basswood project pack
2. Chipboard .05" thick + .03" thick
3. Cardstock (grey)
4. Corrugated **cardboard**
5. Basswood strips
6. Mahogany strip 1/16" thick
7. Translucent Vellum
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11. 6" cork-backed metal ruler
12. 24" cork-backed **metal ruler**
13. **Flat nose pliers (bending wire)**
14. **Wire cutters**
15. **Square**
16. **White glue**
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18. Self-healing **Cutting mats** (12"x18" + 18"x24", taped together)
19. Kuru toga **mechanical pencil**
20. Copic marker (gray set)
21. Olfa 18mm **Blades**
22. Olfa L-2 (**cutter**)
23. Chisel blade (for cutting windows)
24. **X-acto #11**
25. **Tweezers (sprung shut)**
26. **Heavy duty metal scissors**
27. Razor saw
28. Mitre box
29. **Gaffer's tape**



# 5

## How can model making contribute to our design process?

- Snapshots of architectural thoughts – **documenting processes**
- Quick test of ideas – **away from computer and input's affordances**
- Verbal narrative – **practice your narrative**
- Means of communication – **tutorials, design & client meetings, teamwork**
- Exploring spatial interrelationships and sharing them – **quick multiple renderings**
- Allowing for 'happy mistakes' – **which might lead to new ideas**
- Sense of mass and scale – **check on digital model's proportion (very important)**
- Exploration of form – **confirm how does your design relate to the context. Ground plane interactions**



# 6

## When do we need to do it?

All the time.

Beginning of the design project: **site models** as part of site analysis

**Conceptual models** when we talk about design concepts

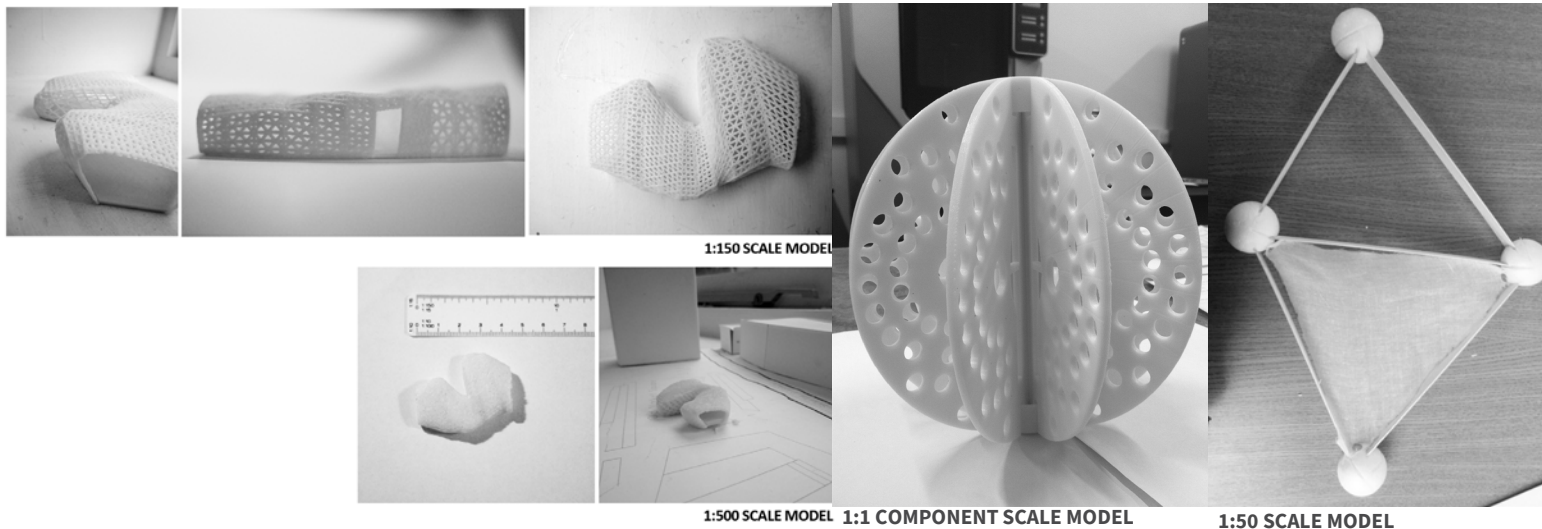
**Working models** when we refine ideas or new ideas

