Binding Lalava: Unravelling the Functionality of Pattern

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Auckland University of Technology

Dedication

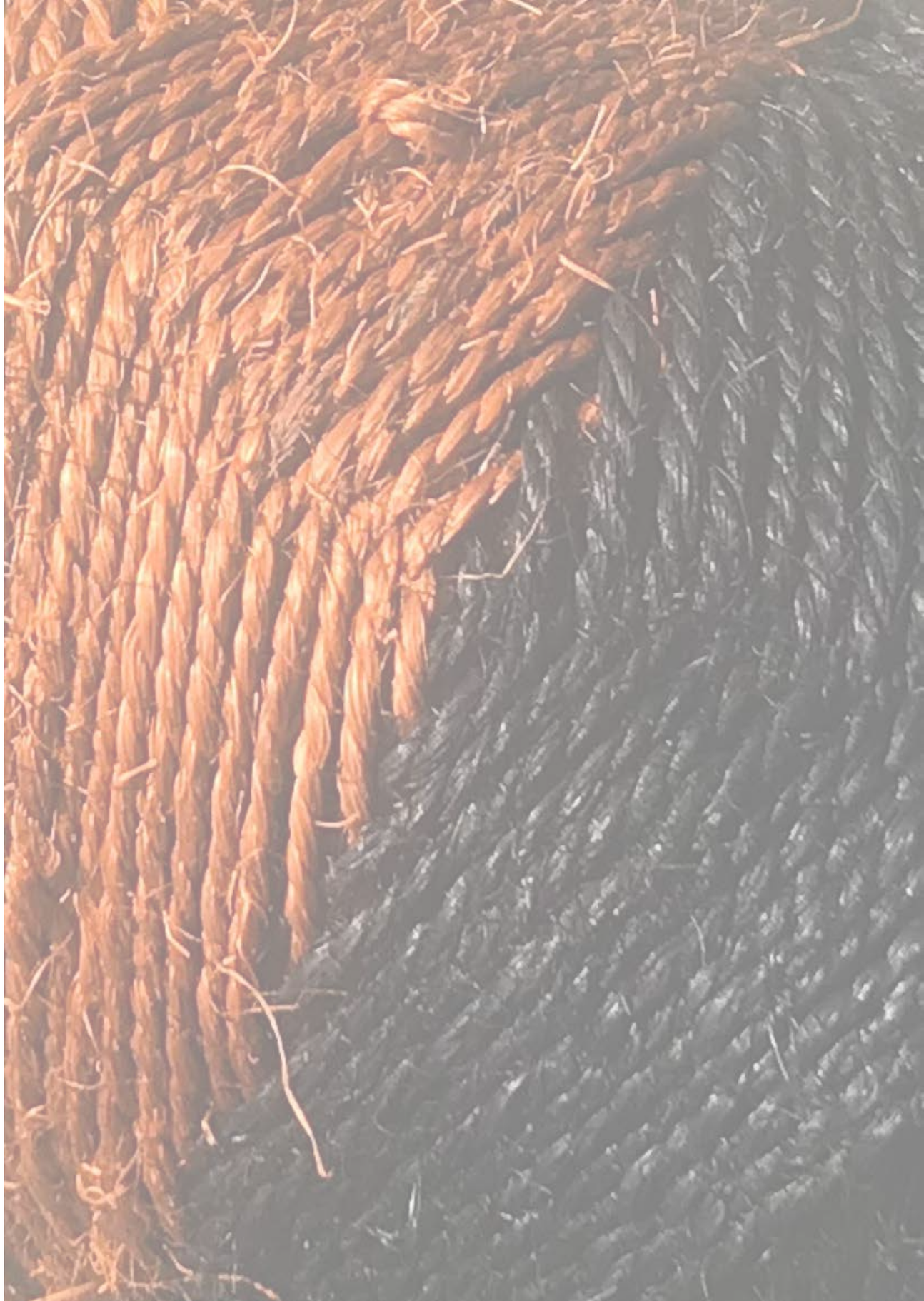
For Sosefo Fa Heamoni Latu

Rest in Peace Dad

Fig 1. Latu, Vena. Digital Photography. Dad looking into the fale structure of the Saione Motu'a Chapel. The Sia'atoutai Theological College Chapel. Tonga. 2019

Abstract

Lalava is a form of Tongan construction that consists of lashing two lines of kafa (sennit), a braided rope made from the inner fibres of the coconut husks; the lines intersect one another repeatedly, circling up and down to form geometric patterns as it binds and connects two or more beings and objects. In contemporary contexts, lalava is considered more as an art form rather than a method developed by ancient Tongans and Oceanians to bind large structures such as the fale (house) and vaka (canoe). While it is evident that lalava is used as a decorative element expressing ancient Tongan narratives and metaphors, this research project, investigates the functionality of lalava to consider how it contributes to maintaining structural stability.



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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the Acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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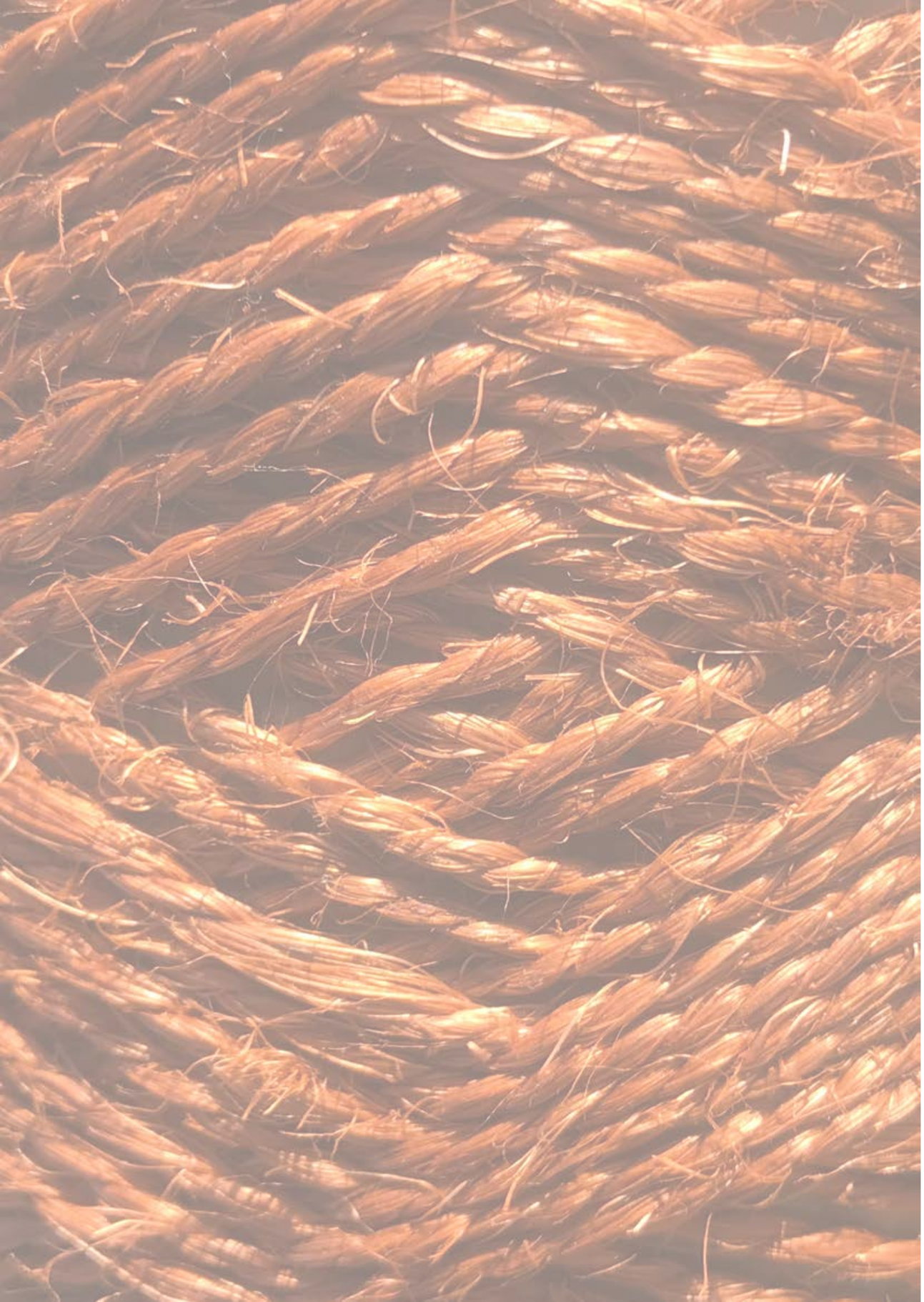

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Firstly, I would like to say thank you to my supervisors, Fluer Palmer and Albert Refiti, thank you for accepting to take me under your wing and sharing your knowledge. The support and advice you both have provided throughout our meetings have been extremely motivational, providing unique perspectives in how I approached this research project. It was an honour to have two extremely respected individuals both in the world of architecture and academic as supervisors.

To the School of Architecture tutors and lecturers, I am grateful for the guidance you have provided not only for me but the Masters of Architecture (Professional) as whole. I have learnt so much, both inside the classroom and within the industry, and for that I am thankful.

I would also like to thank the Va Moananuiakiwa Bula boys, Ansgar and Tukai, thanks boys for the support, talanoa and the feeds. I hope nothing but the best for you guys.

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Thank you Sonny Natanielu for being open to share your time not only with me and but with the boys as well, we have learnt so much from you - you have reveaed a perspective of Pacific Culture, I did not know even existed, further adding into how great our Pacific people are.

To my father, This journey began with you right by my side, but sadly left us before it ended. You are the embodiment of hard work and humility; I am thankful for everything you did for me, and will continue your legacy. I am thankful that God chose you to be my father. I miss you dad.

and Lastly to my mother, thank you for being my biggest supporter as well as a pillar of strength during these tough times. No words can decribe how thankful and appreciative I am of you. I know you have been hurting a lot after dads passing,but you have shown the most strength out of all of us.

Figures List

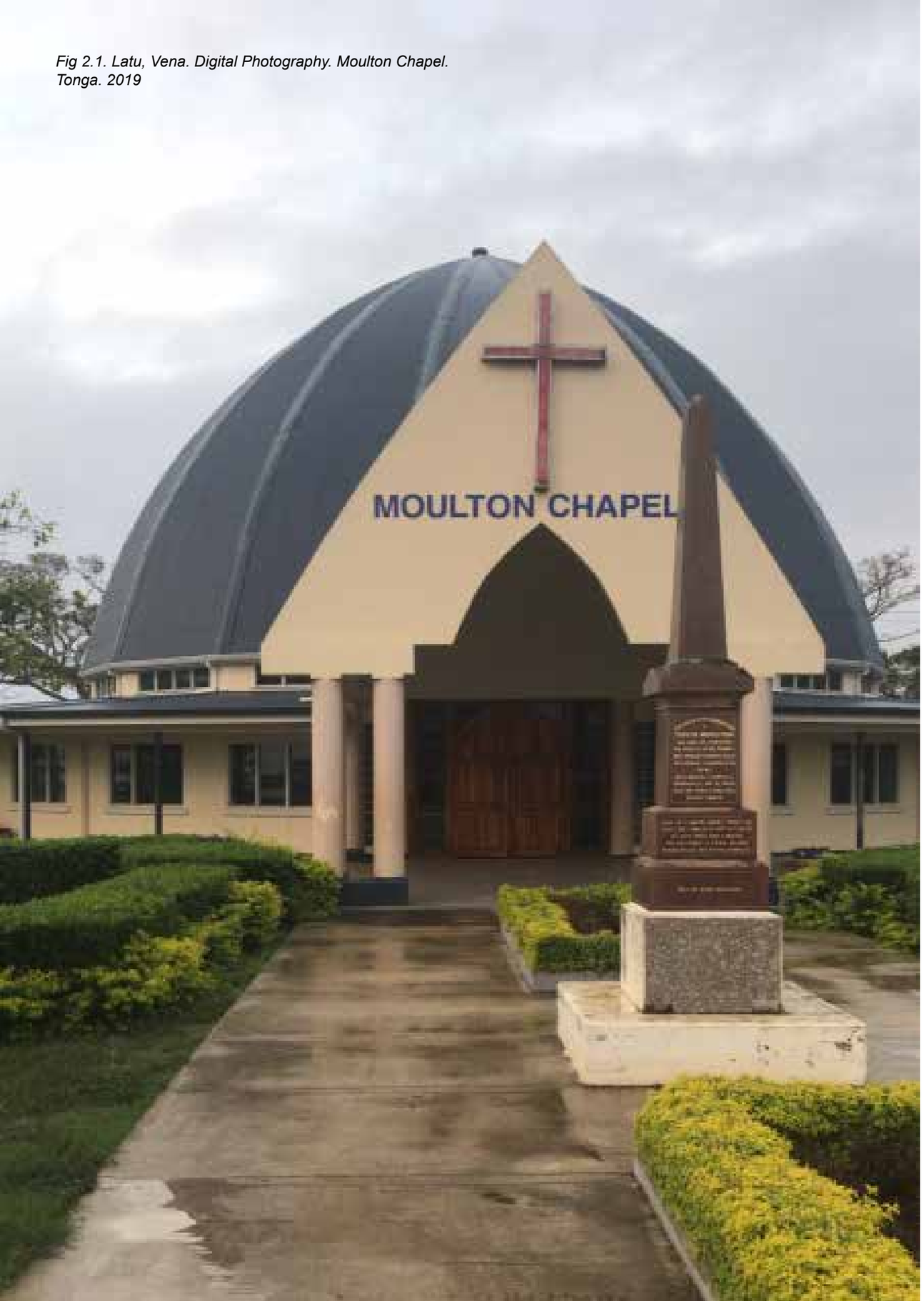

Fig 2.1. Latu, Vena. Digital Photography. Moulton Chapel. Tonga. 2019

Introduction

Lalava, an art form that consists of lashing two lines of kafa (sennit), a braided rope made from the inner fibres of the coconut husks; the lines intersect one another repeatedly, circling up and down to form geometric patterns as it binds and connects two or more beings and objects.[1] In the present time, lalava is considered more as an art form rather than its constructional origins – a method developed by ancient Tongans and Oceanians to bind large structures such as the fale (house) and vaka (canoe). When walking into the fale now, it is evident that lalava is used as a decorative element to express ancient Tongan narratives and metaphors. To Western Researchers, lalava as a constructional method may be regarded as a primitive approach to architecture but for this research project, it looks to unravel its functionality and how it contributes to maintaining structural stability.

My journey with lalava began during my undergraduate years as a second-year Spatial Design student at the Auckland University of Technology, to which my lecturer at the time and now Supervisor, Dr Albert Refiti introduced this ancient technique to me. I did not know what lalava was at the time and realised that many other young Tongans and Pacific people like myself growing up in Aotearoa may also be unaware of what lalava is. This thought led me to believe that the progression of time has created a disconnection between modern and ancient Oceania. There are limited academic resources and visual teachings that demonstrate the processes of 'making.' To gain a deeper insight into lalava, I observed the works of Sopolemalama Filipe Tohi, a Tufunga Lalava (master in the ancient art of lalava), as he is one of the few people if not the only person whose practise with lalava is documented. For many, the artistic practice of Filipe Tohi is based on his lalava-ology:[2] "Tohi considers the movement of binding and lashing lalava as a means of appreciating a Pacific language that reflects a philosophy of life, as the patterns imply an insight into the equilibrium of our Tongan ancestors' daily lives through metaphorical and physical connections with cultural knowledge." [3] Tohi reimagines the forms of this indigenous construct into contemporary works of art thus forming a metaphorical binding of past and present.

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1 Karen Stevenson, "Lalava-ology: A Pacific Aesthetic," in Filipe Tohi: Genealogy of Lines—Ho¬hoko e Tohitohi, eds. Filipe Tohi, Simon Rees, and Gregory Burke (New Plymouth, New Zealand: Govett-Brewster Art Gallery, 2002), 17.

2 Karen Stevenson, Filipe Tohi: Journey to the Present: Makahoko mei Lotokafa (Suva, Fiji: University of the South Pacific Press, 2015), 1.

3 "Sopolemalama Filipe Tohi." Tautai: Guiding Pacific Arts. http://www.tautai.org/artist/sopolemalama-filipe-tohi/.

Filipe Tohi and Hilary Scothorn. "An Artist's Perspective, 2" in Journal of Museum Ethnography 21

"For me (Filipe Tohi) to understand some of the patterns is like understanding the past."[4]

As a Tongan architectural designer, this research project undergoes an auto-ethnographic approach, positioning myself in the shoes of my settling ancestors, documenting my experiences of learning through making. I have never attempted lalava making within its traditional form but have reinterpreted it through a variety of different contexts such as 3d sculptures, architectural design and fashion design. Due to the limited available academic resources and talanoa[5] being the most common method of transferring its knowledge, I have placed myself in a vulnerable position especially considering that I am not a "Tufunga Lalava." The end product may or may not be a mastery result but the details of technique reveal the stages of evolution through which the craft has passed.[6]

By putting myself in this position I understand that my attempts are not a discovery of something new but more so maintaining a practice lost to the present generations of Tongans and Oceanians – a reconnection with the ways of our ancestors. By observing the lalava on display in the Fale Pasifika (fig 2.2), Lotofoa Free Wesleyan Church (fig 2.3), Saione Motu'a Chapel (fig 2.4), Pelehake Free Wesleyan Church (fig 2.5), and Moulton Chapel (fig 2.1); my techniques of making will be a result of how I trace the placements of line interactions. Unless the technical details are similar, the end products cannot well be regarded as identical.[7] Despite what I create not being regarded as an "original," the purpose of this research project is to document what I have uncovered and share it with the Pacific community.

4 *Filipe Tohi and Hilary Scothorn. "An Artist's Perspective, 2" in Journal of Museum Ethnography 21 (2009).*
5 *'Talanoa' is the Tongan translation for verbal interaction. Timote Vaioleti, "Talanoa: Differentiating the Talanoa Research Methodology from Phenomenology, Narrative, Kaupapa Maori and Feminist Methodologies," Te Reo 56/57 (2013).*
6 *Peter Buck. "Samoan Material Culture,"(Honolulu, Hawaii: The Museum, 1930) 7*
7 *Ibid*

As lalava is common practice throughout Oceania, this research will solely focus on the Tongan perspective. In Chapter One, I investigate the metaphorical knowledge intertwined within the lines of lalava which provides an insight into the abstract way of how ancient Tongans approached daily living. Ancient art like lalava spoke a philosophical language that links ancient Tongans and Oceanians to the sea – defining a way of life according to the ocean. I also set out to navigate the timber framing of the fale as a means of understanding the functionality of its structure, its development overtime and titles, as well as revealing a connection amongst the different types of Tongan arts.

Chapter Two initiates the methodological positioning of my research, highlighting the auto-ethnographic and practice-based methodologies I have explored, in addition to their associated methods. This Chapter documents the different types of methods utilised to gain an understanding of how lalava functions both as an art and constructional tool.

Chapter Three outlines the analysis of practice by going into detail on how these methods and methodologies guide the research project, as well as how COVID-19 lockdown protocols influenced the outcome of this research. This chapter reflects on the phenomenology of making, contradicting my assumptions from what I have learnt.

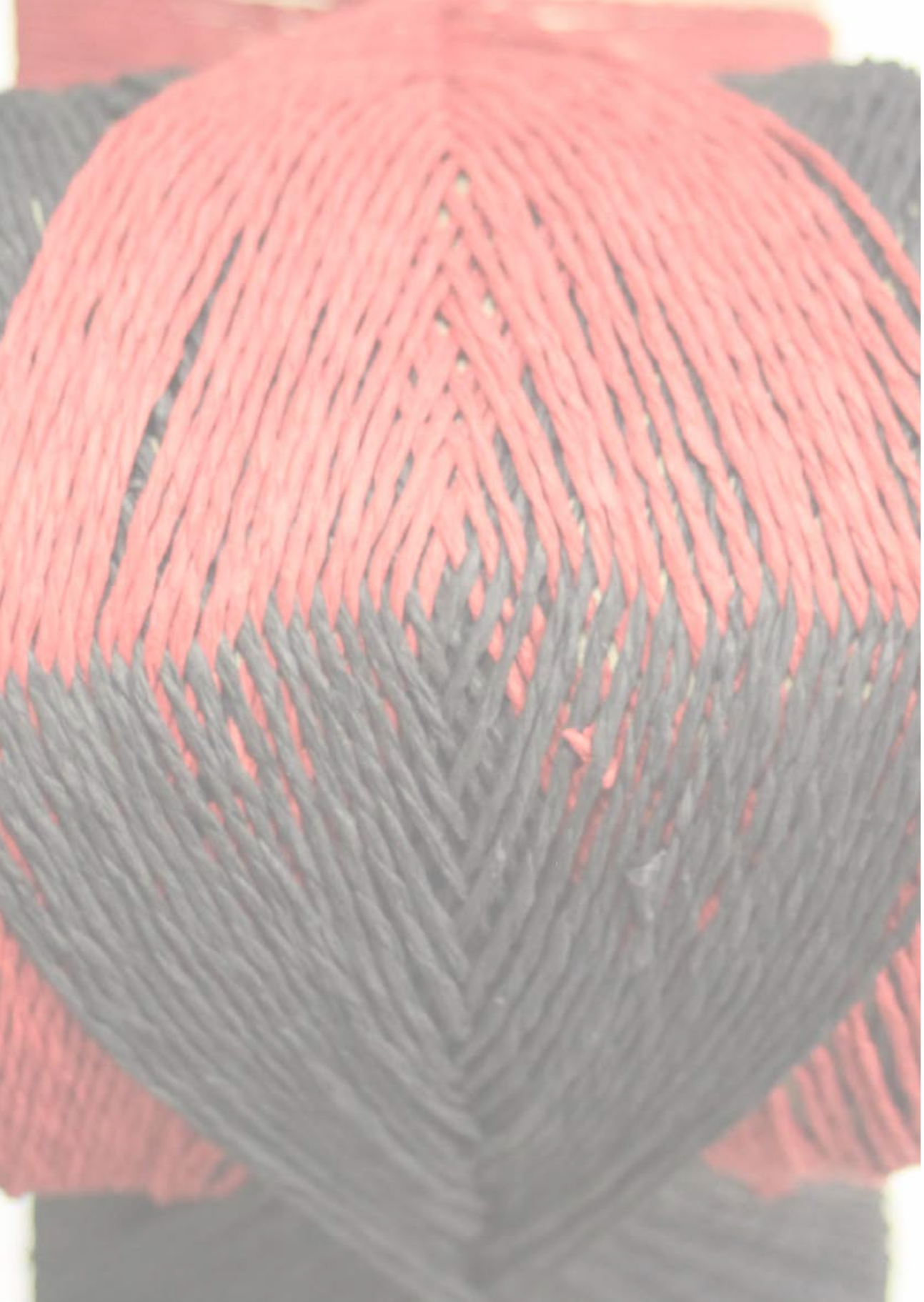
8 *Vena Latu. "Unraveling Lalava: Uncovering the Cultural Knowledge Embodied in Lalava," (2020) 20*

Fig 2.2. Latu, Vena. Digital Photography. Fale Pasifika. University of Auckland. 2019

Fig 2.3. Kaloni, Tomui. Digital Photography. Lotofoa Free Wesleyan Church. 2013

Fig 2.4. Latu, Vena. Digital Photography. Saione Motu'a Chapel. The Sia'atoutai Theological College Chapel. Tonga. 2019

Fig 2.5. Latu, Vena. Digital Photography. Pelehake Free Wesleyan Church. Tonga. 2019



Chapter One: Contextual Review

Tonga is one of the many islands that is interconnected by the Pacific Ocean and is the only Oceanian country that still has a monarchy, which is why it is referred to as The Kingdom of Tonga. Tongan society is divided into three hierarchy: the first hierarchy consists of the king and his family, the second consists of the nobles and their families, and the third hierarchy consists of the commoners.[9] The Tongan hierarchy system plays a pivotal part in how the system of the Tongan fale is designed – a system which I will go over in more detail later in this chapter. Located in the South-Central Pacific Ocean just west of the international dateline. Tonga consists of a cluster of some 180 small islands, with a total area of about 270 square miles (700 sq km).[10] The islands fall into three main groups, from north to south these groups are Vava'u, Ha'apai, and Tongatapu. North of Vava'u is the small islands of Niuafo'ou, Niuataputapu, and Tafahi (fig 3). The largest island of Tonga is Tongatapu island, which is located the capital, Nuku'alofa. The islands are either of coral or volcanic formation. With so many islands making up Tonga, only a fifth are inhabited. Tonga is a slowly developing country, as its inhabitants still follow ancient customs and traditions with also the inclusion of few Western Cultural influences.

Tonga along with other Oceanian countries have a unique perspective of the world which may have originated from their first piece of history – the navigation and voyaging across the vast Pacific Ocean. Methods of observing their surroundings from feeling the currents and ocean swells, to the guidance of the celestial realm, these methods were visually documented through the different practices of arts and aesthetics.

> *"Tongan aesthetic philosophy is based on heliaki, to say one thing but mean another. The employment of metaphor and allusion, 'the poetics and politics of Tongan verbal and visual modes of expression."[11]*

When investigating indigenous Tongan art, it is understood that it reminisces the environmental surroundings, a natural world that consisted of three realms, the sky, the ocean and the in-between. These realms are not separated but are all interconnected through ancient Tongan and Oceanian philosophies of how they perceive the world at large. This chapter examines lalava as a means of unravelling a unique perspective of the world and culture established by ancient Tongans. The contextual review will influence the thinking process that goes into the creative making developments, as it will provide a critical insight that would influence the outcome of this project.

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9 Paula "Floau" Nonu, "Reconnecting with the Past: Traditional Tongan Architecture as an Educational Device for the Tongan People," (2016)5

10 William D. Halsey, Bernard Johnston, "Tonga," Collier's Encyclopedia, Volume 22, (1951).

11 Quote by Adrienne Kaeppler obtained from Karen Stevenson, "Lalava-ology: A Pacific Aesthetic," in Filipe Tohi: Genealogy of Lines— Ho¬hoko e Tohitohi, eds. Filipe Tohi, Simon Rees, and Gregory Burke (New Plymouth, New Zealand: Govett-Brewster Art Gallery, 2002), 5.

