

Introduction

1

The nature of materials, making and detailing

1.1. Background

If you think of Brick, you say to Brick: “What do you want, Brick?” and Brick says to you: “I like an arch.” And if you say to Brick: “Look, arches are expensive, and I can use a concrete lintel over you. What do you think of that, Brick?”

Brick says: “I like an arch”. —Louis Kahn

The nature of materials has an influence on the manner in which they are used in construction. As structural elements, bricks perform best as arches, while timber elements are most economically used perpendicular to one another, as seen in traditional Japanese architecture. This has spatial implications: arches and domes form a different spatial experience to the linearity of lintels, and timber decking results in a rectilinear geometry. Construction details extend beyond nuts and bolts; they can reveal and memorialise construction methods, and this can lead the user to understand the built landscape and how it is made. For example, the triglyphs of Greek temples of the Doric order were made of stone, but were retained in the form of the wooden beams that would once have supported the roof (Tucci 2015:245; see figure 1). Can this influence the conventional design process that landscape architects follow?

Historically, architects were considered master builders, being both designers and craftsmen. In contemporary landscape architecture, there is typically a separation between the act of designing and the act of making, often causing a lack of practical knowledge of the capabilities of materials and their relationship to one another. This is perhaps the reason behind the recent increase in design-build workshops and -courses taken by students of spatial design; only by building does one truly understand construction.

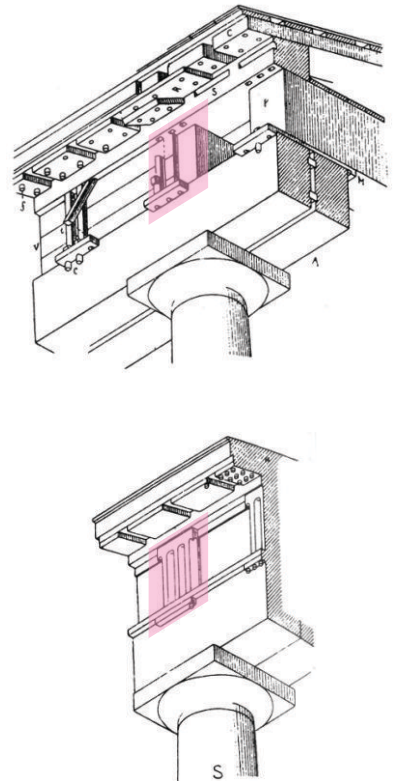


Figure 1: Auguste Choisy's diagrams of Doric order stone construction and its wooden origins (colour added by author)

1.2 Problem statement

Tectonic theories aim to explain how materiality and the art of construction can play a central role during the building design process. However, there is not a well-known body of work regarding the art of constructing landscapes. This knowledge is important as the design of robust yet expressive elements in public spaces requires an understanding of materiality and making.

1.3 Research objectives

The aims of this dissertation are:

1. To explore a design process that starts with detailing and material exploration.
2. To follow a research strategy based on hand-making and prototyping as design tool.
3. To investigate, apply, and contribute to the current body of knowledge regarding landscape architectural tectonic theories.

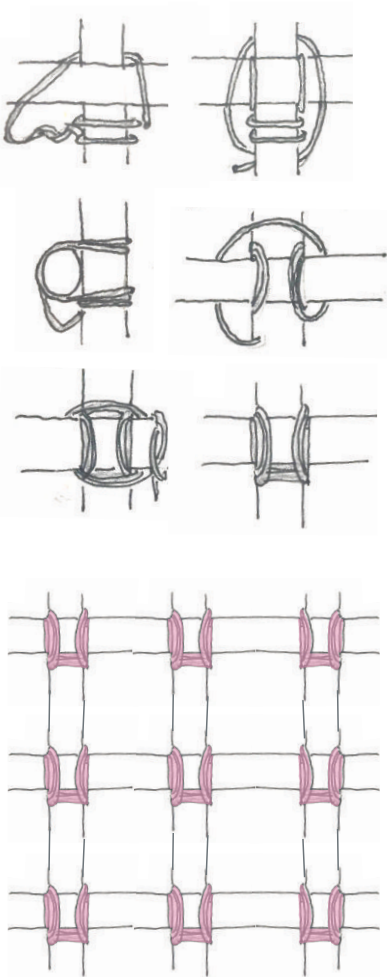


Figure 2: The square lashing of wooden poles by means of rope is not only functional, but it results in a pattern and repetition that is aesthetically pleasing
(Author 2016)

1.4 Thesis statement

Detailing and the joining of materials can inform the physical appearance of a built landscape on a larger scale, reveal its context and show the user the construction methods followed in its fabrication. This can be optimised by prioritising detailing as a starting point of the design process. Furthermore, an understanding of the material identity of a region will enable detailing representative of its setting. By actively incorporating making as a design tool, landscape architects can discover the potential of the materials available in an area. A landscape architectural tectonic theory will add to the knowledge gained through this process.

1.5 Project overview

The design process is initiated by theory and design ideals, and, as such, a programme, site and users are only identified at a later stage. The process of discovery reveals opportunities and constraints as the designer progresses.

A set of criteria is established at the start of each phase of investigation.

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When the criteria are met, or when new information is discovered that could change the course of the design, the phase is reflected upon and responded to with an amended set of criteria. These criteria are a tool by which the investigations are measured against, and also act to control the time spent on each phase, which is a limiting factor due to the fixed duration of the study.