**Final** presentation **models** for final crit



# 7 Step-by-step

1. Define the **purpose** (conceptual/working/final model?)
2. Fix the **scale** based on the purpose
3. Confirm **information** to be conveyed (level of accuracy)
4. Prepare or print **information** you need to build the model (plan, elevation and section drawings)



# Takeaways

Work on multiple scale of models

NTS (not to scale) model is to be avoided

Use materials which are readily available such as cardboards, thick paper

Use high quality tools



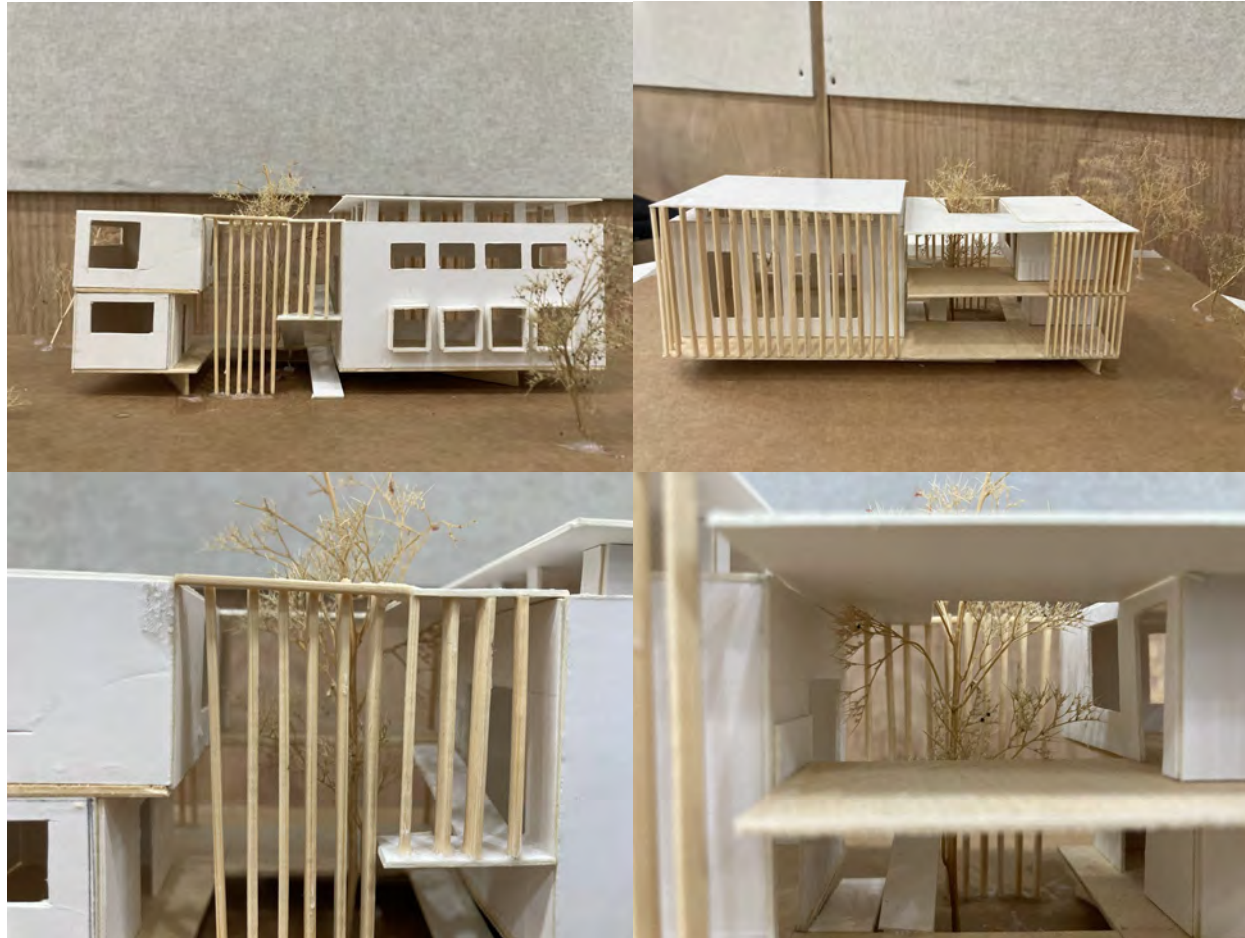
# With your model..