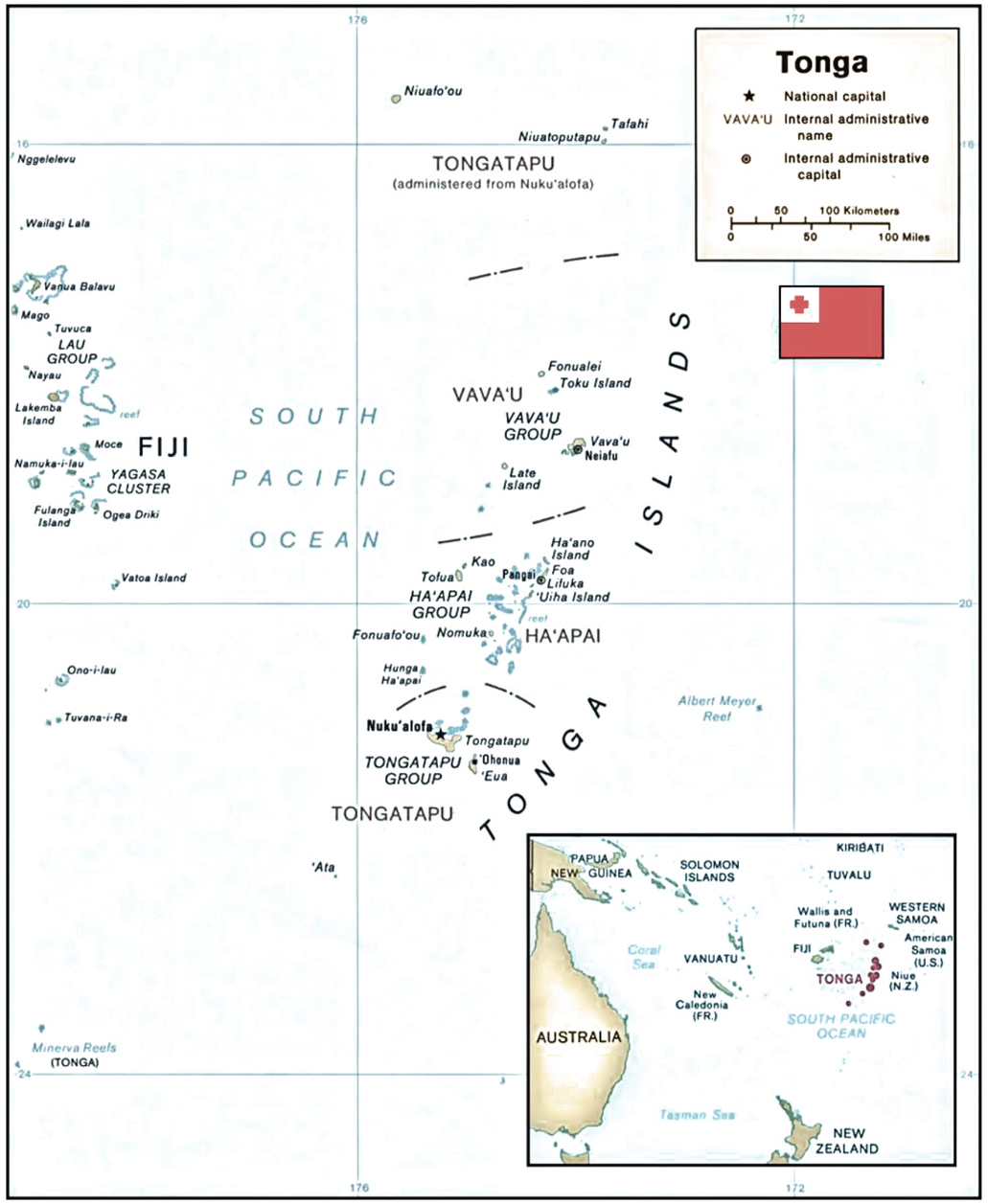

Fig 3. Map of Tonga. Retrived from https://www.mapsland.com/maps/oceania/tonga/detailed-political-map-of-tonga-with-other-marks-small.jpg. Edited by Latu, Vena. 2021

I was introduced to lalava by Dr Albert Refiti, where he provided me with a quick overview of what it is, before steering me towards the artwork of Filipe Tohi. Tohi's artistic journey has spanned over three decades, experimenting with a variety of different media such as incessantly drawings, both wood and stone carving and lalava. Through Tohi's artistic practice, he has successfully visualised a contemporary insight into the social, philosophical, navigational, and ecological methods of knowledge unique to Tonga through his artistic practice. I understood lalava was a constructional method but through Filipe Tohi's teachings, I learnt that lalava is a genealogical link to our past. Referencing astronomical navigational, and environmental knowledge, these motifs, were, in essence, mnemonic devices that allowed for the dissemination of cultural knowledge.[12] Before the written language, Tongan history was visualised, interpreting knowledge into patterns. While being interviewed by Hilary Scothorn, Tohi pointed out that lalava patterns are designed after aspects of the ocean from the currents to the fishes. (fig 4.1)[13] This indicates a significant aspect of Pacific culture which is the Ocean – the Pacific Ocean is like one large lalava, as it is what binds and connects the Islands of the Oceania. In Epeli Hau'ofa's 'Our Sea of Islands' he elaborates on how early European visitors would emphasise the smallness and remoteness of the Pacific Islands while isolated from the central powers of the world, referring to them as the 'islands in the far sea.' Hau'ofa quickly denotes this as these labels confined our people to the land, when in fact they viewed their world as a 'sea of islands'[14] as their world consisted of more than the islands but the sea as well forming an Oceanic network – the many islands are not separated but are one with the Pacific Ocean. The first piece of Oceanian history begins on sea – the world of our ancestors was a large sea full of places to explore, to make their homes in, to breed generations of seafarers like themselves.[15]

12 Karen Stevenson, "Lalava-ology: A Pacific Aesthetic," in Filipe Tohi: Genealogy of Lines—Ho¬hoko e Tohitohi, eds. Filipe Tohi, Simon Rees, and Gregory Burke (New Plymouth, New Zealand: Govett-Brewster Art Gallery, 2002), 17.

13 Filipe Tohi and Hilary Scothorn, "An Artist's Perspective, 2," Journal of Museum Ethnography 21 (2009).

14 Epeli Hau'ofa, "Our Sea of Islands," in A New Oceania: Rediscovering Our Sea of Islands, eds. Eric Waddell, Vijay Naidu, and Epeli Hau'ofa (Suva, Fiji: School of Social and Economic Development, The University of the South Pacific, 1993), 7.

15 Hau'ofa, "Our Sea of Islands," 8

Fig 4.1. Lalava by Filipe Tohi. Humu Pattern Named after the Trigger Fish Essential for navigating and sailing. 2004. Retrieved from http://www.lalava.net/index.php/ct-menu-item-17#1

Fig 4.2. Lalava by Filipe Tohi. A Perspective from the front side. This is a derivative of the Veimau pattern and represents stars. 2004. Retrieved from http://www.lalava.net/index.php/ct-menu-item-17#1

When the term lalava is translated to English, it means 'to lash' or 'lashing,' but its meaning is not as simplified as its English translation makes it out to be. According to Dr Okusitino Mahina the term lalava is made up of two Tongan root words, 'lala' and 'va' – two separate words with different meanings yet very similar in metaphorical values. "To lala is to intersect two, the interaction of two or more imaginary lines."[16] When visualising the making of lalava, I have defined lala as the action sequence of the term 'lalava,' as it consists of a variety of kafa intersections throughout different parts of the lalava making process forming geometric patterns and stories. The definition of lala can be applied through an encounter between people, as lalava uses kafa lines to create connections, a human intersection begins through eye contact (fig 5.1) and later develops onto talanoa (fig 5.2), and a relationship is formed between the two whether it be a significant relationship or just a short encounter (fig 5.3). An intersection can also be physical (fig 5.4) as we shake hands with another, it is an intersection of two genealogies. The relationship or memories created between the two people is the equivalent to the geometric patterns created through lalava making. Filipe Tohi describes the patterns of lalava as vessels of cultural knowledge and history that connects past, present, and future[17] where the kafa are the lines that represent genealogy.[18] (fig 5.6)

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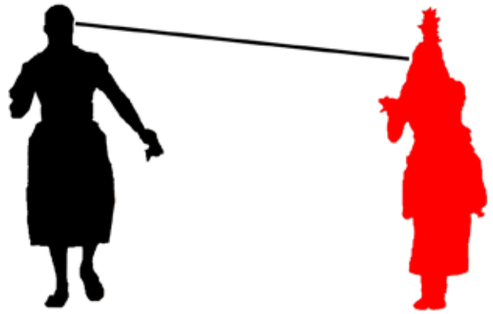
16 Okusitino Mahina, "Tufunga Lalava: the Tongan art of lineal and spatial intersection" In Filipe Tohi: Genealogy of Lines—Hohoko e Tohitohi, eds. Filipe Tohi, Simon Rees, and Gregory Burke (New Plymouth, New Zealand: Govett-Brewster Art Gallery, 2002), 7.

17 Nina Kinahoi Tonga and Helen Kedgley, Tonga I Onoponi (Porirua, New Zealand: Pataka Art + Museum, 2014), 8

18 "Lalava Residency." The University of Auckland. https://www.auckland.ac.nz/en/on-campus/life-on-campus/pacific-life/fale-pasifika/lalava-residency.html



Lala - intersection of eye contact

Fig 5.1. Latu, Vena. Digital Drawings/ Diagrams. Lala - intersection through Eye Contact. 2021

Lala - intersection between two through talanoa

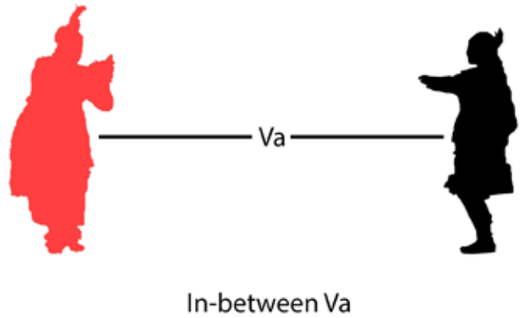
Fig 5.2. Latu, Vena. Digital Drawings/ Diagrams. Lala - intersection through Talanoa. 2021

Intersection of lines creates patterns development of relationship and memories between two and more

Fig 5.3. Latu, Vena. Digital Drawings/ Diagrams. Relationship created between two or more is the representation of lalava patterns. 2021

Lala - the intersection through physical touch

Fig 5.4. Latu, Vena. Digital Drawings/ Diagrams. Lala - intersection through Physical Contact. 2021



In-between Va

Fig 5.5. Latu, Vena. Digital Drawings/ Diagrams. In-between Va, Connected by the Va . 2021

Sociospatial relationships - Woven Genealogy

Fig 5.6. Latu, Vena. Digital Drawings/ Diagrams. Lalava a representation of Genealogical Connection, Va Connection of kin. 2021

The later term 'va' is a common terminology within the Polynesian language that describes the space between things or people.[19] Va is the in-between space, or the betweenness, not empty space, but rather the space that connects people and environment, the space that context and gives meaning to all.[20] Dr. Tevita Ka'ili's uses specific Tongan words that incorporate the term 'va' as a root word, highlighting the different forms of 'va.'

> *When Tongan seafarers sail from one island to another, the open sea between the two islands is called vaha or vahanoa ((fig 5.7) both words are formed from the root word va) […] when my Tongan friends in Aotearoa and Australia use the Internet to contact me (Tevita Kai'li), they call the internet 'Vahaope.'[21]*

According to Dr Okusitino Mahina, there are four main social dimensions of va; which are the physical, intellectual, social and symbolic. Within human social contexts, va is experienced in social, sociospatial relations and space between people.[22] This is what differentiates va from the Western terminology of 'open space' as it refers to a physical space whereas va serves as the 'relational in between' – through the four dimensions as mentioned.

The in-between va can also be viewed as 'social,' as it implies as the space that 'relates' or 'connect' whereas socially engaging with another requires human encounters. This is where the importance of spatiality has a significance as it depicts how it links to sociality in Tongan social ontology.[23] With Ka'ili's use of va as a root word, he uses 'vaofi' as an example to describe the social closeness between extended families which translates to literally, spatially near to one another. This leading us into how the 'sociospatial va' works, which is a relationship between 'kainga,'[24] related to each other through genealogy (fig 5.6). The first time I came across the term va, I asked my mother for its translation to which she described it as a relationship between families – a lineage that binds you together through family ties.

19 *Tevita O. Ka'ili, "Tauhi va: Nurturing Tongan sociospatial ties in Maui and beyond." The Con¬temporary Pacific 17, no. 1 (2005): 89.*
20 *Albert Wendt, "Tatauing the Post Colonial Body," Span nos. 42-43 (1996): 23*
21 *Ka'ili, 2005: 89*
22 *Quote by Okusitino Mahina obtained from Tevita O. Ka'ili, "Tauhi va: Nurturing Tongan sociospatial ties in Maui and beyond." The Con¬temporary Pacific 17, no. 1 (2005): 89.*
23 *Ka'ili, 2005: 90*
24 *Kainga is the Tongan translation for kin or relatives. Ibid*

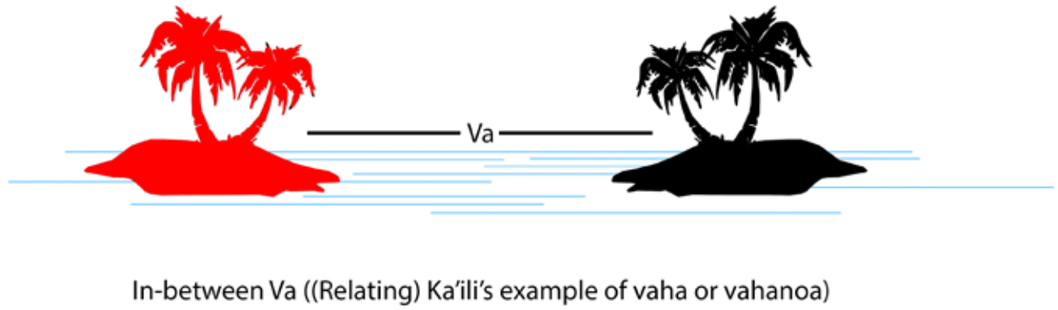


Fig 5.7. Latu, Vena. Digital Drawings/ Diagrams. Vaha or Vahanoa. 2021

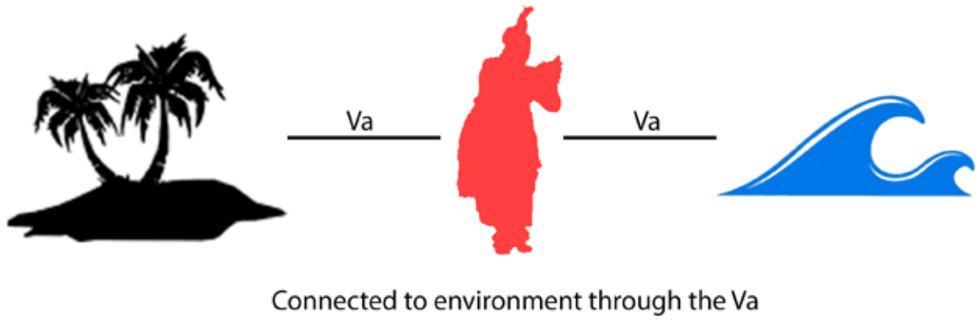


Fig 5.8. Latu, Vena. Digital Drawings/ Diagrams. Environmental Connection through the Va. 2021

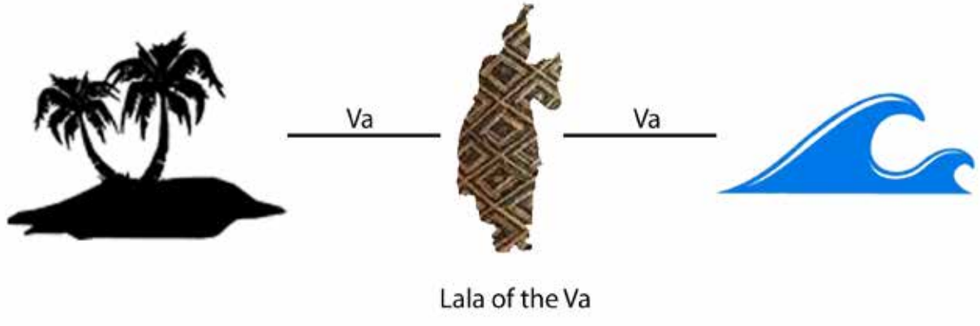


Fig 5.9. Latu, Vena. Digital Drawings/ Diagrams. Lala of the Va - Point of Intersection. 2021

Through its cultural meanings of relational space, the va is almost of another realm that one enters both physically and metaphorically – as we stand between land and ocean, we are connected to these environments through the va (fig 5.8). But when we put lala in front of it and place into that same scenario, we are then intersecting the va becoming what connects both environmental realms (fig 5.9). The va is never disrupted when one enters as it is forever inviting both genealogically (sociospatially), socially and in-between. John Belford Lelaulu has diagrammed how the va multiplies when one stands in between environmental realms, thus creating two va relationships through one's intersection of space in-between (fig 5.8). By employing Ka'ili's root word strategy, I have observed the term 'vaka' – referring to the traditional canoes, a physical object whereas Ka'ili's examples were a description of relational space. I investigated this term both through the understandings of both 'lala' and 'va,' building onto its already established meaning. When lala and va are placed together, lalava translates to the intersection of relational space.[25] As lalava binds and ties the vaka together, it is then set out to voyage across the boundless seas, thus 'intersecting' the in-between va, thus becoming the centre of connection, physically, socially, spatially and symbolically (fig 5.10). As the vaka physically places itself on the ocean surface, navigators search the va for directional indication of land. Environmental directions that would later be interpreted into patterns helping to establish a sense of cultural identity symbolising a way of life. The interpretation gone into the term lalava does not determine what I have said to be correct but combines meanings of its root words that further enhances a metaphorical understanding of how ancient Tongans viewed their world, thus falling into the category of heliaki.

25 *Latu, 2020: 22*

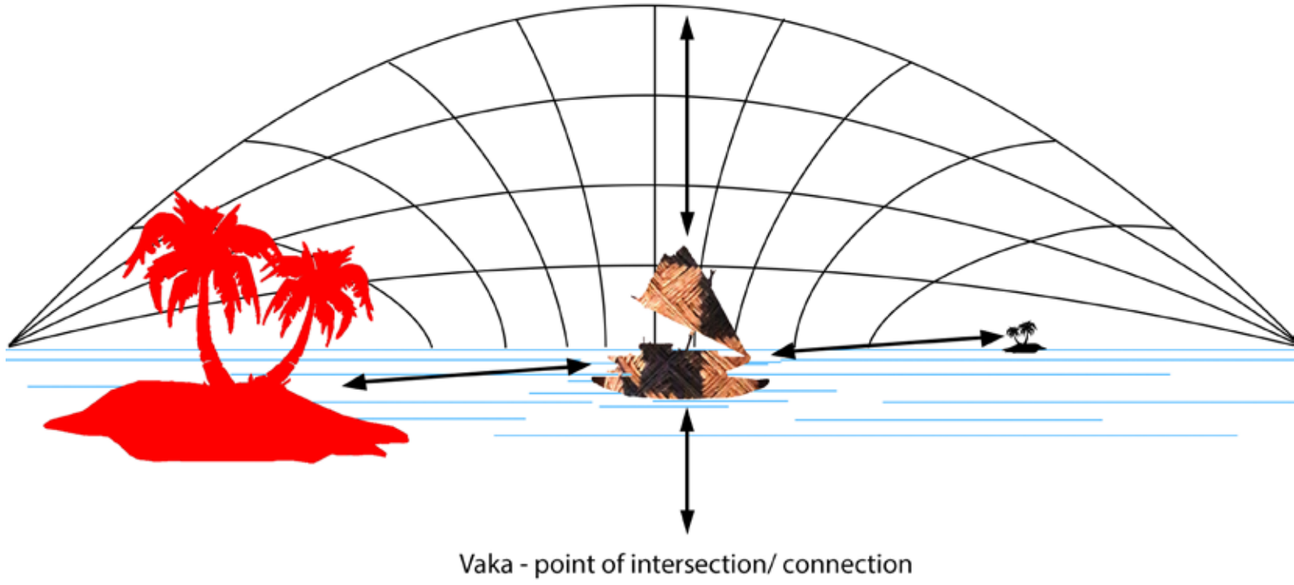


Fig 5.10. Latu, Vena. Digital Drawings/ Diagrams. Va-ka, Point of Intersection. 2021

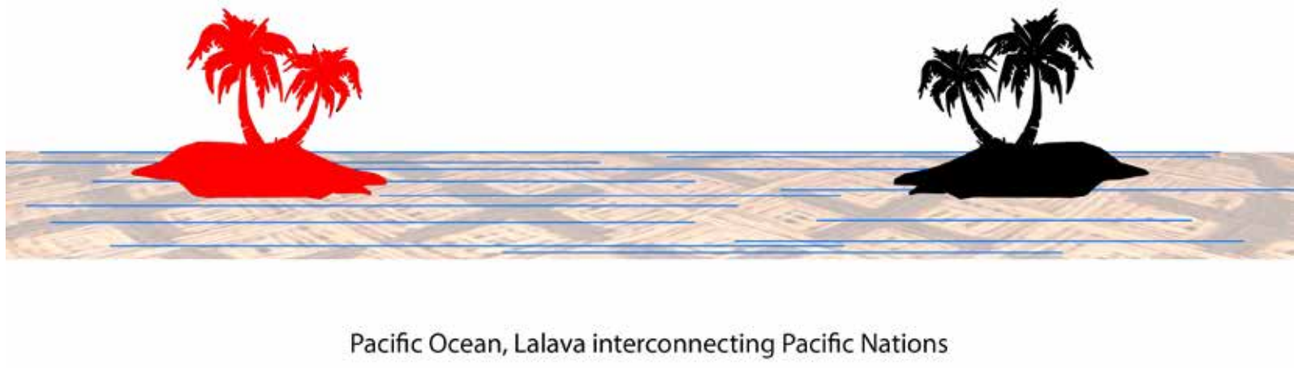


Fig 5.11. Latu, Vena. Digital Drawings/ Diagrams. Pacific Ocean, Lalava Interpretation. 2021

Tongan Fale

For this research project, I will be focussing primarily on the Tongan rendition of the fale – observing its structural formats as well as the functionality of how lalava patterns contributes to the maintenance of the timber framing. As this thesis undergoes an auto-ethnographic method of learning, it is important to learn the typologies of the Tongan fale design. Oceanian architecture can be varied as with the different cultures. The Pacific Ocean is divided into three major groups: Micronesia, Polynesia, and Melanesia, a population that spreads over some thirty thousand islands, the majority of which are in the Southern Hemisphere. Tonga is part of the Polynesia group. Despite residing within the Pacific, and interconnected through the ocean, each Oceanian nation contains its own specific rituals and traditions.

In architecture, apart from the similarity of climate, it is difficult to generalize the architecture of the Pacific Ocean. The similarity of climate in turn determines the types of materials available and the construction technology that has been developed and greatly improved over hundreds of years.[26] Most of the Pacific contains a warm and humid tropical climate with high rainfalls suitable for lush vegetation – providing Oceania with organic building materials such as timber, bamboo, cane, grasses, coconut (husk) and reeds. There are very limited resources that provide information about Tongan architecture, however, visually the Tongan rendition of the fale share strong similarities with the Samoan fale, both in elevation and values.