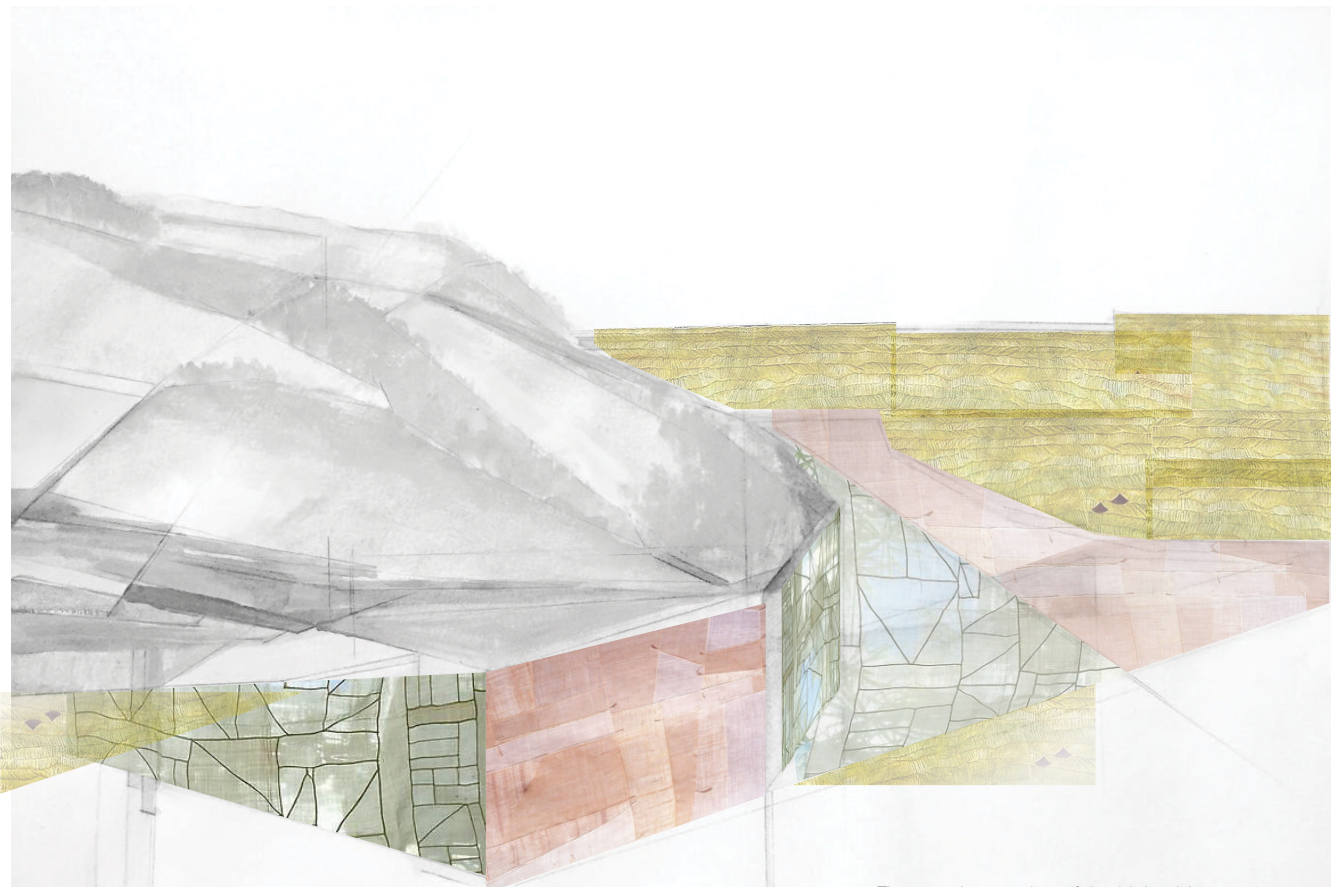


Figure 3: Impression of the highveld
(Author 2016)



1.6 Definition of terms

detailing	the way in which two or more components of a landscape or building are joined
experiential (also phenomenology)	the experience of built space
expressive construction	using a material's properties to guide their aesthetic potential through patterns and repetition; the joining of materials in a functional yet aesthetic way (see figure 2)
fabrication	the making or building of an item or space
forces	natural phenomena that have an observable effect on the landscape, such as rain and water flow, wind and sunlight
hyperbolic paraboloid	an infinite surface in three dimensions, with hyperbolic and parabolic cross-sections
hypar	a hyperbolic paraboloid shape cut from the full infinite surface
immersive experience	when a user feels completely captivated by a space
kit-of-parts	a subcategory of pre-fabrication focusing on demountability, disassembly, and reuse
mountain fold	a crease where the paper or sheet-like material folds away from the crease
parametric design	the use of a computer to design objects by modelling their components with real-world behaviours and attributes
pavilion	a stand or structure often found in parks and other public spaces
poetics of construction	paying close attention to the joining of separate elements in a structure
pre-fabrication	manufacturing components of a structure and afterwards transporting them to a different site where the structure is to be located
space-definer	elements that imply form
stereotomic	elements of architecture and built landscapes that are perceived to be heavy and solid
<i>techne</i>	making useful objects by hand in an artful way
tectonic	elements of architecture and built landscapes that are perceived to be lightweight
tectonics	see poetics of construction
textile	a flexible material consisting of a network of fibres, formed by knitting, weaving, knotting, crocheting or felting
yarn	a continuous length of interlocked fibres