1. North point
2. Scale or scale bar
3. Site context
4. Human figures

# With your own library model..

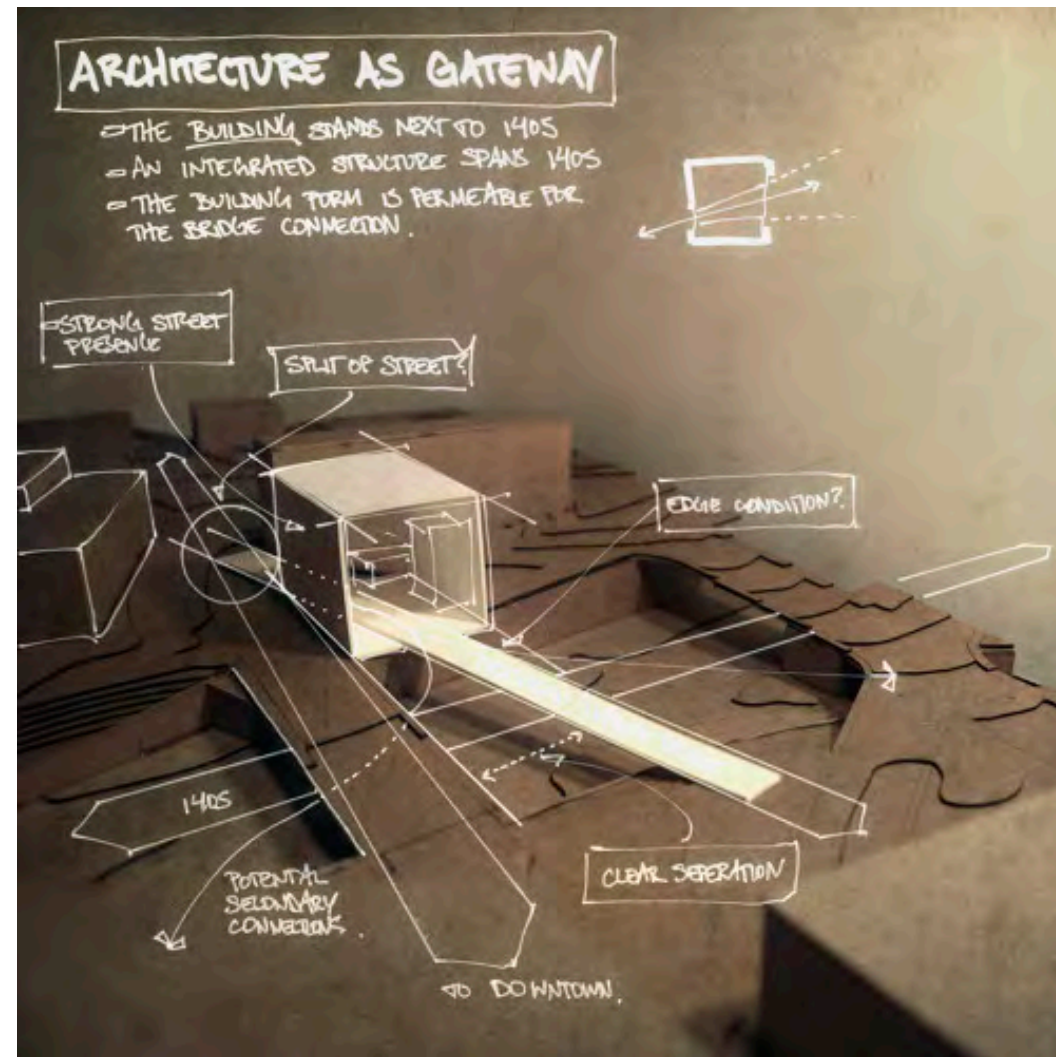
Take some close-up pictures and add sketches on it (digital or manual).



# Add in: Your self review Analysis

And upload on the  
new Miro Board.

Min 3 photographs



[Architecture School \(tumblr.com\)](https://www.tumblr.com/architectureschool)