Before the introduction of the fale, according to Paula Tuivailala, Tongans originally lived in ana (cave).[27] A naturally constructed stone shelter was ideal to shield ancient Tongans from the harsh tropical weather. Caves would only be the first use of stone architecture in Tonga, as they would later develop a stone building technique that would later become an exceptional example of native Oceania architecture, as they develop and change in relatively different ways, or more precisely, they are constantly transforming. The most famous of Tongan stone architecture is the Ha'amonga a Maui (fig 6) which translate to "Maui's burden," a historical monument built around 1200AD by Tuitatui, the eleventh king of Tonga. The purpose of the Ha'amonga has been the subject of much speculation. Some speculated that it is a gateway to a royal property, while others compared it to the ancient Celtic monument, the Stonehenge. However, according to the late King Taufa'ahau Tupou IV, the notch carved on the top lintel had an important role in the lunar calendar, serving as a guide in the establishment of a new year. The stone building techniques in Tonga are a remarkable example of the indigenous architecture of Oceania. Stone architecture also serves as monuments to those who have passed on – most monuments were known as Langi,[28] royal tombs or burial sites of kings and their nobles.[29]

Fig 6. Latu, Vena. Digital Photography. Ha'amonga a Maui. Tonga. 2019

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26 Balwant Saini and Alison Moore, "Traditional Architecture in the Pacific'" (2007) 8
27 Paula Tuivailala, "Tala 'o Tonga (Tonga: Government Printing Department," (1991), 146. Attained from Nonu, 5
28 Langi Tombs – a special burial place for former kings located in the Tongan Village, Lapaha, Tongatapu
29 Nonu, 31

There seems to be an uncertainty as to what was the first rendition of the Tongan fale. According to Paula Folau Nonu's 'Reconnecting with the past,' and Andrew Anderson's 'Tonga: apt housing,' they refer to the fale hunuki (fig 7.2) as the first rendition of the fale. Whereas Tongan architect Solomone Tuita suggests that the first fale was the fale faka-hekeheke (fig 7.1), which he describes as being built around a tree.[30] The fale faka-hekeheke is interesting as the tree would indicate as the inspiration of what would later be known as the 'pou'.[31] This thesis will refer to the fale faka-hekeheke as the origin fale as it reveals a gradual development pattern that starts with a single 'pou.' The fale faka-hekeheke consist of branches of the same length that were sharpened to a point and pierced the ground at an incline plane, with the tops of these branches leaning inwards and supported by the tree's trunk. The floor, which was covered in layers of leaves, was comfortable enough to sleep on, and the roof was thick enough to keep the sun and rain out.[32] Following the fale faka-hekeheke, the fale hunuki, was the first independent structure as it didn't rely on natural structures for stability. The fale hunuki consist of two 'pous' that holds the ridge beam in which the rafters fall towards the ground that acts as both the roof and wall – similar to a tent-like structure. A similar structure to this is the fale faka-funa (fig 7.3), which existed at the same time as the fale hunuki, reciprocating the same trend of a roof that also acts as a wall. What differentiates the two fales is its structural outcome, as one has a triangular formation whereas the other consists of a much rounder shape. Evolving from the fale hunuki and fale faka-funa was the fale faha'iua (fig 7.4) – very similar to the fale hunuki in structural system as it involves the two main posts but differs as its incorporation of four or more 'secondary vertical posts' or 'pou fehihi.' The inclusion of the pou fehihi acts as a support to the main post as it elevates the roof from the ground for the addition of low walls, severing the notion of roof that also acts as walls. The evolution of the fale does not imply new functions for these structures as it was used for the same purpose as its predecessors, but the fale faha'iua was better to handle the wind than the fale hunuhki.[33]

30 Charmaine 'Ilaiu, "Tauhi Va: The first space," Interstices: Journal of Architecture and Related Arts, (2009): 23

31 Pou is the name of the main structural posts that support the roof

32 Solomon e Tuita, "Towards a Tongan architecture: a commentary from a Tongan perspective,"(1988): 40, acquired from Ilaiu, 23

33 Nonu, 12

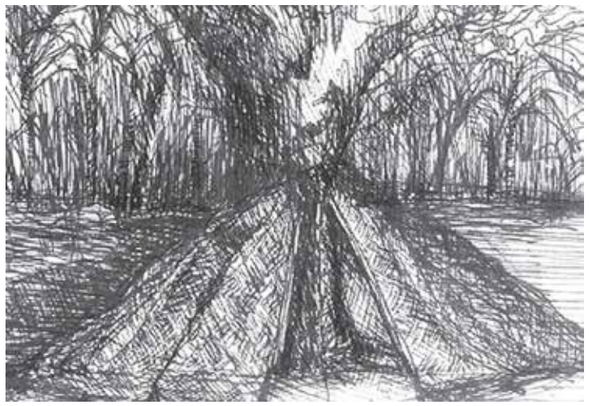

Fig 7.1. Drawing of the Fale Faka-Hekeheke by Ilaiu, Charmaine (2009). Ilaiu, Charmaine. "TauhiVa: The First Space." 2009: 23

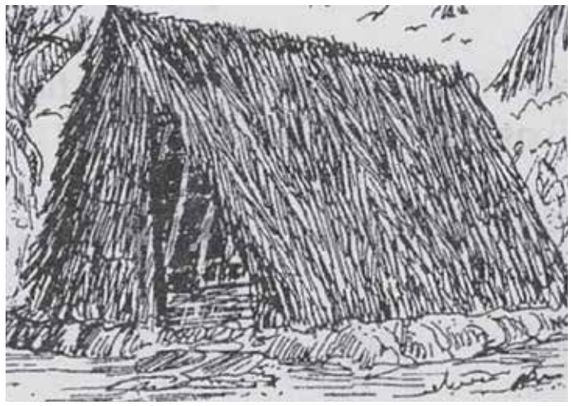

Fig 7.2. Fale Hunuki Drawing by the Potungaue Ako (Ministry of Education, Tonga) 2005. Retrieved from Ilaiu, Charmaine (2009). "TauhiVa: The First Space." 2009: 23

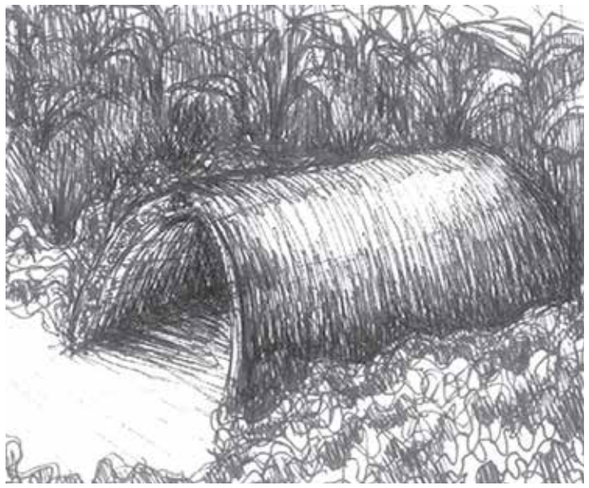

Fig 7.3. Drawing of the Fale faka-Funa by Ilaiu, Charmaine (2009). Ilaiu, Charmaine. "TauhiVa: The First Space." 2009: 24

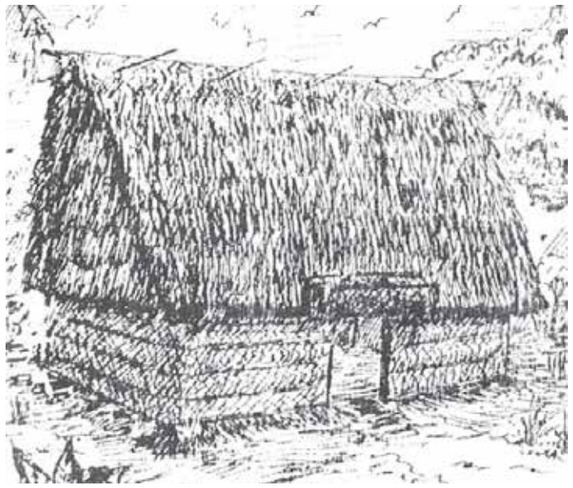

Fig 7.4. Drawing of the Fale Faha'iua Drawing by the Potungaue Ako (Ministry of Education, Tonga) 2005. Retrieved from Ilaiu, Charmaine (2009). "TauhiVa: The First Space." 2009: 25

Tongan fale extended from two posts to four posts system arriving at the fale fakamanuka (fig 7.5) or fale Faka-Tonga (fig 7.6). The internal space is opened up in this arrangement articulated by the curvilinear roof and end walls.[34] The construction stratifies the internal space, which is attached by the diagonal teke (strut) members and the teke on the two round ends. The fale fakamanuka and fale Faka-Tonga is visually the most familiar amongst younger Tongans as it shares similarities to the Samoan fale with its curved roof and capsule shaped floor plan.

> *The fale Faka-Tonga and the fale faka-Manuka appear the same from the outside but structurally their roof members are slightly different. The fale faka-Tonga used teke tau'olunga, or vertical struts, supported by lango, or beams, whilst the fale faka-Manuka's roof had three teke, or angle struts, supported on the three lango.[35]*

The fale faka-Manuka is still practiced today in Tonga as it is the structural system used for the Saione Motu'a Chapel and the The Latafoa Free Wesleyan Church. The Tongan society is also reflected in the fale from the various members making up the structure reflect different strata of the society from the Taufatungamotu'a at the ridge representing the king down to the pou (posts) being the commoners who hold up the social pyramid[36] (fig 7.7). This showcases the influences of human relationships that helped built a society - as the structure of the fale is not a symbol of hierarchy but a reflection of a supportive social system that make up the Tongan civilization. From an observational perspective, the fale is reminiscent of the three realms, the dome shaped roof represents the sky, the ground the ocean, and the in- between – the space inhabited and utilised most by humans.

34 *Tomui Kaloni, "Tonga: Architecture and Rationale," (1990), 46*
35 *Ilaiu, 28*
36 *Kaloni, 22*

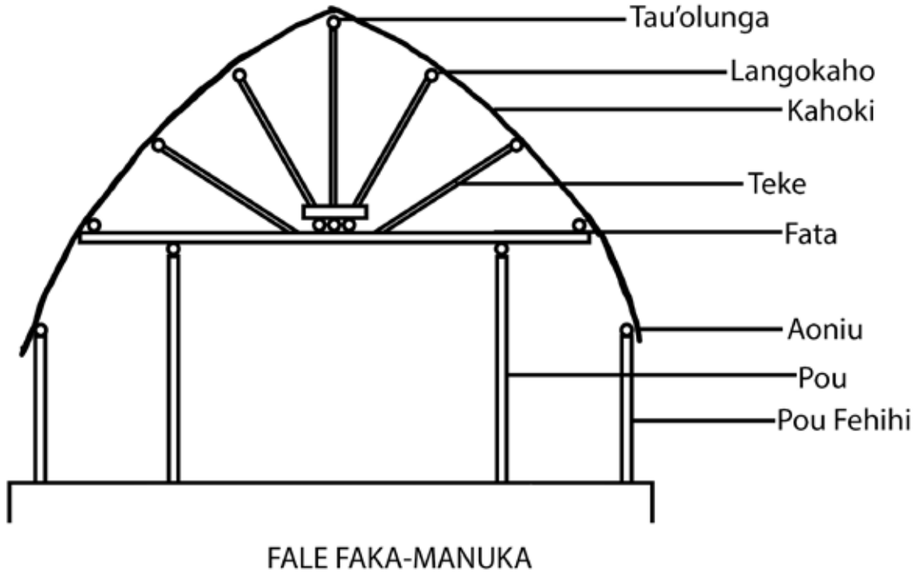

Fig 7.5. Latu, Vena. Digital Drawing/ Diagrams. Section Drawing of the Fala Faka-Manuka. 2021

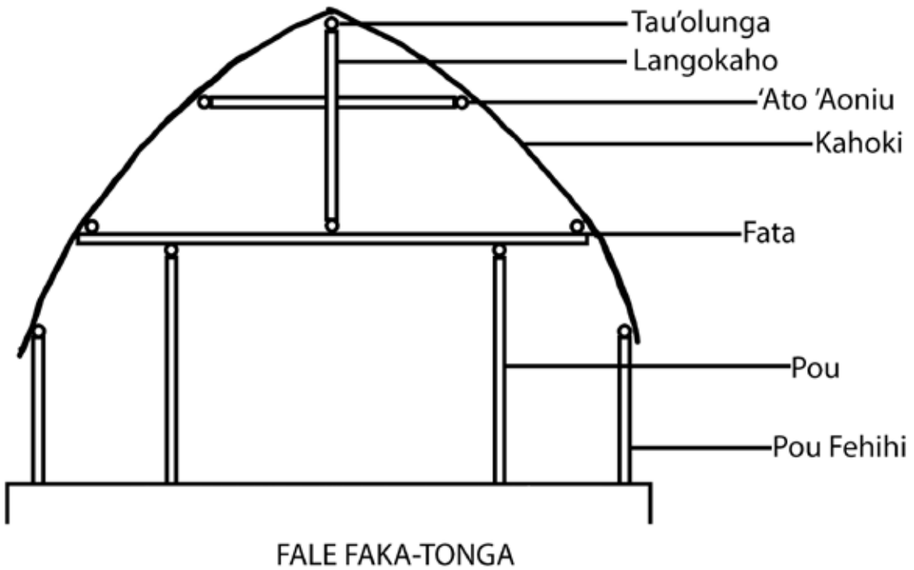

Fig 7.6. Latu, Vena. Digital Drawing/ Diagrams. Section Drawing of the Fala Faka-Tonga. 2021

Lalava Aesthetics

Art and aesthetics are an influential element of Tongan culture, an abstract language of knowledge that has been passed down through centuries, where it has been reinterpreted and influenced through time. To Oceanian people, art is more than a cultural representation but an embodiment that connects us to our ancestors. According to Dr Adrienne Kaeppler, "An aesthetic or aesthetic system is socially constructed evaluative way of thinking that is part of a larger belief system that underlies social action."[37] In Tongan art, it is divided into three principal genres: tufunga, material arts, faiva, performance arts, and nimamea'a, fine arts.[38] Earlier I referred to Filipe Tohi as a Tufunga lalava, as he is a master in the art of lalava but the term tufunga too was mentioned as lalava is a form of material arts; as it revolves around the notion of binding materials together using kafa. Western ideas of aesthetics primarily concern itself with beauty and connoisseurship,[39] which is conceptually inadequate when observing lalava or general Oceanian art.

Art and aesthetic structures are social structures and communicate societal meanings in different ways.[40] The lashings of lalava are patterned after human encounters; teaching us how to live/ interact/ be.[41] Before the written language, lalava and other general Tongan art were symbolic documentations that were reminiscent of a history experienced by our ancestors voyaging out onto sea. Therefore, when viewing the structural system of the fale, it provides a new interpreted perspective, as sections of the fale are a representation of the human society (fig 7.7), as lalava binds the fale together, it is also a representation of our ancestors binding our society together – as the lashings embody their memories and knowledge. Aesthetically, lalava knows no bounds both as an art and in its literacy form. From a phenomenological perspective, the experience of 'lalava making' can be viewed as a form of faiva; subtracting the materials aspect, we are left with the hand gestures of the 'making motion.' As an architectural designer, this phenomenological experience, will provide a basis of both delivering a teaching method as well as outlining structural forms.

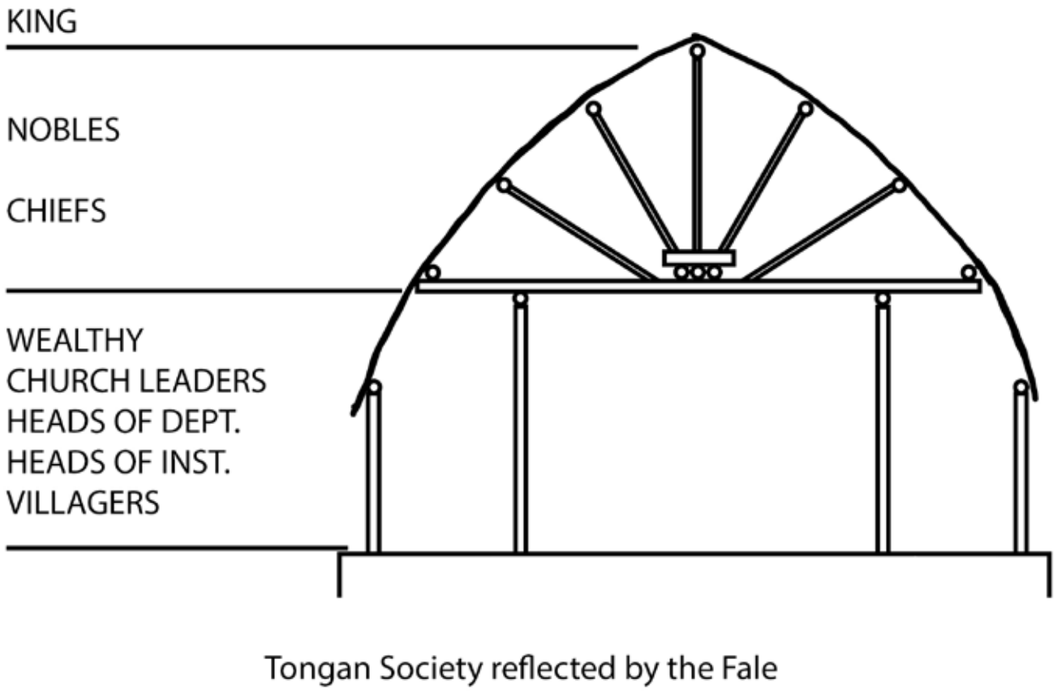

Fig 7.7. Latu, Vena. Digital Drawing/ Diagrams. Section Drawing of the Fala Faka-Manuka and Tongan Society Reflected through its Structure. 2021

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37 Adrienne Kaeppler, "Aesthetics, Carving, Metaphor, and Allusion," The Pacific Arts of Polynesia & Micronesia (2008), 58
38 Tevita Ka'ili, "Sio FakaTonga 'Ae 'Aati FakaTonga: Tongan Views of Tongan Arts," The ancestors of Tongan Arts (2008), 5
39 Kaeppler (2008): 57
40 Kaeppler, (2008): 58
41 Karen Stevenson, "Lalava-ology: A Pacific Aesthetic," In Filipe Tohi: Genealogy of Lines—Hohoko e Tohitohi, eds. Filipe Tohi, Simon Rees, and Gregory Burke (New Plymouth, New Zealand: Govett-Brewster Art Gallery, 2002), 18

Contemporary Oceanian artist that has migrated to countries such as New Zealand and Australia use their artistic practice and have fused the cultural knowledge of the Pacific with the materials of their new home – a metaphorical connection between times. Filipe Tohi and his integration of the traditional textile technologies of Tonga into what he terms 'lalava-ology.'[42] Tohi was fortunate enough to study under one of the most revered tufunga lalava in the Pacific, Tamale, who unfortunately had passed on. Through Tohi's experiences in working with lalava; it has allowed him to unravel a cultural philosophy unique to ancient Oceania but more interestingly, he states that 'the answers of the universe can be found within the patterns of lalava.'[43] In his artistic practice, Tohi has experimented with a variety of different media in an attempt to help him study the lines of lalava – uncovering the knowledge embedded by ancient Tongans and presenting it to the world. According to Kaeppler 'Pacific art is an understanding of the invisible through the visible, gaining a philosophical understanding of cultural knowledge through the seen and unseen.'[44] For example, Tohi's Manulele (ruuning bird) sculpture (fig 8.2), his process consists of turning the geometric patterns of lalava into a two-dimensional digital drawing where he visualised the shape of the manulele (fig 8.1). Tohi's ability to outline images from the lalava drawing is comparable to how ancient navigators observed the unseen such as understanding how to read the stars and connecting them to islands. Mahina notes "The celestial bodies in the sky, or outer space, or vava, were treated as kohi Velenga, where the points of spatial intersection of imaginary lines from the actual stars, and galaxies of value to navigation and voyaging."[45] As an architectural designer, this method of seeing the unseen will be critical in unravelling methods of both teaching how to make lalava and forming a structural conclusion.

42 Stevenson, (2002): 17
43 Ibid.
44 Kaeppler, Adrienne. "Hawaiian art and society: traditions and transformations." Transformations of Polynesian Culture. 1985: 120
45 Mahina, (2002): 6

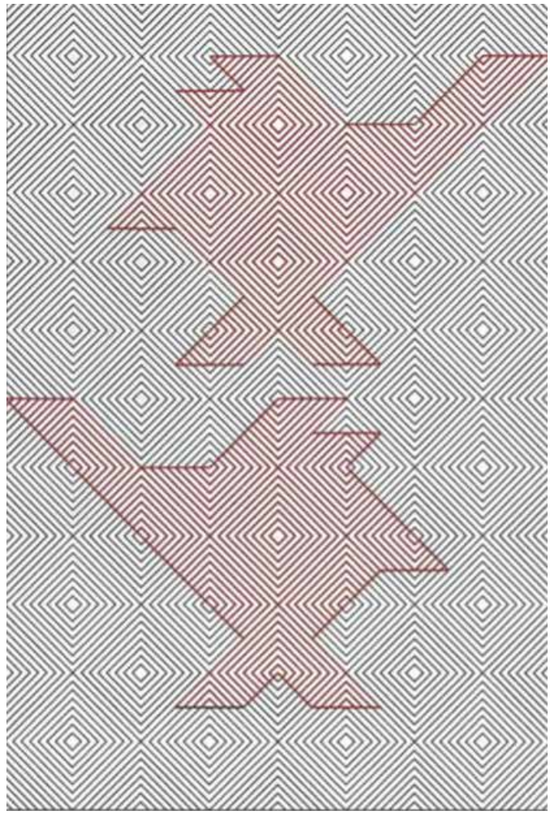

Fig 8.1.Two dimensional drawing of lalava patterns with manulele design formed. 2007. Retrieved from Stevenson, K. (2015). Filipe Tohi: Journey to the present, Makahoko mei lotokafa, University of the South Pacific Press, 2015: 81

Fig 8.2. Manulele lalava sculpture. 2007. Stevenson, K. (2015). Filipe Tohi: Journey to the present, Makahoko mei lotokafa, University of the South Pacific Press, 2015: 80

Fig 9. Latu, Vena. Lalava Outfit. Visulising Lalava Outside of its Traditional Context. 2018

I want to analyse an artistic rendition of lalava I created back in 2018 as undertaking this research project it has provided a new perspective on this piece as compared to when I created it – the lalava outfit (fig 9). At the time my focus was on the kafa as my experience with this material was from using it as clothing accessories and wanted to make it the focus. It also was an attempt in experimenting with lalava from a design context outside of spatial or architectural. Tohi compares the complexity of lalava with human DNA, consisting as it does in several levels of intricacy.[46] I have connected this comparison to a quote from Dr Albert Refiti:

> *"Your body does not necessarily belong to you as an individual. Because you are woven from the flesh of the dead, your body belong to the ancestors, the birth of place and to the community that shaped and cared for you."[47]*

This brings new meaning to the lalava outfit in the sense that lashings are a representation of our ancestors and through this context it visualises these notions into physical form, suggesting that we are wearing our ancestors. The kafa is a genealogical metaphor and that no matter where we are in the world, our ancestors are embedded in our genealogy tying us back to our homeland. When we see lalava within the fale it is the presence of our ancestors woven onto it similar to the tiki carvings of the Māori whare. With this design research I intend to use both traditional and modern methods of sharing the knowledge I have attained through 'making' using my experiences.

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46 Karen Jacobs, "Artists-in-Residence: Polynesian engagements with the past," in Journal of Museum Ethnography, No. 21, 2009: 116

47 Albert Refiti, "The Forked Centre: Duality & Privacy in Polynesian Spaces & Architecture," in AlterNative: An International Journal of Indigenous Peoples. 2008: 99

Chapter Two: Methods and Methodologies

> *Obtaining knowledge was developed through a means of art-making and talanoa; through performances, stories and symbols.*[48]

According to Filipe Tohi lalava patterns with its variations gives insight into the history of Pacific people and the environment in which they lived.[49] *Missionaries travelling from the Western side of the world presented a way of life that have now simplified how ancient Tongans and Oceanians approached daily living from architecture, materials, crafting and forms of communication (written language). Oceanian motifs and architectural systems were admired for its aesthetics and uniqueness as they are both beautiful and inspiring. This practice led research project, undergoes an auto-ethnographic and phenomenological approach in uncovering the narratology of making through my experience as well as analysing the cultural practices occurring within cultural societies that are of interest. Through a combination of my experiences, I am able to uncover and interpret lalava both in its making form and as an artifact to visually exhibit 'how to make lalava' utilising different forms of media.*

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48 Vaioleti, Dr. Timote. Talanoa: Differentiating the Talanoa Research Methodology from Phenomenology, Narrative, Kaupapa Maori and Feminist Methodologies. 2013: 196

49 "Lalava Residency." The University of Auckland. Retrieved from https://www.auckland.ac.nz/en/on-campus/life-on-campus/pacific-life/fale-pasifika/lalava-residency.html

Lalava Analysis

Conducting an analysis on lalava that was solely based on observation, both in person and through pictorials, presented several obstacles, as learning a discipline like this is best done under the supervision of an expert rather than by self-teaching. Unfortunately, due to COVID-19 lockdown restrictions, the idea of learning under the guidance of such experts became very unrealistic. However, it is not impossible to learn how to create this ancient art when relying on one's intuition as it provides an opportunity to undertake a series of trial and error, experimenting with scales and materials. This provided a chance to unravel similarities between different patterns used for the same conjunction types and how they work in maintaining stability.

***Fale Pasifika** (fig 10.1) – located at the University of Auckland, New Zealand Building codes prevented lalava to function as a joining mechanism while also allowing it to maintain its decorative messages of the past.[50] When analysing the Fale Pasifika, it is noticeable that the beams decorating the roof space do not stack on top of one another as shown in the diagrams of the fale faka-Manuka and fale faka-Tonga but are fused together. Observing the lalava on the fused timber framing, when compared to the lalava on fales that layer its timber pieces such as the Saione Motu'a and Lotofoa Free Wesleyan Church, the lalava of the Fale Pasifika comes off as more two-dimensional, as the layering of timber pieces allow for more movement and a harmonious flow between lalava and timber. In the fale Pasifika we are unable to understand how they are functionally connected.*

***Saione Motu'a Chapel and Lotofoa Free Wesleyan Church** (fig 10.2) – these two fales consist of the traditional fale faka-Manuka structural system, as well as stacking its timber pieces, allowing the lalava to be both constructional and decorative. Although the lalava is not functionally holding the fale together, the layering system makes it seem as it is. The approach of stacking the timber pieces on top of one another and side by side brings forth a multi-dimensional liveliness to the lalava as lines and patterns lashing in between the conjunctions, we can clearly examine what strengthens the lalava when binding two or more materials. When we compare the lalava to that of the Fale Pasifika, or more specifically, the lalava patterns presented on the conjunctions; the Fale Pasifika showcases much larger patterns whereas Saione Motu'a and Lotofoa show multiple smaller patterns. This suggests that the latter was the more appropriate approach in efficiently constructing the fale in ancient times as multiple smaller patterns suggest a much stronger resistance to load management.*

50 Semisi Fetokai Potauaine, 'The tectonic of the fale.' Interstices: Journal of Architecture and Related Arts (2005)

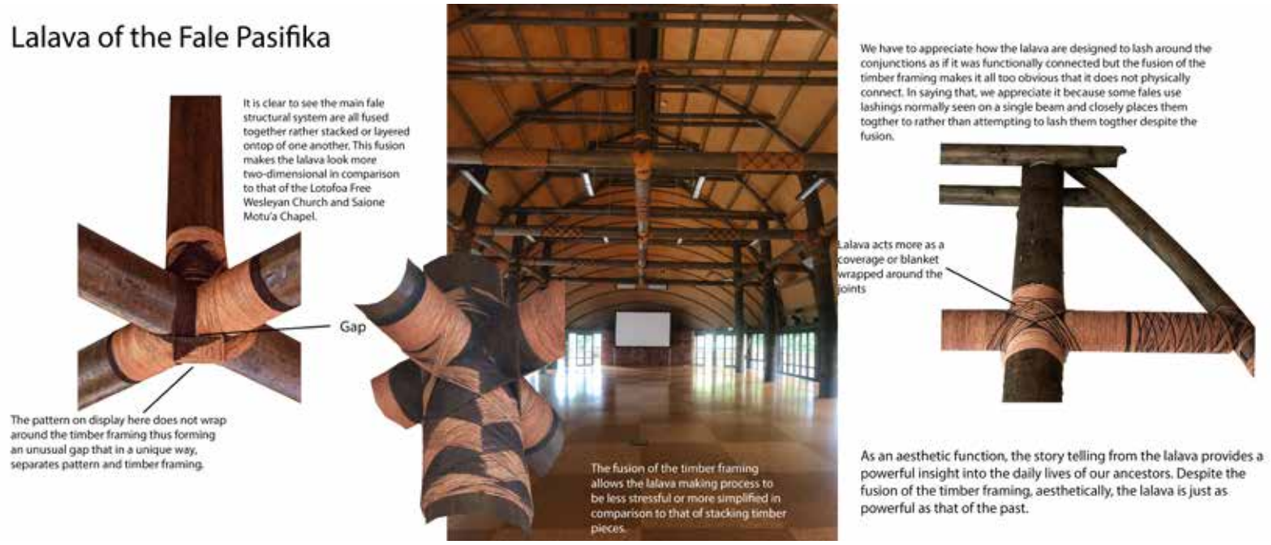

Fig 10.1. Latu, Vena. Analysis. Lalava of the Fale Pasifika. 2021

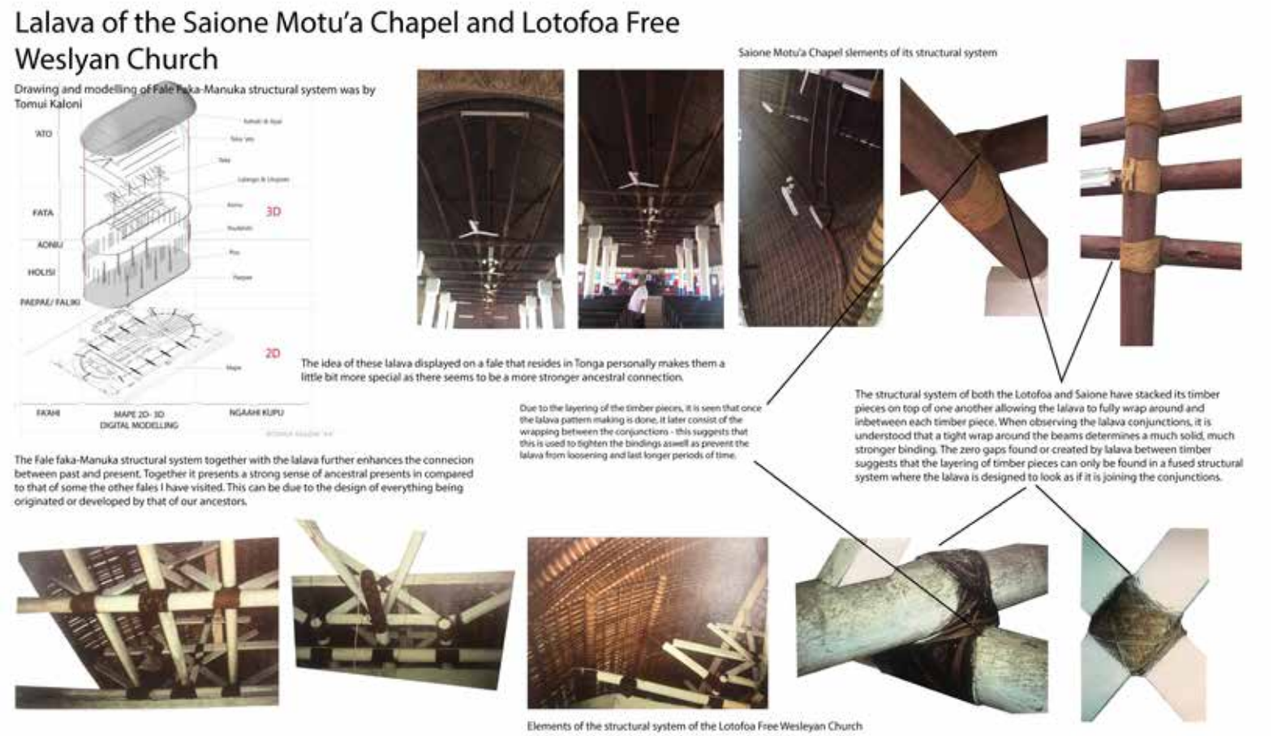

Fig 10.2. Latu, Vena. Analysis. Lalava of the Saione Motu'a Chapel and Lotofoa Free Wesleyan Church. 2021

Pelehake Free Wesleyan Church of Tonga *(fig 10.3) – like the Fale Pasifika, the Pelehake Free Wesleyan Church does not use the technique of layering its timber beams but rather fuses them. Unlike the other fales I have observed, this Wesleyan church uses a series of fused concrete pou, lalango and toka/'utupoto holding the timber framing that teuteu the roofs va. The use of concrete 'pous' can be seen in the Saione Motu'a chapel which was incorporated due to the roof having shifted from its original location. The lalava on display show no evidence of functionally connecting the beams and posts but are positioned in places that would indicate the required services of lalava. Unfortunately, the lalava does not go beyond the concrete posts and beam as the timber framing above are fused together with no lalava coating. The displayed lalava strongly serves a more decorative aesthetic function.*

Tupou College's Memorial Moulton Chapel *(fig 10.4) – the lalava of the Moulton Chapel is only presented onto the timber beams that wraps around the roof. The patterns the lalava forms can be seen on every other fale that I have visited and images I have examined as it does not bind two or more but a single continuous beam. Presumably the main function of a single post or beam lalava may serve that of aesthetic, but with that said according to Tomui Koloni, the tongi feleano joint, despite being a single beam, it looks to be cut up into two or three pieces with four slim inputs carved in one side and four outputs carved out on the other. These pieces were then put together and are then held together with lalava as well as just a casual wrap around the beam. The single beam lalava could also indicate a repair of damages found on timber pieces such as cracks.*

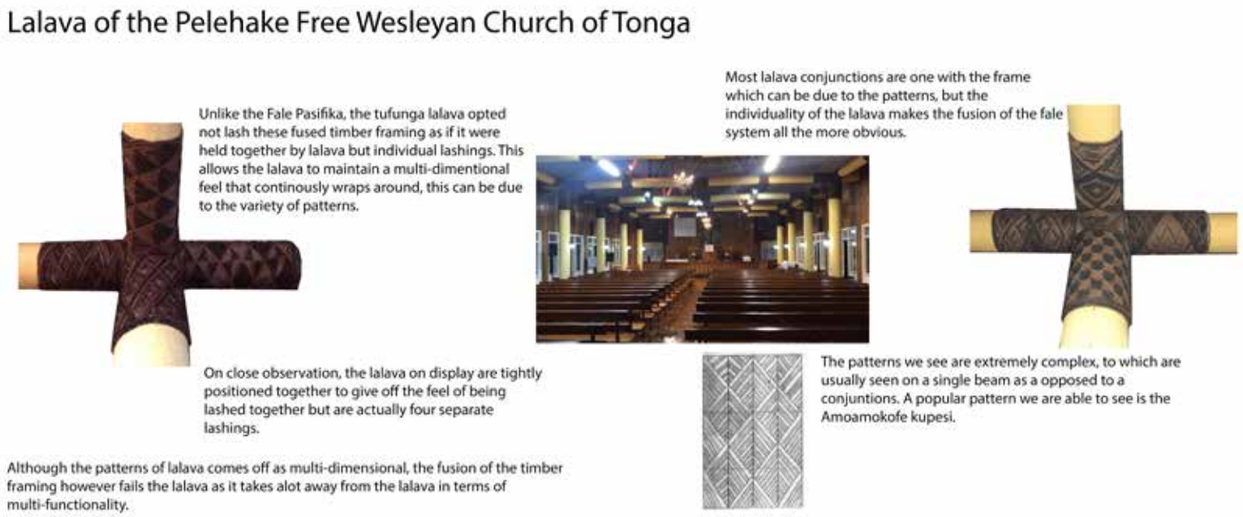

Fig 10.3. Latu, Vena. Analysis. Lalava of the Pelehake Free Wesleyan Church. 2021

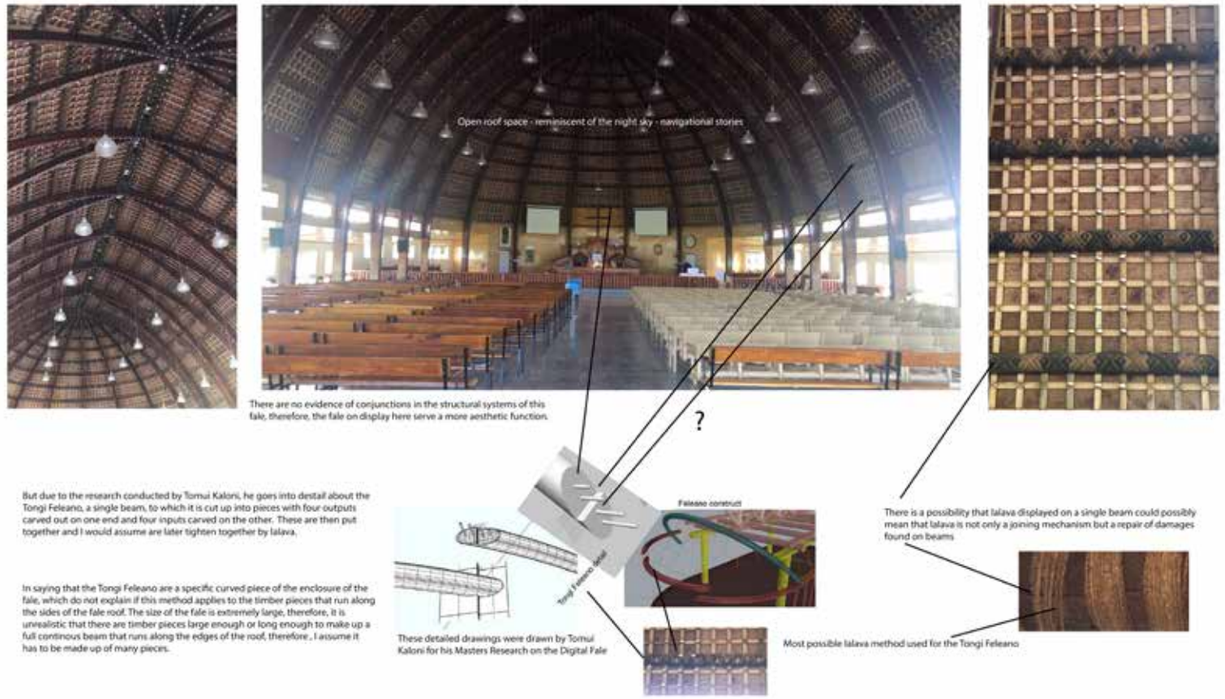

Fig 10.4. Latu, Vena. Analysis. Lalava of Tupou College's Moulton College. 2021

Lalava Patterns and Fractals

The lalava pattern are referred to as kupesi (fig fig 11.1, 11.2, and 11.3), patterns that consist of a triangular form and repetitively placed side by side. Kupesi patterns are reminiscent of aspects of the environment and are very popular when decorating the ngatu (tapa cloth) and tattooing. A common kupesi pattern displayed on lalava is the Amoamokofe Kupesi - The patterns are set up with the midrib of the green coconut frond (palalafa).[51] Patterns making is a common tradition in Tongan culture no matter the practice, but in the case of lalava it more than a decorative aesthetic, but an aesthetic function that maintains structural stability.

Learning to make lalava from an amateur's perspective comes with many challenges, therefore, I had to be creative in unravelling unique ways of tracing the placements of multiple lines and shapes. Observing the shapes of lalava has revealed a multi-dimensional world in which they operate in, allowing viewership from different perspectives. When observing the outlined shapes of lalava; its repetitiveness of geometric patterns reveals a similar sequence to that of fractals.

> *Fractal geometry "is the study of mathematical shapes that display a cascade of never ending, self-similar, meandering details as one observes them more closely." Self-similarity "is a phenomenon where repeated elements change in scale but retain a similar shape." [52]*

The use of fractals in architecture is neither a new phenomenon, nor is it a post-modern response, as many people assume. Many traditional communities and architecture have realised and represented it.[53] Fractals provide a pivotal understanding in pattern lashing and uncovering what contribution patterns serve in the function of constructional lalava. This repetition of shapes especially in the case of lalava provides a state of geometric stability as a joining mechanism. In order to understand this, we must view lalava as a structural entity in itself – geometric stability is the property which preserves the geometry of a structure and allows its elements to act together to resist load.[54] Without the use of patterns, lalava would revert to a singular motion of wrapping around the timber without cross intersecting the kafa, this method will only achieve a state of equilibrium. Though a state of equilibrium will still provide this joining mechanism the function of maintaining some structural stability but the fale however would not withstand harsh weather conditions and is more likely to collapse due to loose joints. The geometry of patterns further solidifies the joint connection as well as the integrity of the fales structural system. By interpreting lalava patterns into fractals, it allows us to gain an understanding of the movement and placement of lines and points of intersection by tracing the outline of shapes (fig 19.2, 19.3 and 19.4). As shown in the lalava analysis, and incorporating Tohi's teachings of two lines spiralling up and down with fractal images indicating when, where and what times each point of intersection is created as well as indicating moments of spiralling up and down. Lalava as a fractal is an interesting analysis, as the geometry of the patterns allows lalava to have a multi-dimensional fractal perspective (fig 12.1, 12.2, 12.3, and 12.4).

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51 Unesco. "Kupesi: A Creative." In Traditional knowledge and wisdom: themes from the Pacific Islands, 2014, 331

52 Jinu Kitchley. "Fractals in Architecture." Architecture and Design-New Delhi- 20, no. 3 2003: 43

53 Kitchley (2003), 45

54 Angus J. Macdonald. "Structural Requirements," Structure and Architecture, 1999: 9

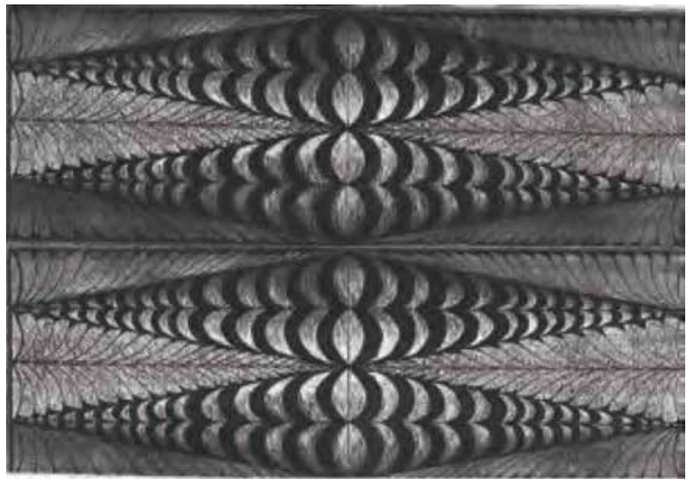


Fig 11.1. Tokelau Feletoa Kupesi. Said to be the flesh of the tuna fish when cut across the middle part. Retrieved from Unesco. Intangible Cultural Heritage Section. 2014. "Kupesi: A Creative." In Traditional knowledge and wisdom : themes from the Pacific Islands: 331

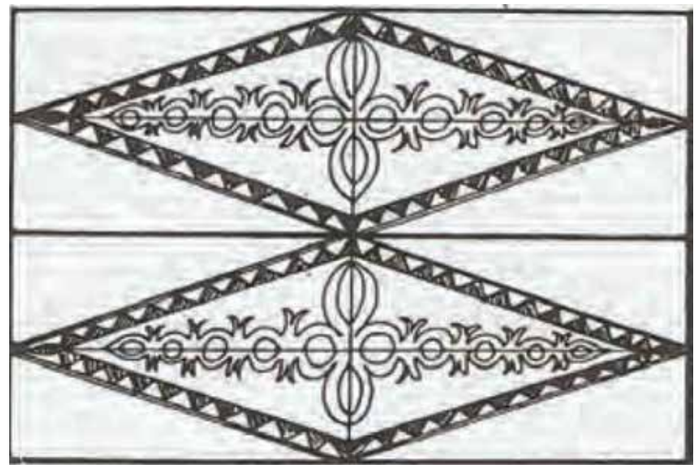


Fig 11.2. Kalou Kupesi. The Kalou is said to be the inside of the mapa fruit. Retrieved from Unesco. Intangible Cultural Heritage Section. 2014. "Kupesi: A Creative." In Traditional knowledge and wisdom : themes from the Pacific Islands: 331

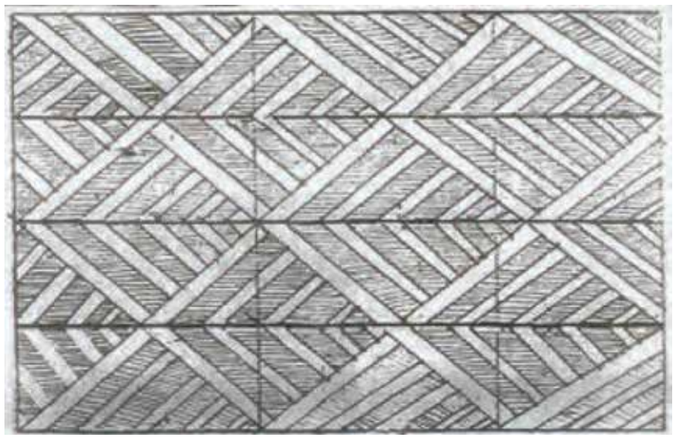


Fig 11.3. Amoamokofe Kupesi. The patterns are set up with the midrib of the green coconut frond (palalafa). Retrieved from Unesco. Intangible Cultural Heritage Section. 2014. "Kupesi: A Creative." In Traditional knowledge and wisdom : themes from the Pacific Islands: 331

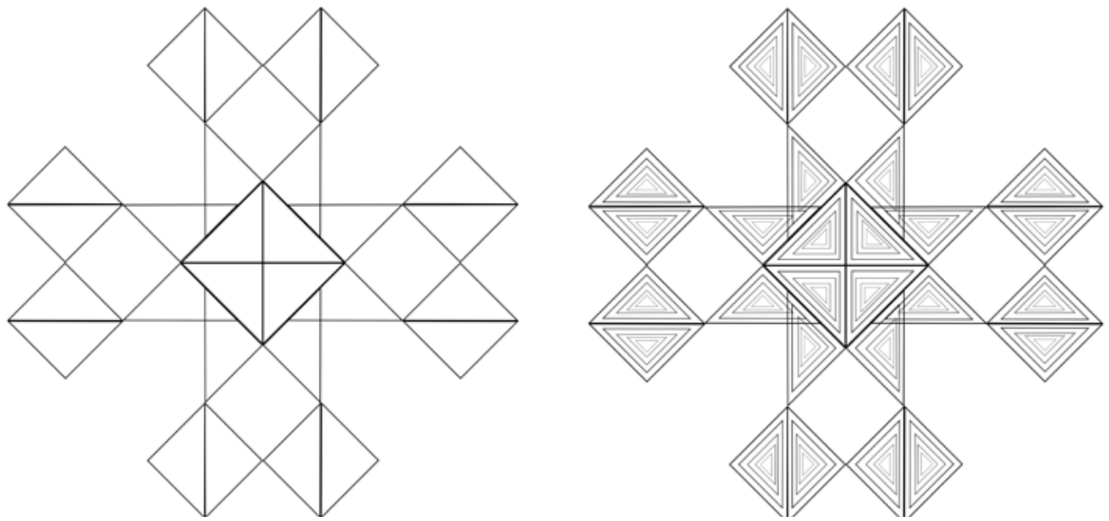


Fig 12.1. Latu, Vena. Digital Drawings/ Diagrams. Lalava Fractal 1. Left, Fractals created from Lalava. Right, Multi-Dimensional Fractal Lalava Perspective. 2021

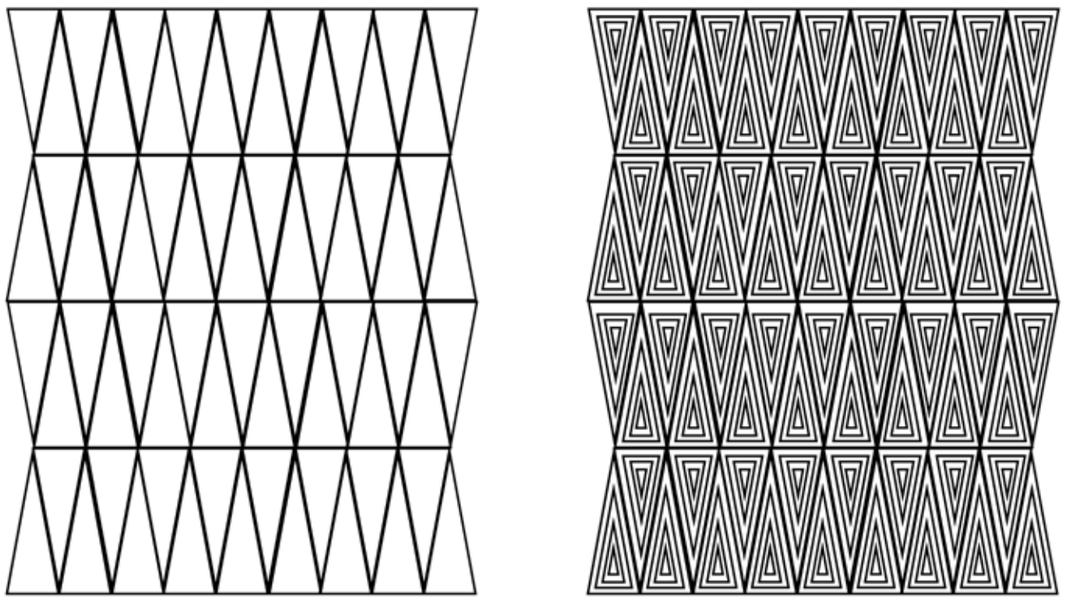


Fig 12.2. Latu, Vena. Digital Drawings/ Diagrams. Lalava Fractal 2. Left, Fractals created from Lalava. Right, Multi-Dimensional Fractal Lalava Perspective. 2021

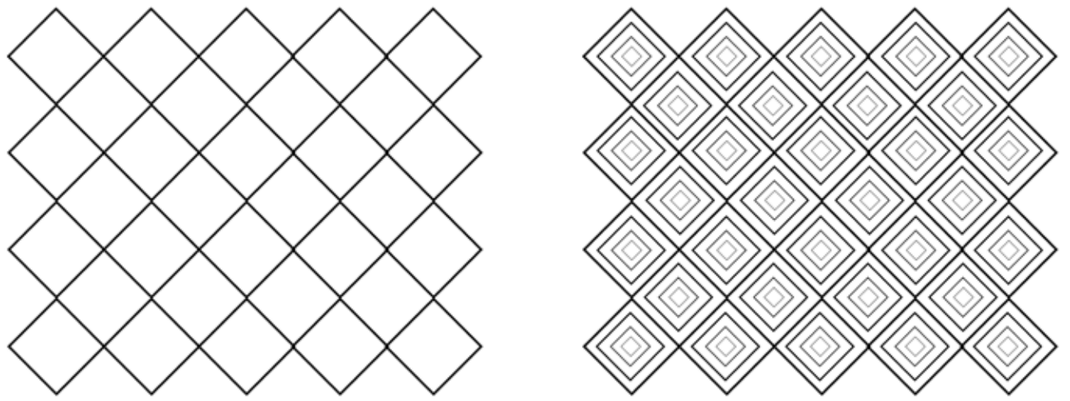


Fig 12.3. Latu, Vena. Digital Drawings/ Diagrams. Lalava Fractal 3. Left, Fractals created from Lalava. Right, Multi-Dimensional Fractal Lalava Perspective. 2021

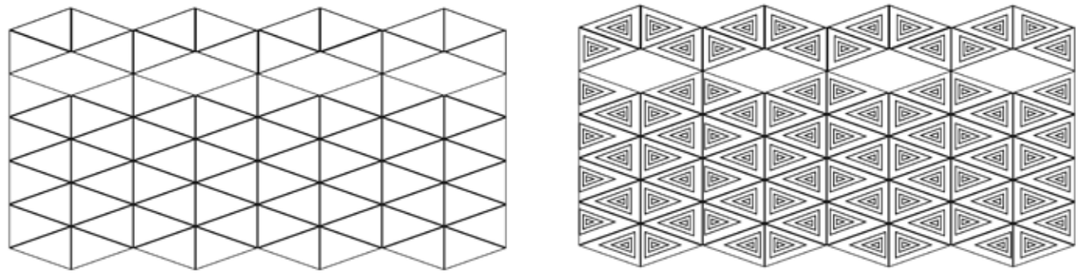


Fig 12.4. Latu, Vena. Digital Drawings/ Diagrams. Lalava Fractal 4. Left, Fractals created from Lalava. Right, Multi-Dimensional Fractal Lalava Perspective. 2021

Faiva and Nimamea'a Lalava

When observing Tongan dances such as the tau'olunga and lakalaka, the hand gestures that are created cannot be described as random movements but according to Adrienne Kaeppler's Aesthetics of Tongan Dance or faiva is described as an interpretation of poetry. By observing the Tongan faiva, I visualised a series of lines that the hand gestures create through movement; this approach unravels a similarity between the hand gestures of Tongan faiva and the notion of tufunga lalava. Interpreting the movement of 'lalava making' as a form of faiva (fig 13) reveals another method of teaching. Kaeppler identifies a similarity between dance and the mixing ceremony of kava that is differentiated through its use of poetry.

> *Our definition of dance must include movements that accompany poetry, for it is mainly in the presence of poetry that dance is differentiated from the ceremonial mixing of kava. Kava mixing uses some of the same arm movements as dance but is done in silence.*[55]

Kaeppler's comparison of the movements of kava mixing with Tongan dance was what brought this idea of using faiva as a means of transforming the hand movements of lalava making into a form of Tongan dance. By indicating a similarity between Tongan faiva and the kava ceremony, this adds to the poetry of metaphorical language practiced by ancient Tonga, as it connects different traditional practices through art.

Pattern making is a common practice in Pacific cultures, as it is evident in both tribal tattooing as well as the ngatu. Lalava pattern language expands from what is seen as the series of lines documented from the hand gestures of faiva lalava also reveal a pattern of movements. These movements were reimagined as a sequence of patterns one would see on a tapa cloth – visual instructions of specific lalava conjunctions (fig 14). The practice of ngatu pattern making and faiva are interesting as both traditions are strongly performed in the present time and are well known amongst the modern generation of Tongans. By using these traditional methods to pass on the knowledge of lalava making also allows ones to learn another traditional artistic practice.

55 *Adrienne Kaeppler. "Aesthetic of Tongan Dance." Ethnomusicology Vol. 15, No. 2, 1971: 176*

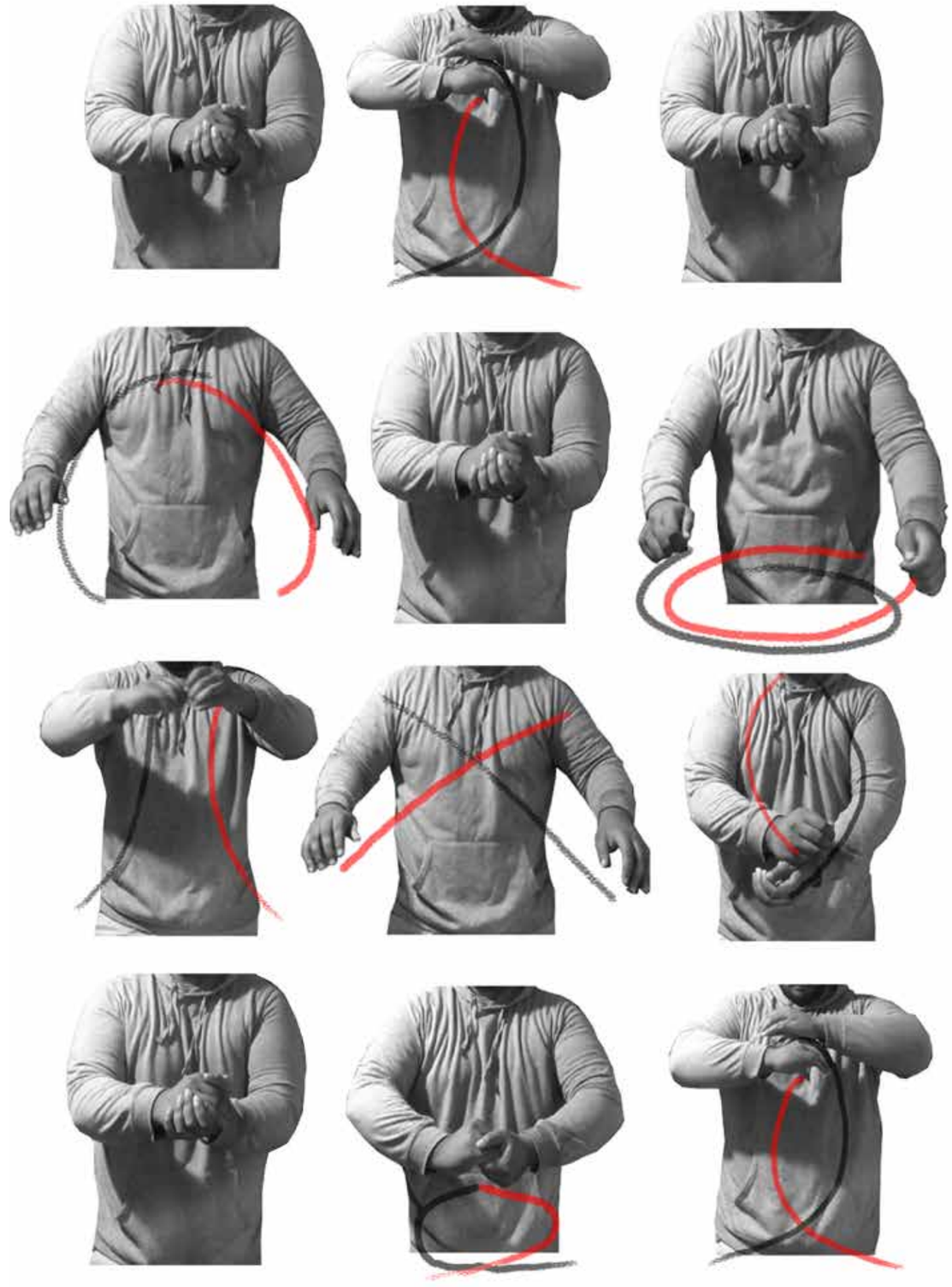


Fig 13. Latu, Vena. Videography. Faiva Lalava. Tracing the Hand Gestures of the Faiva Lalava. 2021

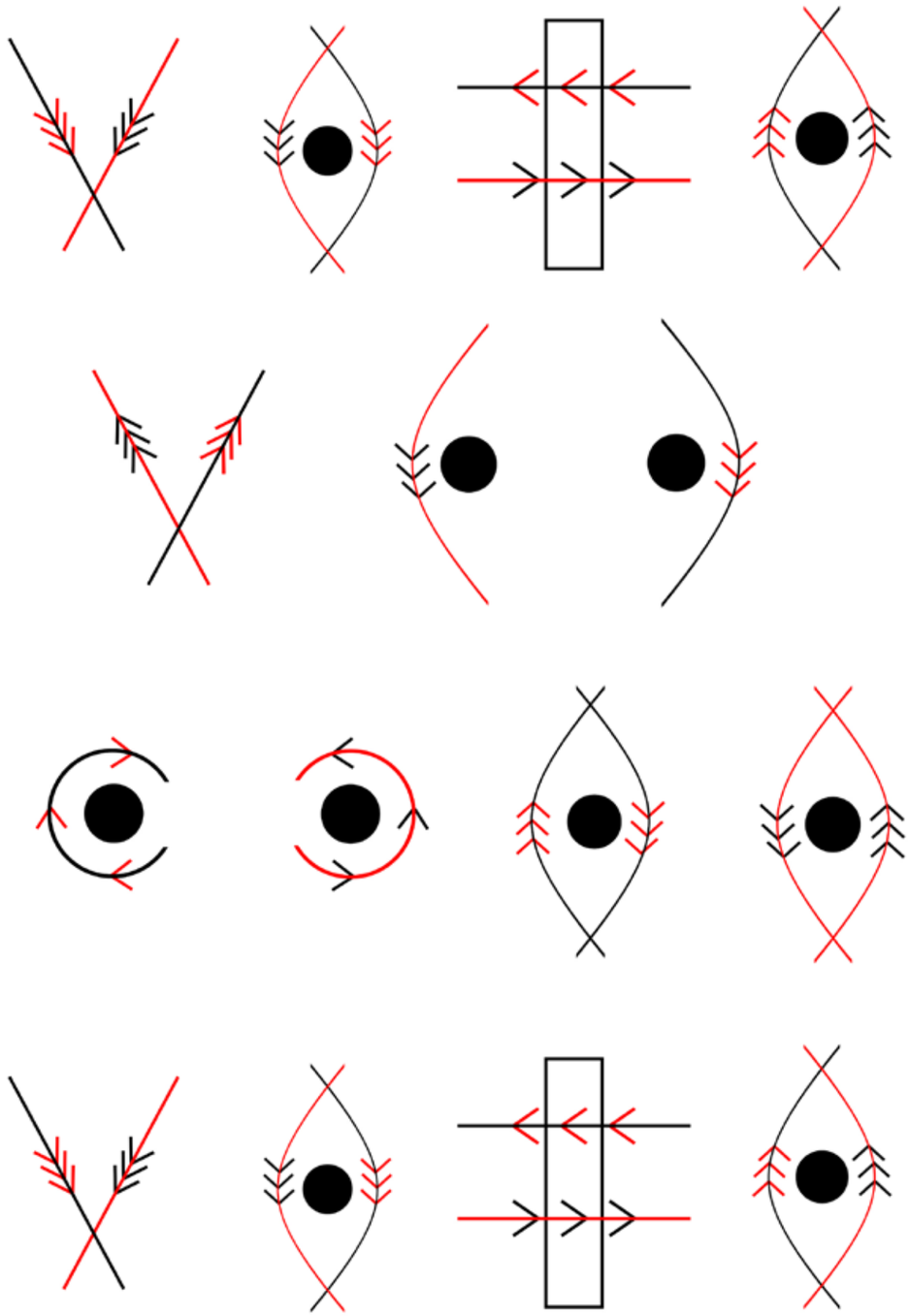


Fig 14. Latu, Vena. Digital Ngatu Drawings. Nimamea'a Lalava. Interpreting Lalava Making into Patterns. 2021

Digital Lalava

Using the Rhinoceros 3D modelling software, I commenced on applying the lines traced by the faiva lalava on Rhinoceros 3D Modelling software and played with the idea of creating a digital lalava. Following Tohi's description of two lines spiralling up and down, I used two hand gesture tracings and extruded them to add more geometry to the pattern as I multiplied the lines resulting in a scaly looking flow while still expressing illustrations of a lalava lashing (fig 15.1 and 15.3). The flow of the digital lalava expresses a wave-like motions rising above the sea level and colliding back onto the sea –personally I can visualise how storiess may have been told through lalava as the digital version allows the lashings to express itself more freely as it is not restricted to binding timber pieces but the va itself. As the sea is never ending, the wave motion of the digital lalava expresses the notion that lalava is a never-ending entity of stories and knowledge passed down by our ancestors and continues to grow with each generation. I continued to digitally construct lalava using the same approach as fig 15.2 but this attempt was to create a lalava conjunction (fig 15.2).

Drawing Structural Elements

Through a series of line drawings, I documented its metaphorical teachings, the motions of making as well as indicating points of intersection between lines to unravel architectural elements that can be translated as a building, floor plan, or section (figs 16.1, 16.2, 16.3, 16.4, 16.5, and 16.6); depending on how the drawing is perceived. Documenting the motion of making played an important part in how these drawings were assessed in the sense that I was fascinated in the idea of translating the gesture of making to how people operate within a space. This translation expands this idea of lalava making from a performance that is acted by tufunga to a bodily experience. These line drawings also incorporate the meanings of lala and va – I referred to lala as the action sequence of the term lalava and va as the metaphorical beliefs, both of which influences the spaces within these line drawings and the way they would function with the inclusion of people. These drawings would later influence a series of collages (figs 17.1, 17.2, 17.3, 17.4, and 17.5) in visualising a world perceived by our ancestors through a spatial and architectural lens.

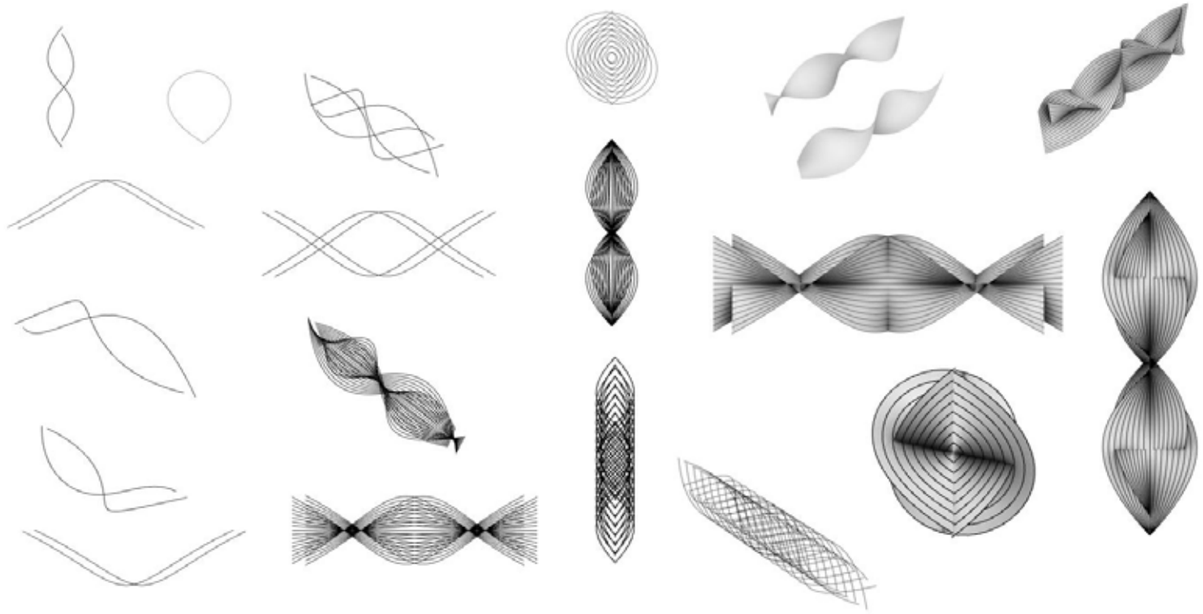


Fig 15.1. Latu, Vena. Digital Fabrication. Lalava Making Hand Gestures. Extruding Lines. 2021

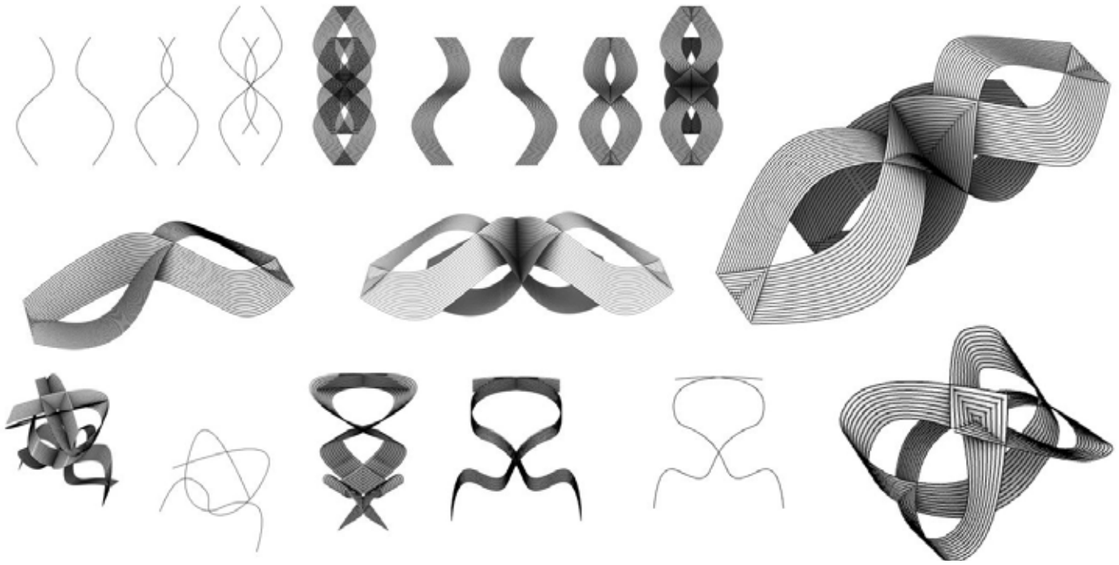
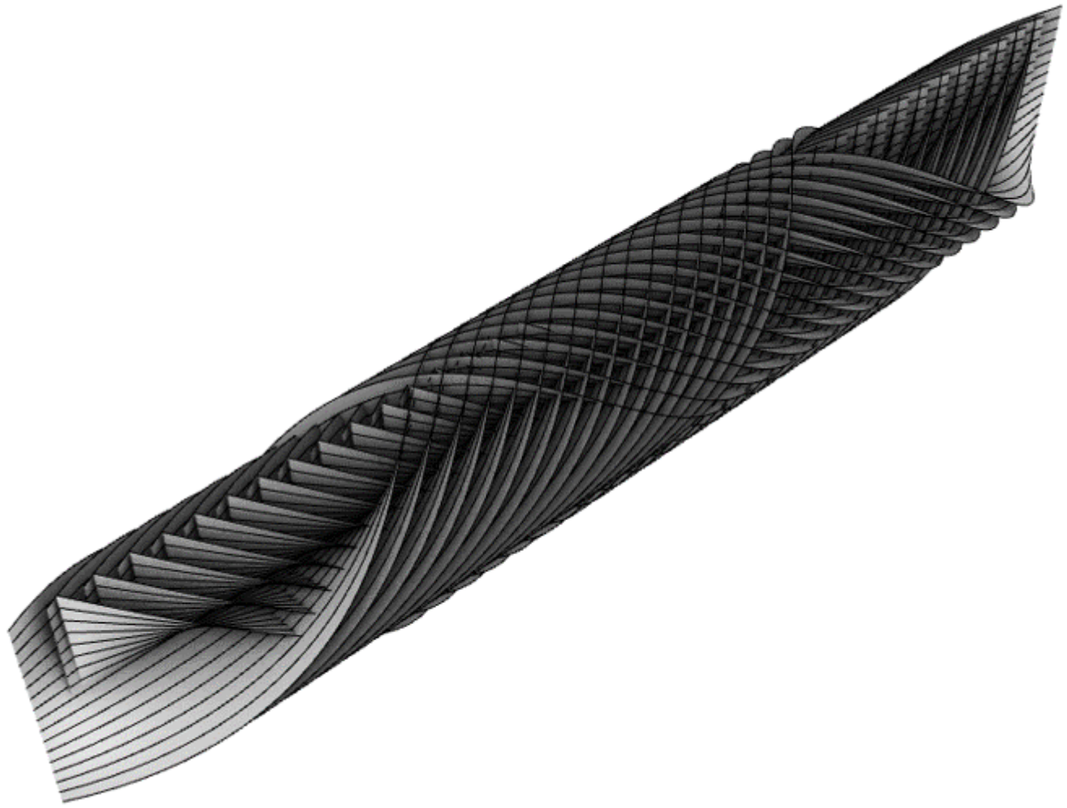


Fig 15.2. Latu, Vena. Digital Fabrication. Digital Lalava Conjunctions. 2021



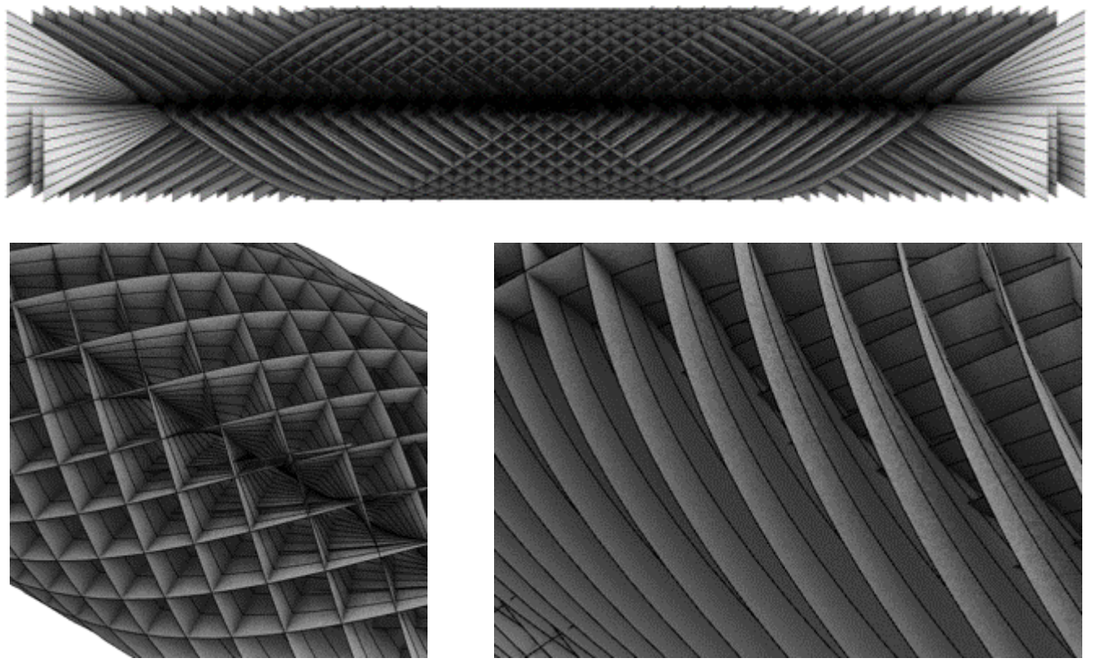


Fig 15.3. Latu, Vena. Digital Fabrication. Digital Lalava and close up perspectives. 2021

Fig 16.1. Latu, Vena. Lalava Instructional and Constructional Drawing 1. 2021

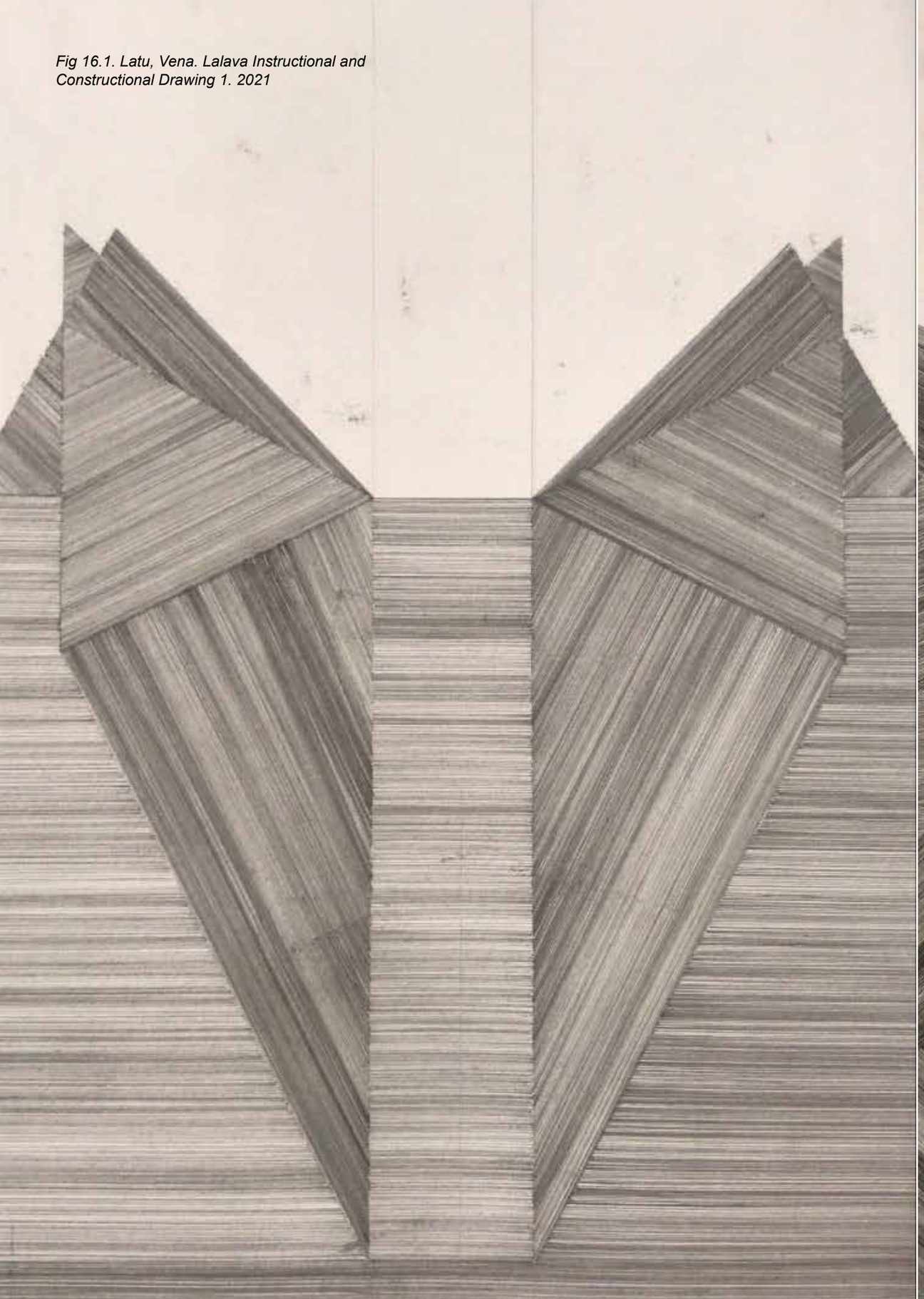


Fig 16.2. Latu, Vena. Lalava Instructional and Constructional Drawing 2. 2021

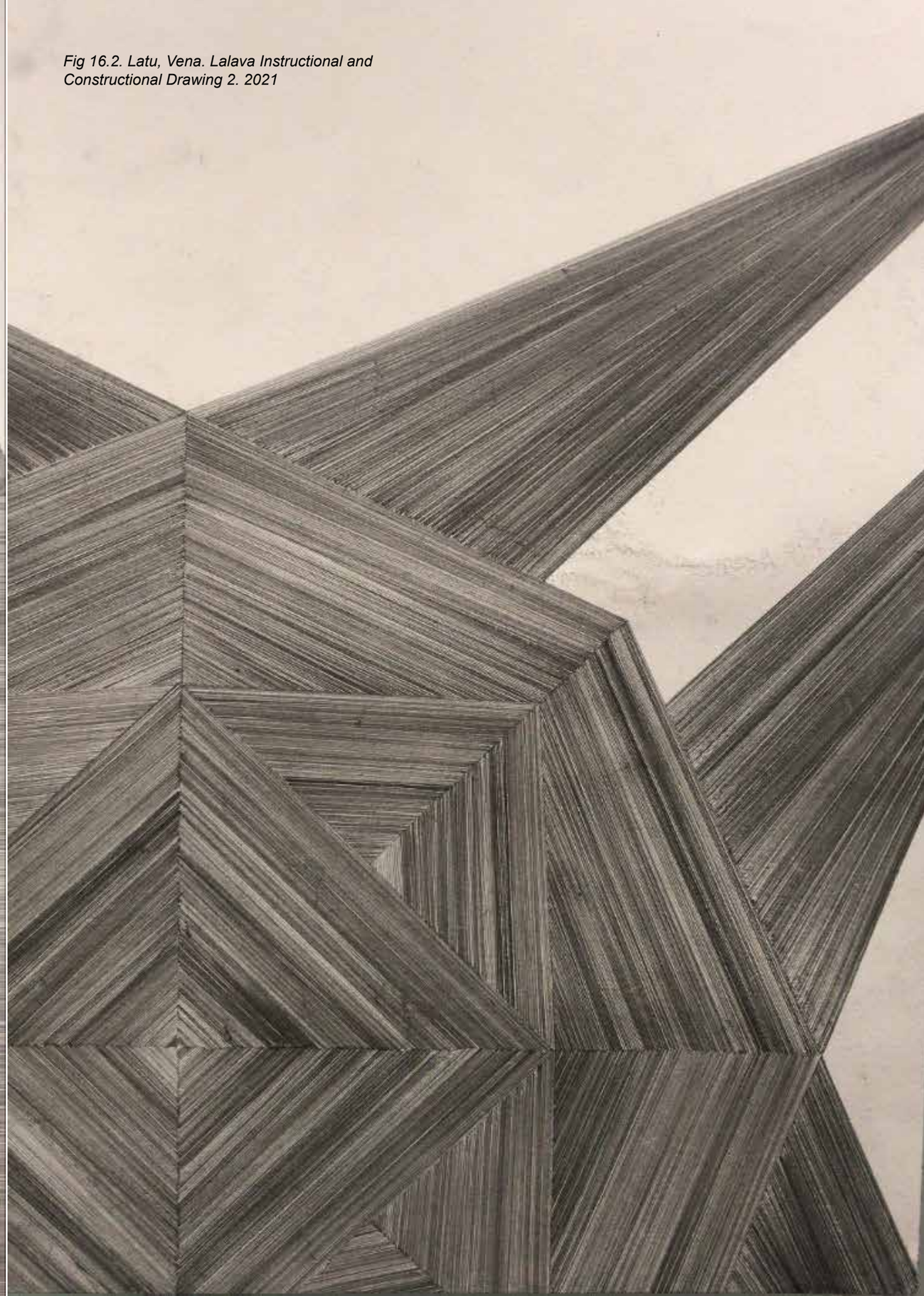


Fig 16.3. Latu, Vena. Lalava Instructional and Constructional Drawing 3. 2021

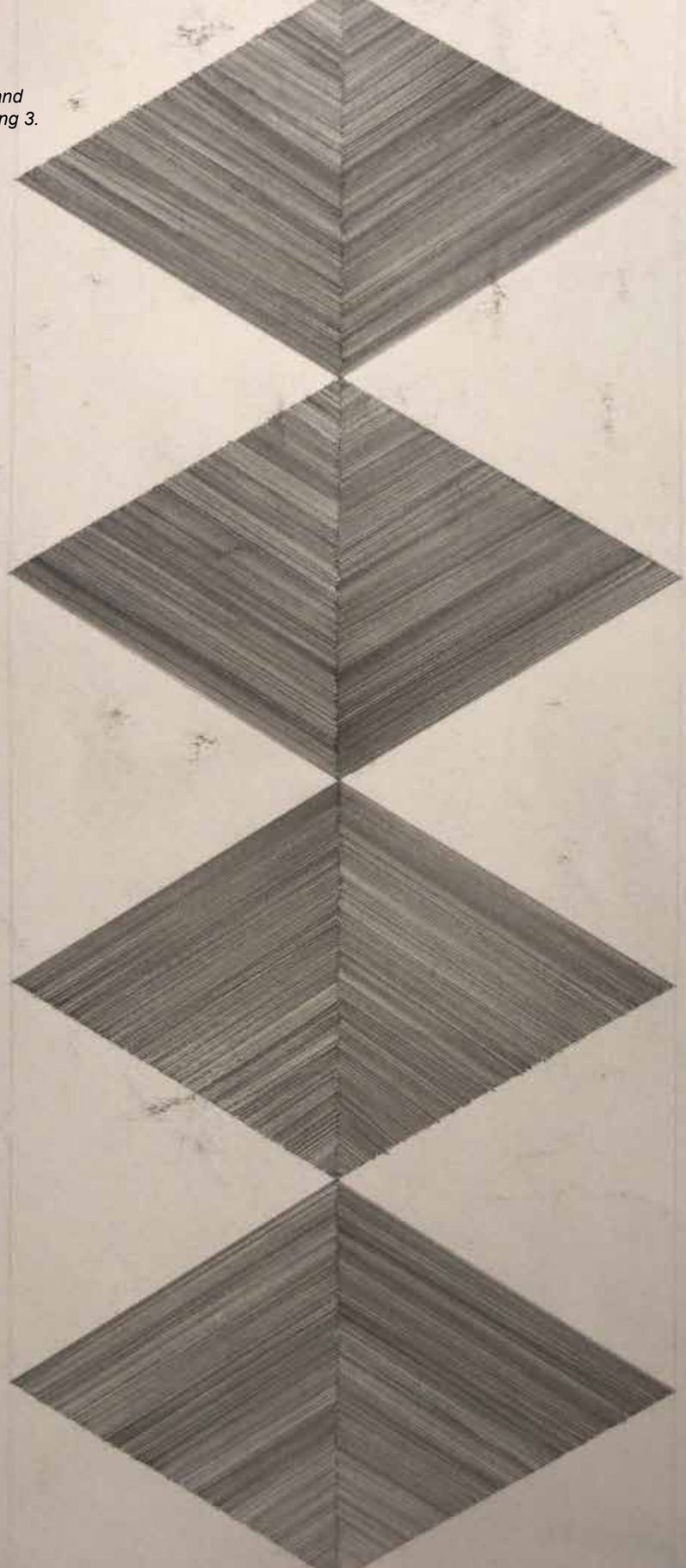


Fig 16.4. Latu, Vena. Lalava Instructional and Constructional Drawing 4. 2021

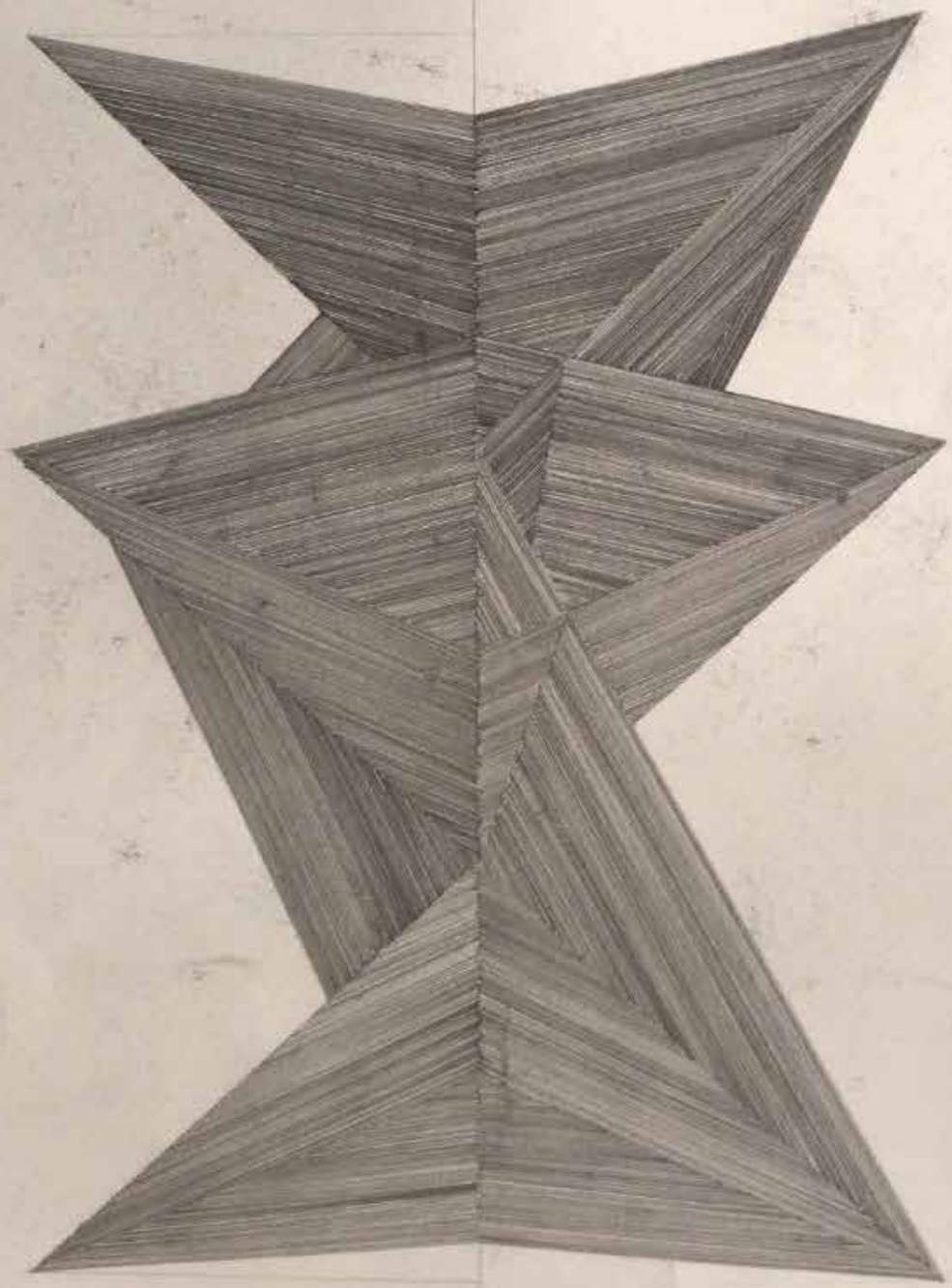


Fig 16.5. Latu, Vena. Lalava Instructional and Constructional Drawing 5. 2021

Fig 16.6. Latu, Vena. Lalava Instructional and Constructional Drawing 6. 2021

Fig 17.1. Latu, Vena. Collages based on the teachings of Lalava 1. 2021

Fig 17.2. Latu, Vena. Collages based on the teachings of Lalava 2. 2021

Fig 17.3. Latu, Vena. Collages based on the teachings of Lalava 3. 2021

Fig 17.4. Latu, Vena. Collages based on the teachings of Lalava 4. 2021

Fig 17.5. Latu, Vena. Collages based on the teachings of Lalava 5. 2021

The vast knowledge assembled from lalava both in its cultural meaning and patterned language unravels a social and spiritual relationships between people and the world at large. For an architectural proposal, the cultural knowledge embedded in lalava shall both reflect this in design as well as housing the creative knowledge of our ancestors shared with the world but more importantly to reconnect with the younger generation of Pasifika. By carefully analysing the phenomenology of my experience of making, comparing the differences in visually analysing how lalava is made to practice. Initially the research project was to unravel instructions of how to make lalava conjunctional patterns through the variety of methods and methodologies used to gather information, and then transferring that onto the younger generations of Tongans and Oceanians. Unfortunately, due to COVID-19 lockdown there were restrictions in accessing facilities (AUT architecture studio), purchasing further materials such as kafa, and wool, and meeting with lalava masters. Fortunately, I did manage to acquire some material before the start of the lockdown but not enough to create a solid response to my research question as well carry on with that approach, therefore, as an alternative I decided to incorporate the traditional master's thesis project approach of proposing an architectural response.

Ancient Tongans and Oceanians lived in a world that was more than the islands they discovered and territories but a world that interconnected by culture, history, networking, and environmental surroundings. As a Tongan Kiwi living in South Auckland, I have encountered many cultures and have been in many social spaces. Auckland is one of the largest Pacific cities in the world with a large portion of those inhabitants residing in South Auckland. Events that comprise of a Pacific theme or express Pacific culture usually reside in South Auckland. In terms of general social interactions or social networking amongst different generations of Oceanian, Mangere from my experience is considered the centre of social networking between different Pacific communities of Auckland. Mangere is home to a variety of Pacific inspired architecture such as the Mangere Art Centre, Fale o Samoa and the Lisieli Tonga Auditorium, popular venues used to hold large cultural functions and performances. It is also home of the residential area of Mangere Bridge (fig 18.1), popular for its outdoor activities such as camping and hiking in its Ambury Regional Park and Mangere Mountain grassy volcanic cone with an educational centre exploring the regions Māori heritage. It is these outdoor activities that captured my interest and why I chose to be my site for this project as the Mangere Bridge itself is located above the Manukau Harbour, which locals use for both sailing and fishing.

As a resident of Mangere, I am very familiar with the Manukau Harbour both visually and historically. There are three major arms to the harbour. The Mangere Inlet sits near to Auckland's core city region in the north-east, with the inner neighbourhoods of Onehunga and Te Papapa adjacent to its northern bank. South of this arm, which is bridged by the Mangere Bridge, are the urban neighbourhoods of Otahuhu and Mangere. The harbour was an important historical waterway for Māori. It had several portages to the Pacific Ocean and to the Waikato River, and various villages and pā (hill forts) clustered around it. Snapper, flounder, mullet, scallops, cockles and pipi provided food in plentiful amounts.[56] Early European settlers struggled to sail through the shallow waters with their ships as the design of their vessels were unsuitable for these waters therefore baffling them as Māori were able to pass through the Manukau Harbour with ease sailing in their traditional wakas. With colonisation Manukau Harbour has become a rubbish dump and receptacle for effluent for Auckland. Industrial waste, animal waste from abattoirs, human sewage, chemicals, storm water and rubbish were tipped into the harbour.[57] By applying the research gathered on lalava onto the Manukau Harbour, it will allow a reconnection with the past by incorporating aspects of how the space was utilised through program and architectural design.

56 "Manukau Harbour." Wikipedia, the Free Encyclopaedia. Retrieved from https://en.wikipedia.org/wiki/Manukau_Harbour#cite_ref-TE_ARA2_3-0

57 "HISTORY." The Manukau Harbour Restoration Society. Retrieved from http://www.mhrs.org.nz/Pages/About/History.aspx

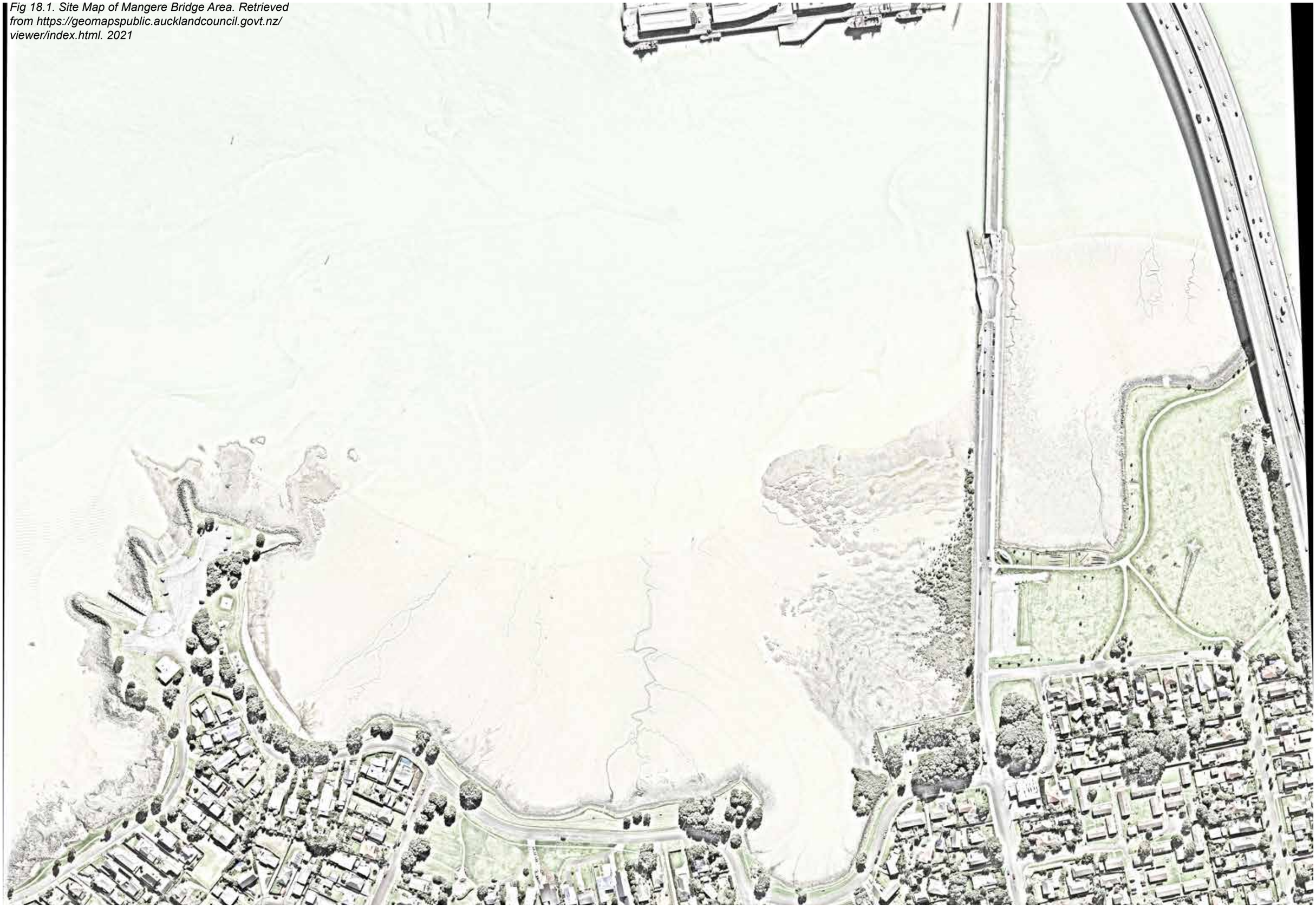


Fig 18.1. Site Map of Mangere Bridge Area. Retrieved from https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html. 2021








Fig 18.2. Digital Photography. A series of Perspective shots of Mangere Bridge area. 2021





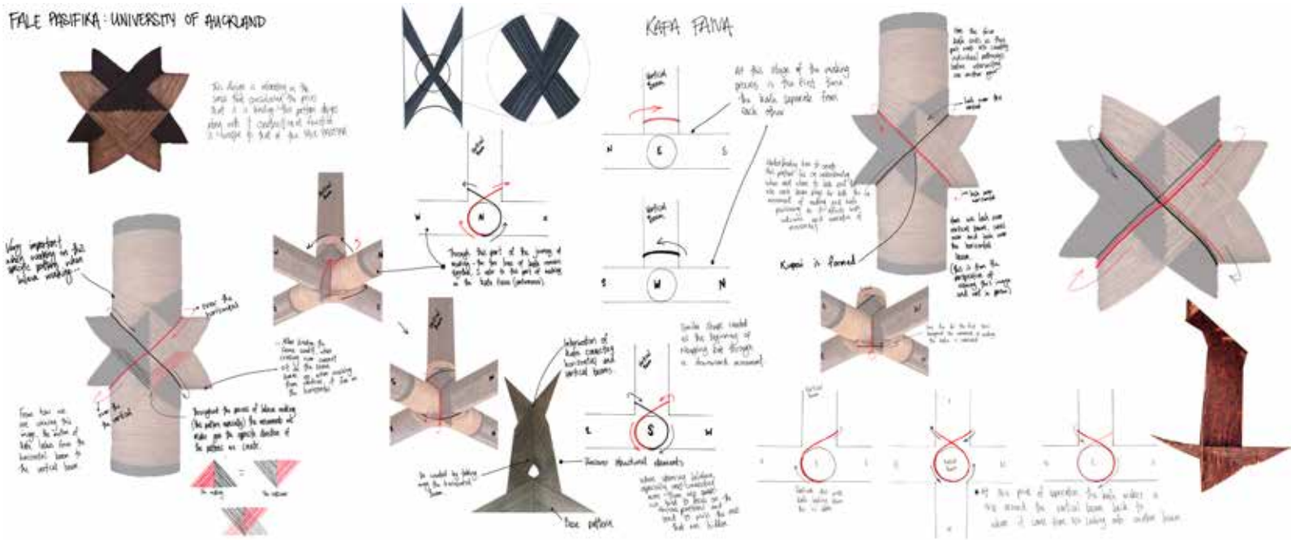


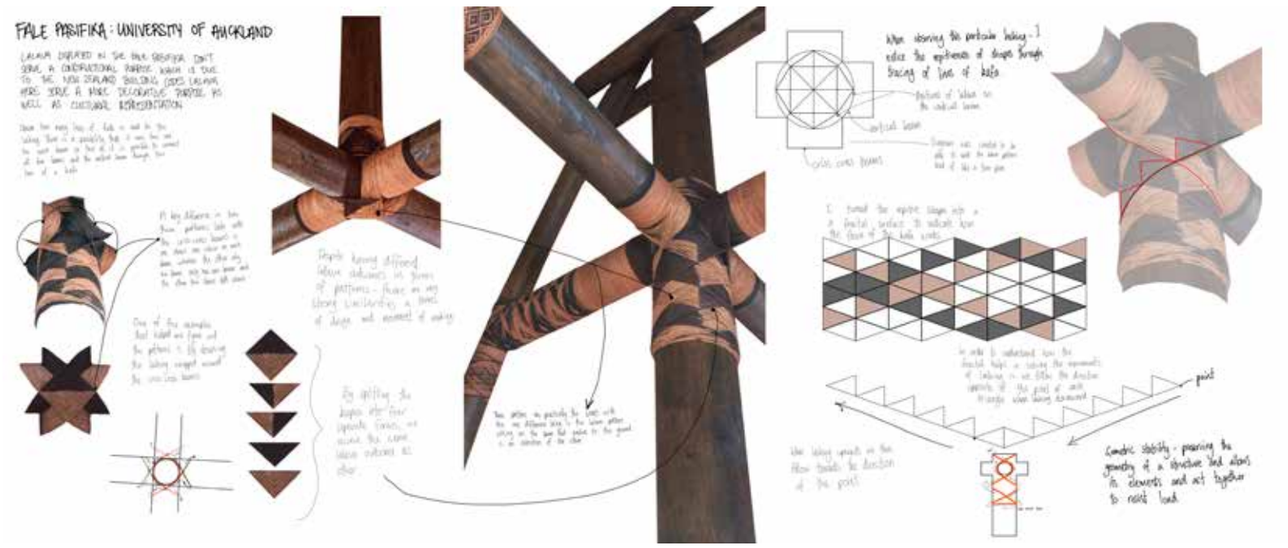

Fig 18.3. Digital Photography. A series of Perspective shots of Mangere Bridge area. 2021

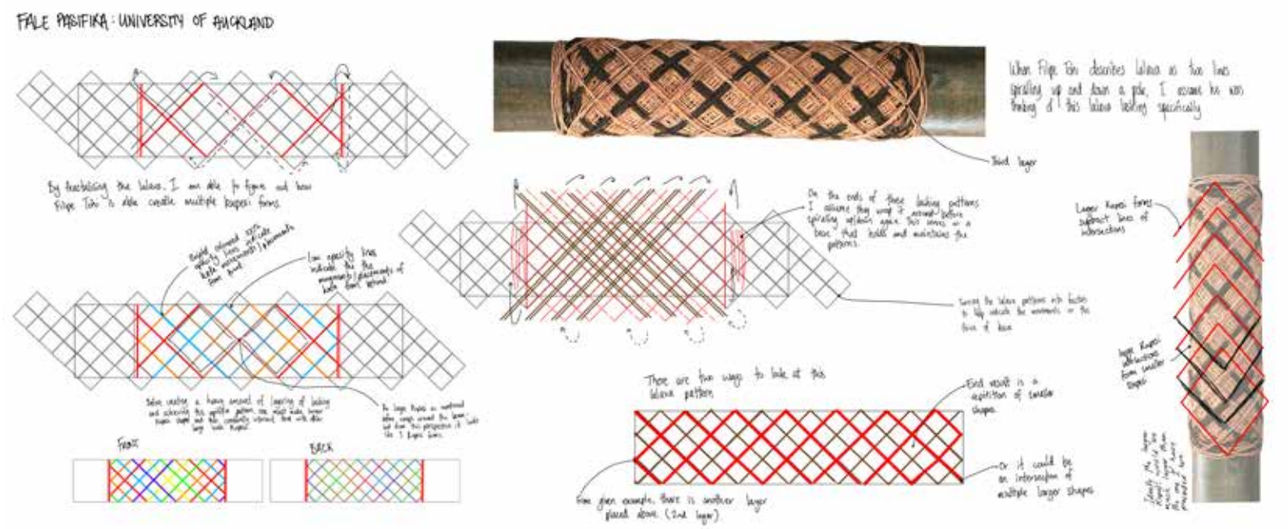
Lalava Making

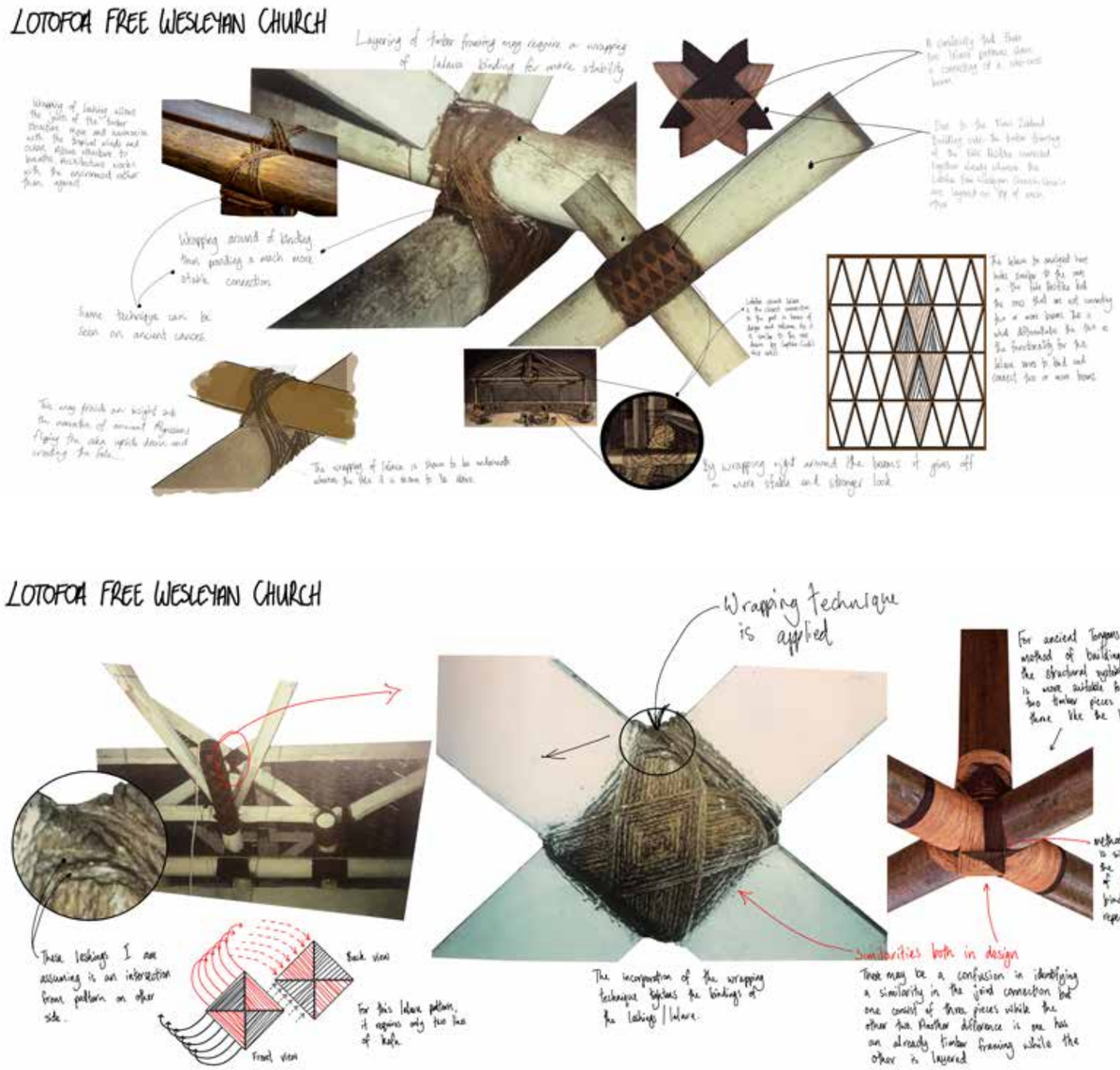
It should not be expected of myself to fully master the art of lalava especially within the time frame given to complete a master's thesis. To put it into perspective, we are given two years to complete our thesis whereas a tufunga lalava such as Filipe Tohi spent several years learning to master this artform under the guidance of his teacher Tamale, therefore, for me to master lalava almost feels unrealistic. In saying that, this should not discourage me from learning the art of lalava – the first lalava form I have taken upon myself to practice making is a conjunction found in the Fale Pasifika which consist of joining three beams (fig 20.1, 20.1, 20.3, and 20.4). The complexity of lalava turned out to be a lot more complicated than what I had visually analysed (fig 19.1, 19.2, 19.3, 19.4 and 19.5). Considering its complexity and constructional origins, it would be fair to say that ancient Tongans and Oceanians would practice lalava making in groups as it would require a variety of heads to memorise kafa movements wrapping around each conjunction. Mimicking lalava patterns are simple when the goal is imitation of aesthetics which one can acquire positive results, but aesthetic imitation does not translate to constructional functionality as sometimes the patterns of my making movements can go off course making the joints loose but still achieving pattern. The difficulty of lalava making did lead to the desire of requiring the guidance of a tufunga lalava but due to COVID-19 lockdown protocols forbade this from happening. Visually tracing the patterns of lalava is different to how it is being created – in my analysis, I traced the patterns based on what I could see but during practice of making, my movements seemed to be moving in the opposite direction from what I initially analysed. In reflection, if I compared the process of making my approach of visually tracing, it felt as if my movements were making the unseen pattern or what was below as the seen or above pattern felt like a product of the unseen – as we make, the lalava is also making itself. Interpreting this as another form of heliaki but rather than saying one thing but meaning another, lalava making is seeing one thing but the creating is of another. Regardless of our prioritisation of the eye, visual observation is often confirmed by our touch.[58]

58 *Juhani Pallasmaa. "The Power and the Weakess of the Eye." The Eyes of the Skin Architecture and the Senses. 1996: 27*









Figs 19.1. Latu, Vena. Analysis. An analysis of how to make Lalava Conjunction pattern from the Fale Pasifika 1. 2021

Fig 19.2. Latu, Vena. Analysis. An analysis of how to make Lalava Conjunction pattern from the Fale Pasifika 2. 2021

Fig 19.3. Latu, Vena. Analysis. Analysis of how to make a Single Beam Lalava from the Fale Pasifika. 2021

Fig 19.4. Latu, Vena. Analysis. Analysis of how to make Lalava Conjunction from the Lotofoa Free Wesleyan Church 1. 2021

Fig 19.5. Latu, Vena. Analysis. an Analysis of how to make Lalava Conjunction from the Lotofoa Free Wesleyan Church 2. 2021

Model One
Phase One: Connecting

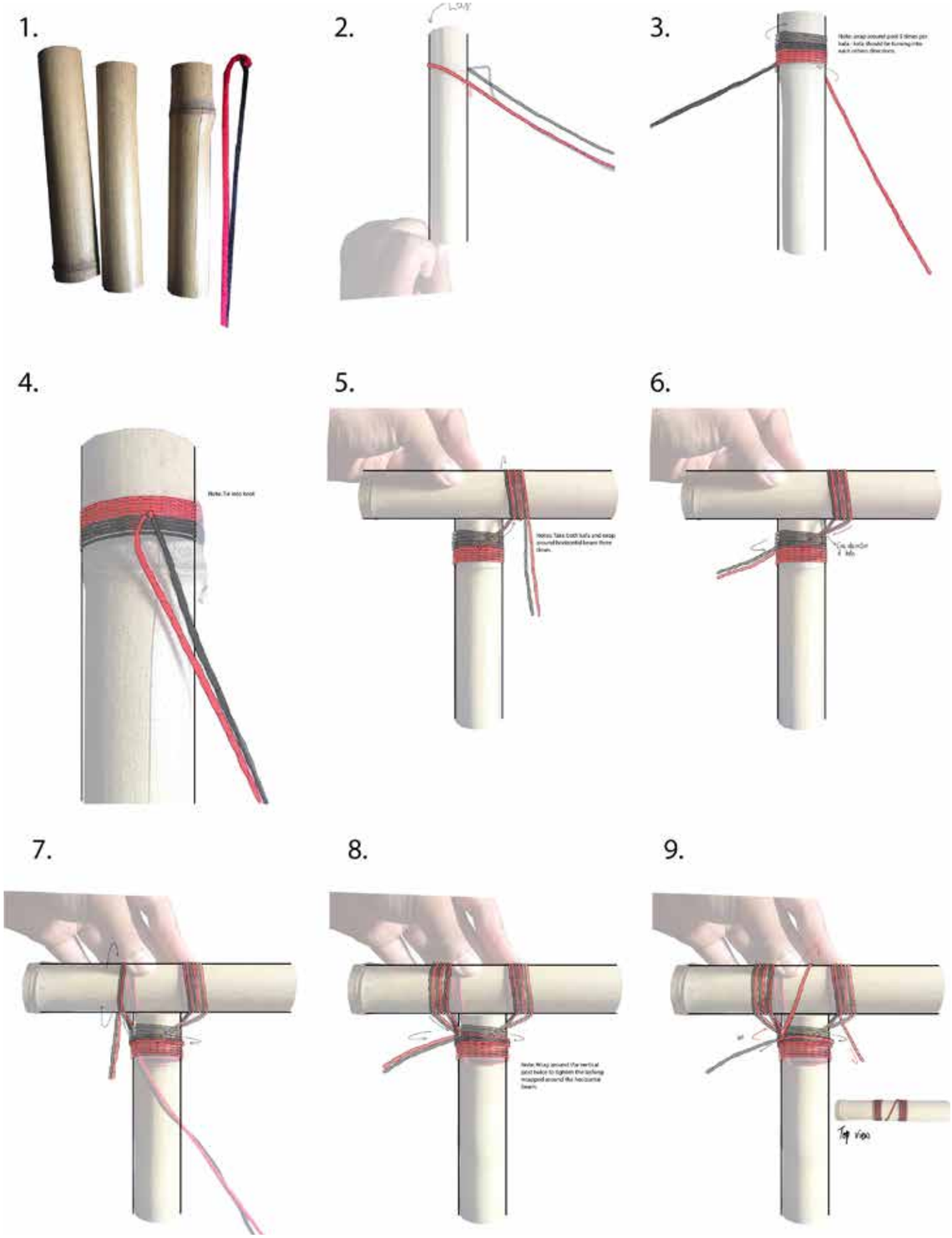


Fig 20.1. Latu, Vena. Lalava Making, Model One. Connecting Phase . 2021

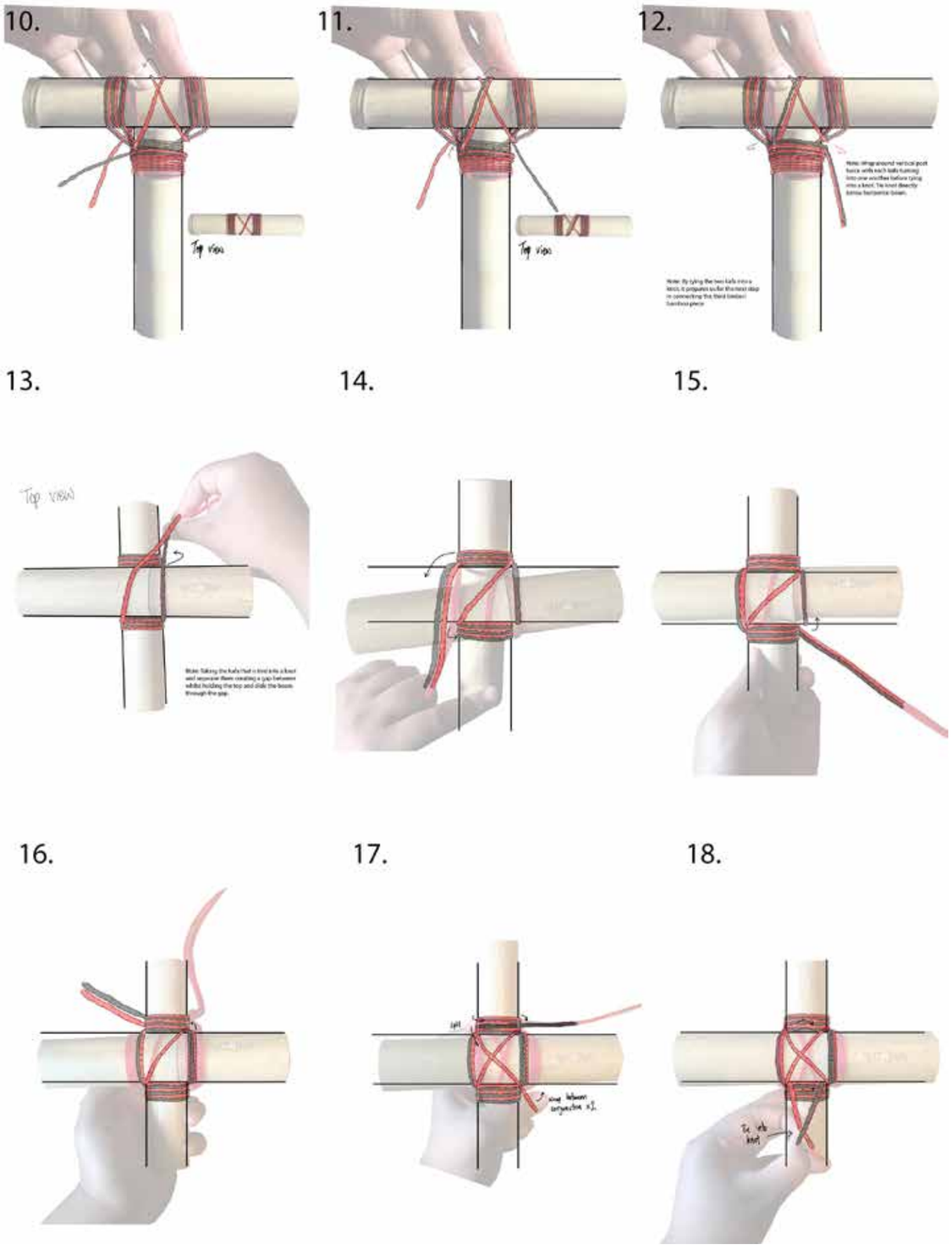


Fig 20.2. Latu, Vena. Lalava Making, Model One. Connecting Phase continued. 2021

Phase Two: Pattern Making

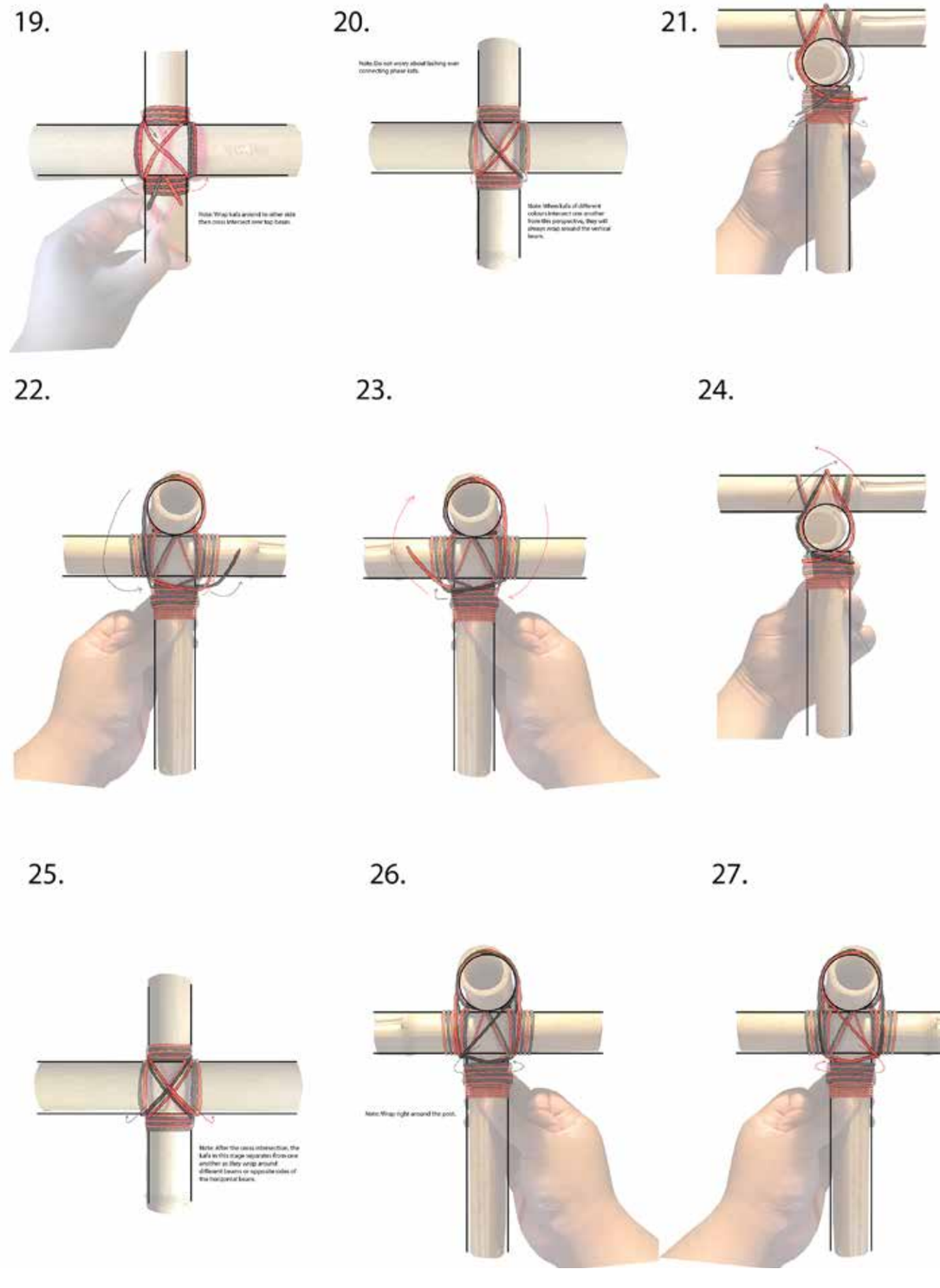
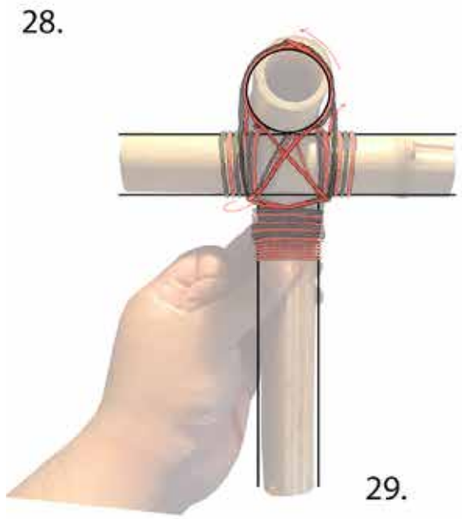
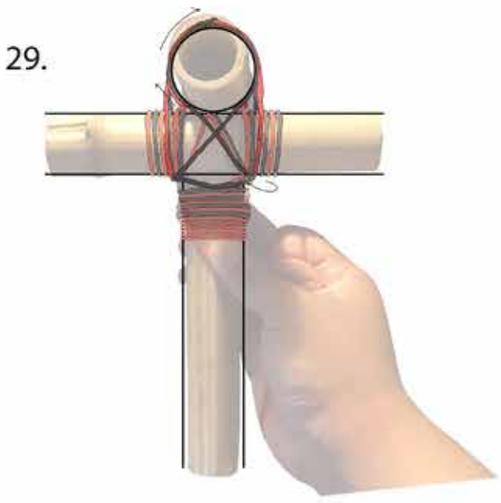


Fig 20.3. Latu, Vena. Lalava Making, Model One. Pattern Making Phase. 2021





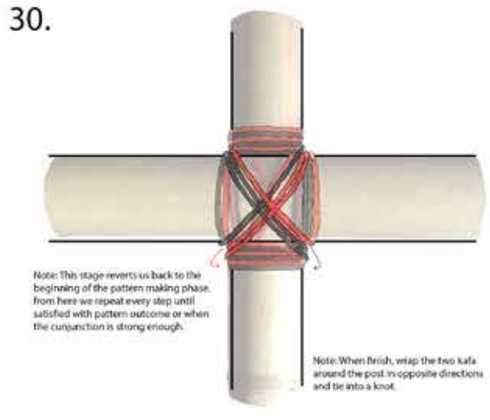


Fig 20.4. Latu, Vena. Lalava Making, Model One. Pattern Making Phase continued. 2021

Fig 21.1. Latu, Vena. Lalava Making, Model One. 1:1 Scale Outcome that consist of using plastic kafa, top view. 2021

Fig 21.2. Latu, Vena. Lalava Making, Model One. 1:1 Scale Outcome that consist of using plastic kafa, Perspective Shot. 2021

Further Reflection:

Upon observation of this particular lalava along with the series of timber pieces it connects, it became difficult to understand how lalava maintains its aesthetic geometry throughout the conjunction. On many occasions and experimentations through making, I have failed more than succeeded in replicating this lalava model. It was not until I decided in attemptint to make a 1:1 scale model where I was able to recognise the patterns of movements flowing throughout the conjunctions – movements that would later influence the faiva lalava. This pattern movement helped reveal an unnoticed secondary pattern of this lalava conjunction of the lashings wrapped around the beams which I refer to as the fish's rib cage. So much time was dedicated to analysing pattern making, that I realised I did not investigate how to connect the pieces before the actual lalava making. In the connecting phase, I used the Japanese square lashing technique and from there, wrapped around the third piece. The conjunction would still be loose but strong enough to maintain form, as it would strengthen throughout the Pattern phase, solidifying it and later using the wrapping and tightening phase to basically wrap around between the timber pieces, further tightening and strengthening the bindings. Materialistically, I have experimented with both plastic and coconut husk-made kafa to create lalava (fig 21.1, 21.2 and 23.1, 23.2, 23.3) revealing a huge difference in result. Despite using the same making technique, it was obvious the coconut husk kafa was the superior material both in constructional durability and aesthetically, despite both having positive outcomes.

Fig 22.1. Latu, Vena. Lalava Making, Model One. Small Scale Instructional Outcome, Top Perspective. 2021

Fig 22.2. Latu, Vena. Lalava Making, Model One. Small Scale Instructional Outcome, Fishes Rib Cage. 2021

Fig 22.3. Latu, Vena. Lalava Making, Model One. Small Scale Instructional Outcome, Axonometric. 2021

Fig 23.1. Latu, Vena. Lalava Making, Model One. Final Outcome 1. 2021

Fig 23.2. Latu, Vena. Lalava Making, Model One. Final Outcome 2. 2021

Fig 23.3. Latu, Vena. Lalava Making, Model One. Final Outcome 3. 2021

I proceeded to create more lalava lashings to compare if different pattern making consist of the same heliaki making technique. I documented my attempts of making but on a smaller scale as it would have been easier to capture all angles from a single point before proceeding onto a near 1:1 scale model. Each attempt, I reflected on the results and what I have learnt. Lalava when in practice is a very labouring task and requires the mind and body to work harmoniously in terms of memory as it can get very confusing. This then links to another important factor of lalava I learnt while making which is it does not force itself onto the structural material it is placed upon to hold tightly together but harmoniously functioning as one. The placements of timber pieces are not random but are carefully positioned in a manner that allows them to support one another before inclusion of lalava. The wrapping and binding of lalava also allows joints of the fale to breathe, in a way allowing the fale to function like the human body as stiff joints disallows us to function properly or complain whereas a loosened body makes us feel more refreshed and ready.

Model Two

Phase One: Connecting

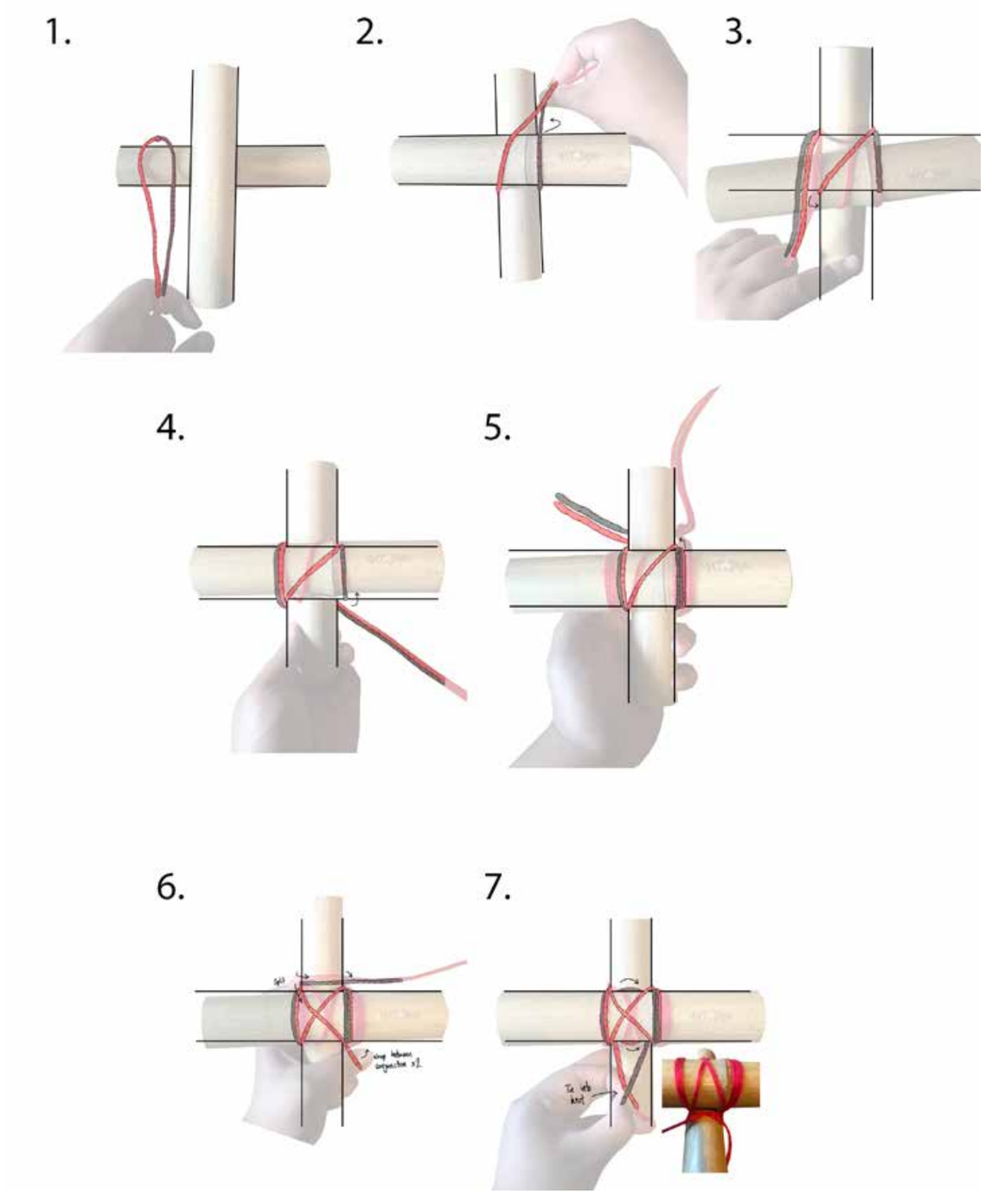


Fig 24.1. Latu, Vena. Lalava Making, Model Two. Connecting Phase . 2021

Phase Two: Pattern Making

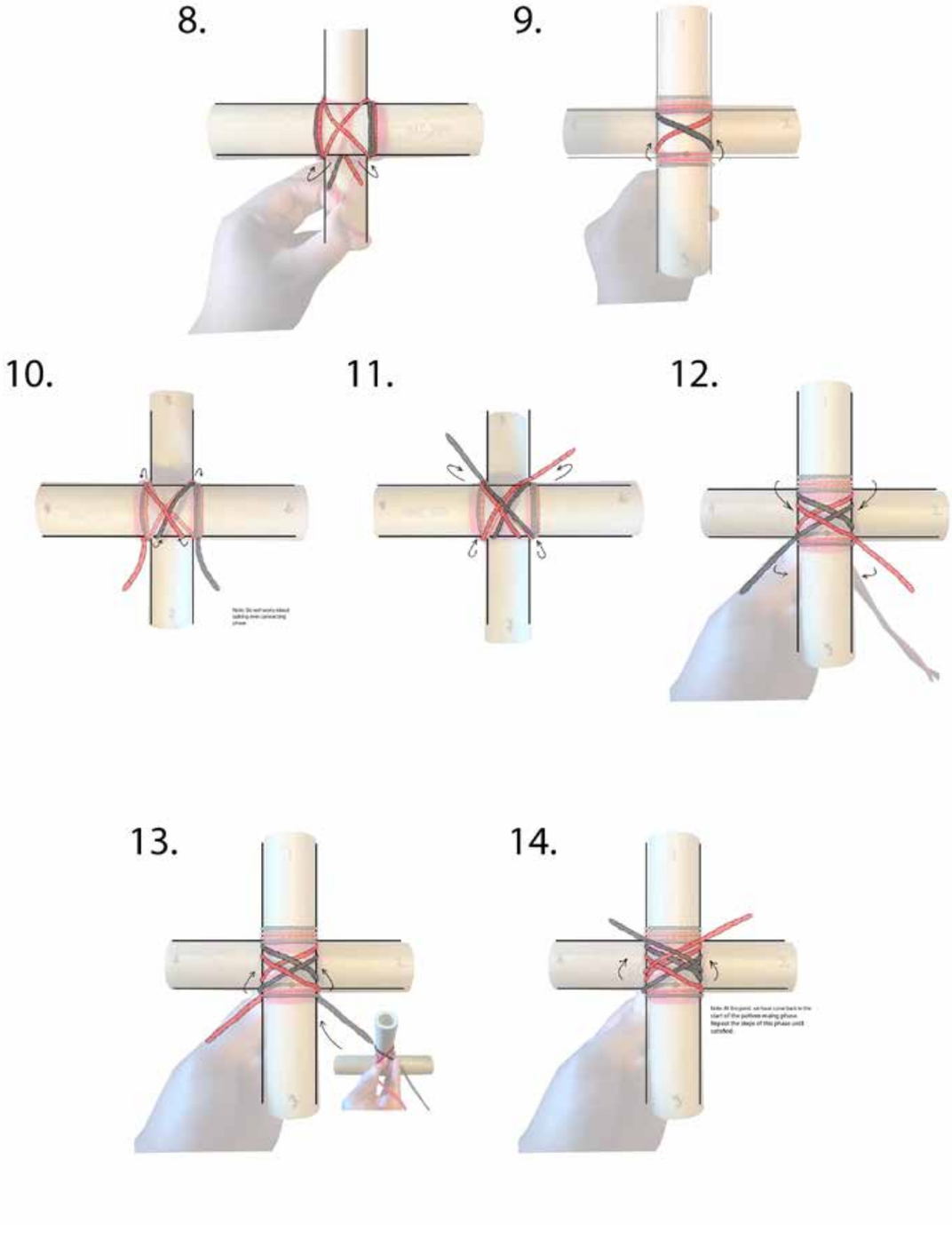
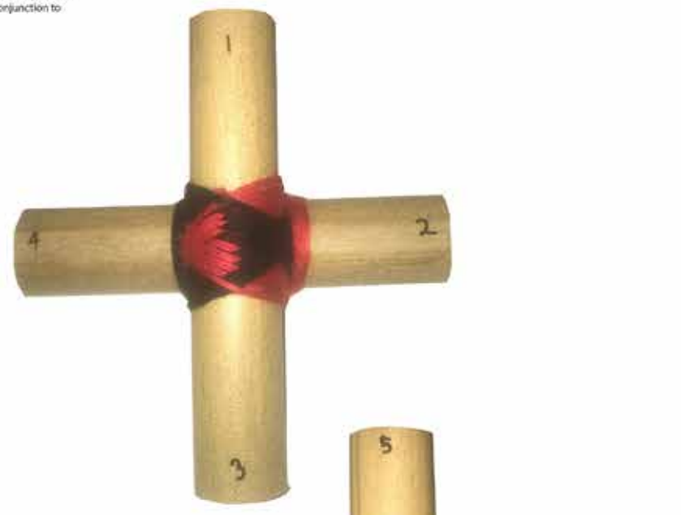


Fig 24.2. Latu, Vena. Lalava Making, Model Two. Patern Making Phase . 2021

Phase Three: Wrapping and Tightening



Outcome

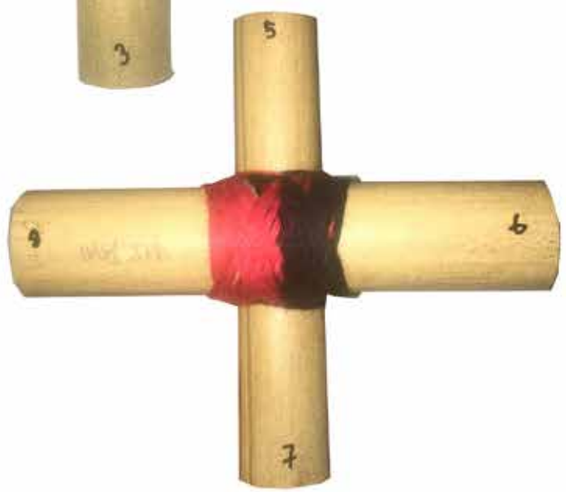


Fig 24.3. Latu, Vena. Lalava Making, Model Two. Top. Wrapping and Tigtening Phase. Bottom. Instructional Outcome . 2021

Reflection:

The Pattern created in model two is very similar to that of model one where the differentiation is the flow of making, as model one consists of three timber pieces, and model two consist of a cross intersection of two. Similar to Model One, it uses the Japanese square lashing technique before moving onto the Pattern phase. Approaching the making process of model two, I began to realise how the inclusion of a third timber piece simplified the pattern making phase as it allowed me to focus on making one main kupesi as opposed to simultaneously creating two on opposite sides. Out of the four models created, Model Two personally was the most enjoyable to make, as the final product turned out to be the most successful in terms of constructional functionality.

Fig 25.1. Latu, Vena. Lalava Making, Model Two Final Outcome 1. 2021

Fig 25.2. Latu, Vena. Lalava Making, Model Two Final Outcome 2. 2021

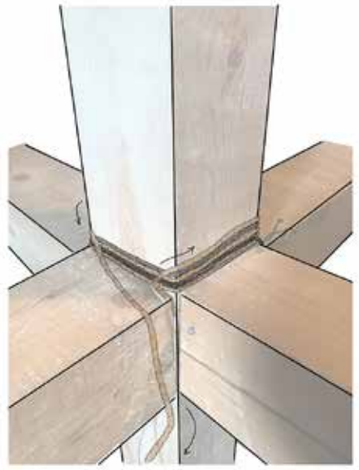
Fig 25.3. Latu, Vena. Lalava Making, Model Two Final Outcome 3. 2021

Fig 25.4. Latu, Vena. Lalava Making, Model Two Final Outcome 4. 2021

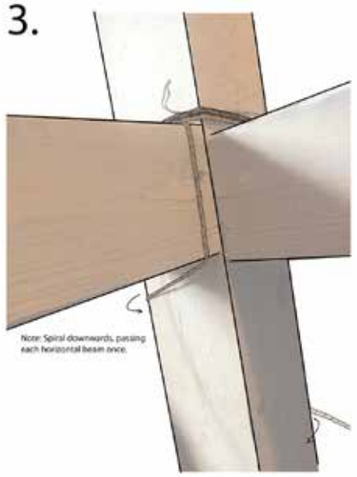
Model Three

1.

2.



3.



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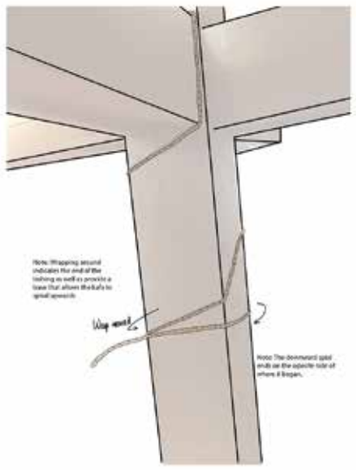
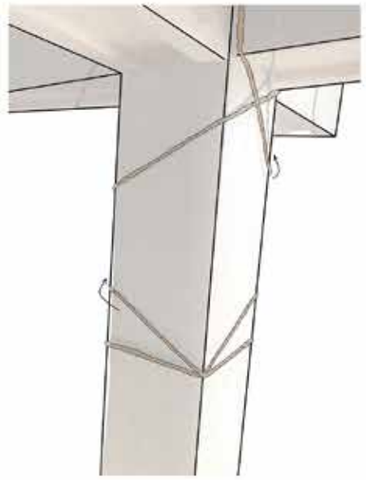


Fig 26.1. Latu, Vena. Lalava Making, Model Three . 2021

5.



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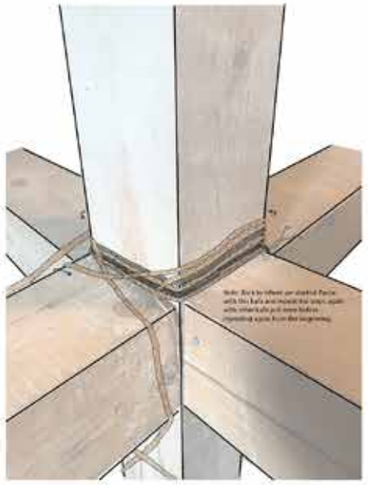

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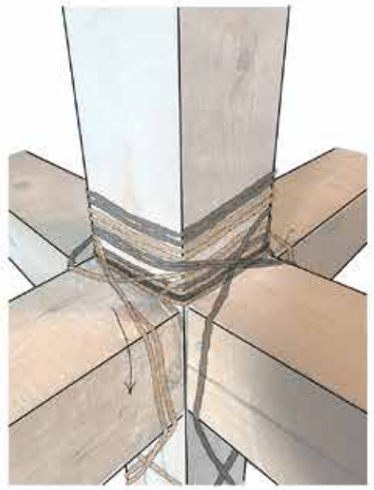

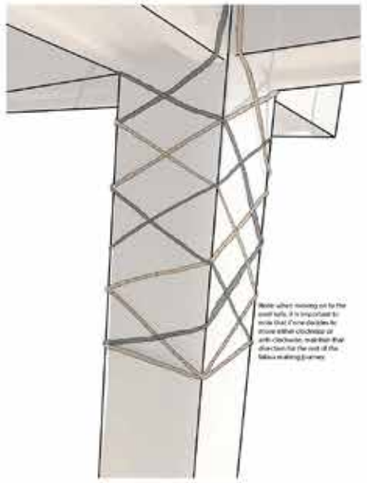

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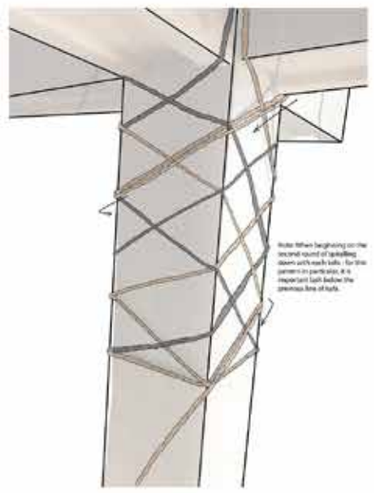

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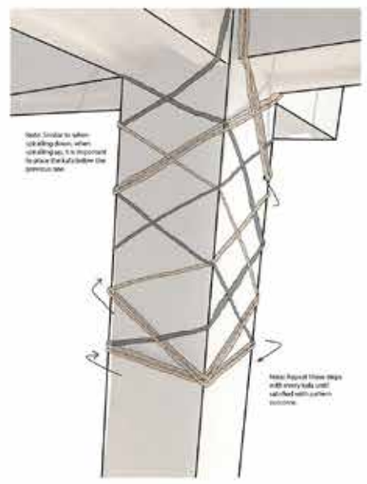


Fig 26.2. Latu, Vena. Lalava Making, Model Three continued . 2021

Reflection:

Model three explores the use of fusing its timber pieces which was a result of resources having come to a finish. The lalava formed through this conjunction in particular is a personal favourite of mine as it reveals a unique connection to the lalava of Model One both in pattern and conjunctions. In terms of timber combinations, the standing post does not stop on top of the cross intersection but pierces through it and straight into the ground, therefore, the 'motion of creating' not too different from Model One. The kupesi we see in Model One and Model Three, visually look different but in reality, they are the same (fig) as the post piercing through allows to unravel the Amoamokofe Kupesi hidden beneath it. This then leads me to rethink both the kupesi on display on both Model One and Two, as no longer a single kupesi but a series of them compact into one, distributing the load of the structure evenly amongst patterns. Model Three also provided insights into how to create a single beam lalava, which may have been made possible due to its use of fusing its timber structure. When Tohi defined lalava as two lines spiraling up and down assuming that all lalava consisted of two kafa overlooking that it has been described as connection between two or more as Model Three has shown in both its conjunction and kafa use.

Fig 27.1. Latu, Vena. Lalava Making. Model Three Final Outcome 1. 2021

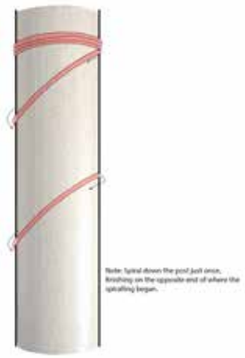
Fig 27.2. Latu, Vena. Lalava Making. Model Three Final Outcome 2. 2021

Model Four

1.

2.

3.



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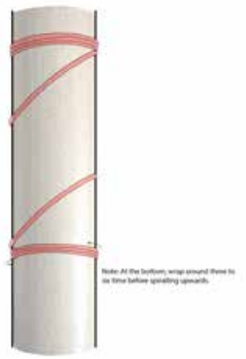

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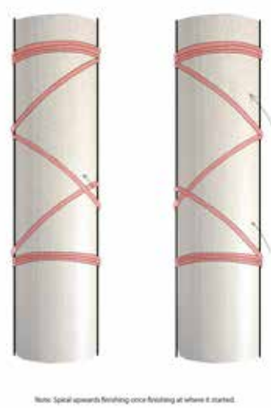


Fig 28.1. Latu, Vena. Lalava Making, Model Four . 2021

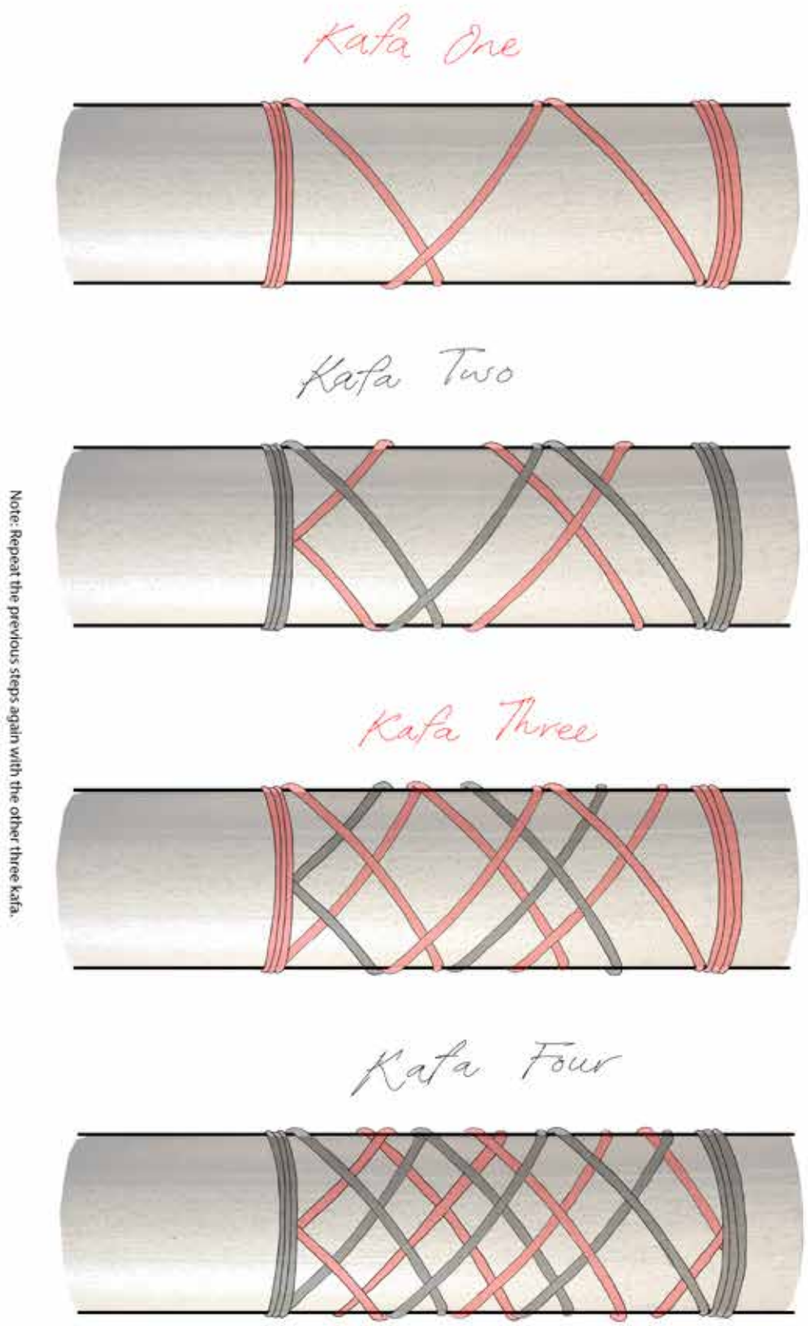


Fig 28.2. Latu, Vena. Lalava Making, Model Four continued 1. 2021

7.

Reflection:

The single beam lalava personally was the most difficult as conjunctions utilises each of its beams to create lalava, the single beam, however, is a continuous spiral going up and down, which is easier said then done. Lalava display on a single beam, from an observational perspective, has showcased the most versatility in terms of an aesthetic outcome. There are a lot of small details one has to pay attention too when conducting a single beam lalava to which as sometimes it is easy to confuse the motion of making one specific pattern with another without even realising it. Aesthetically, the single beam lalava is the most complex in terms of design but also the most revealing in terms of cultural knowledge as it provides more opportunity to focus on the artistic function than that of the constructional function.

Fig 28.3. Latu, Vena. Lalava Making, Model Four continued 2. 2021

Fig 29.1. Latu, Vena. Lalava Making, Model Four Final Outcome 1. 2021

Fig 29.2. Latu, Vena. Lalava Making, Model Four Final Outcome 2, Close-up Shot. 2021

Lalava Workshop

Before the lockdown, I managed to conduct a lalava workshop (fig 30) with my fellow Master of Architecture Professional colleagues. Unfortunately, at this point, I had only successfully completed Model One, and used my experiences of making this model and shared it. I asked my classmates to pair up as model one could be a overwhelming to keep up with. The workshop only managed to go over the connecting phase as there was only a limited amount of time to work with. From what I saw, my associates did seem to enjoy the workshop which could be credited to the social environment that the space had created and the notion of teamwork and maybe a little bit of a competitive spirit of who can make the best one. This led me to believe what possibly may have been like for our ancestors when constructing the fale and lalava making, as on ones own, it may seem like a labouring task but in a group setting, the labour becomes enjoyable. In conclusion, there were a lot of positive outcomes and some not so much (fig 31), but it was a very enjoyable experience for not only myself but for my colleagues too as they provided encouraging feedback about the workshop and recommended conducting more, with the AUT architecture undergraduates to which I was opened to. Unfortunately, due to lockdown, further plans of more lalava workshops had to be scrapped.

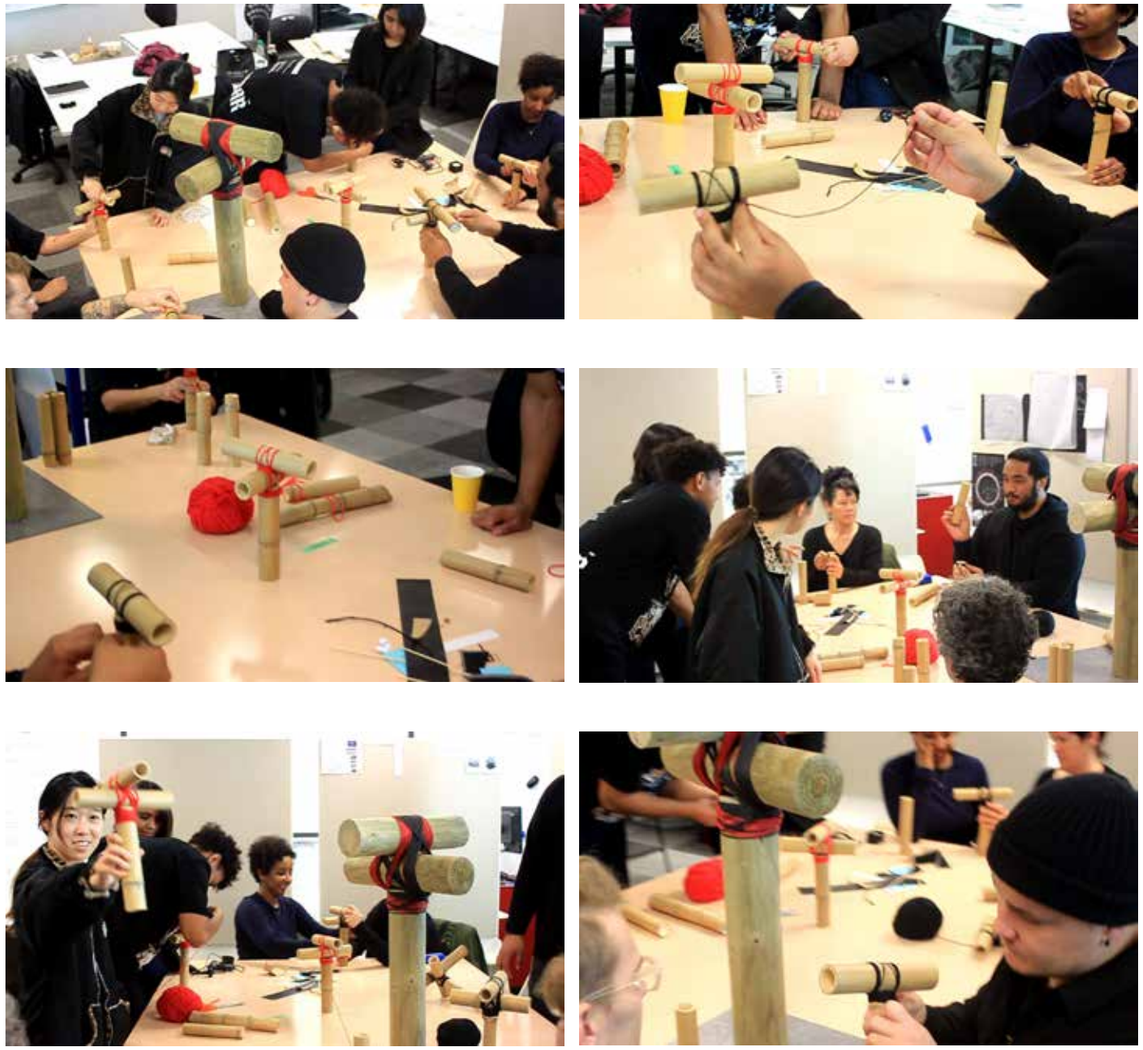


Fig 30. Latu, Vena. Videography. Screenshots of Lalava Workshop with Masters of Architecture Colleagues. 2021

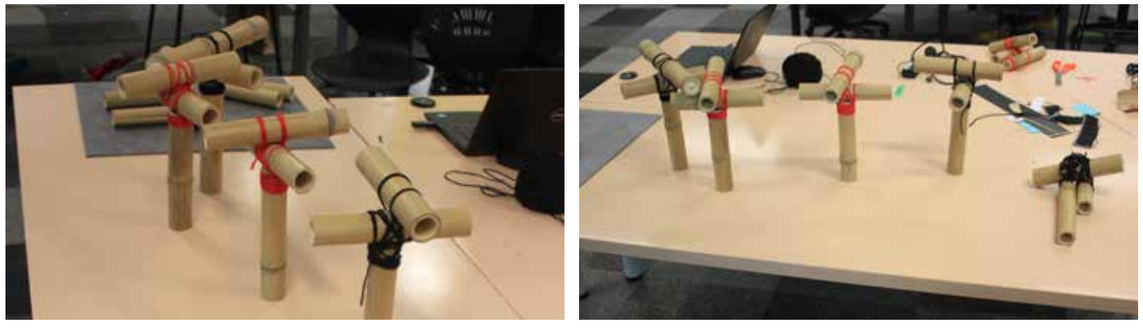


Fig 31. Latu, Vena. Digital Photography. Results from Lalava Workshop. 2021

Architectural Model Making

In creating an architectural building there are languages I wanted it to reflect such as how can one metaphorically participate in lalava making through a bodily experience, as well as consist of programs that wakes up a genealogical memory. Continuing from the digital lalava, again using the tracings of the faiva lalava, by converting the lines into structural elements, creating a basis of a possible architectural outcome (fig 32.1). These elements were created using the Rhinoceros 3D Modelling software again with the faiva lalava comprising of a variety of lines made up of three points, lining up underneath with the centre points connecting with the faiva lalava. From here I loft all the lines together forming a mountain-like structure which have been interpreted into a roof structure and later developed onto a building, by disrupting the flow of the lines and digital drawings.

As the faiva lalava lines did produce some interesting concepts, it did not reflect the research accumulated up to this point. Moving forward, I experimented with digital lalava, transferring some of its lines and translating them into a form of a roof (fig 32.2). The decision as to why I continue to experiment with the roof is due to this structural feature being influential identification in Tongan architecture. The digital lalava roof interpretation was an attempt to create an architectural proposal that indicate the motions of lalava making. In reflection these concepts and developments did not reflect the language I wanted to bring forth architecturally. Seeking help from my supervisors, they suggested looking into designing a bridge, an idea that I did took into consideration but assumed it will consider one aspect of the languages I want to express.

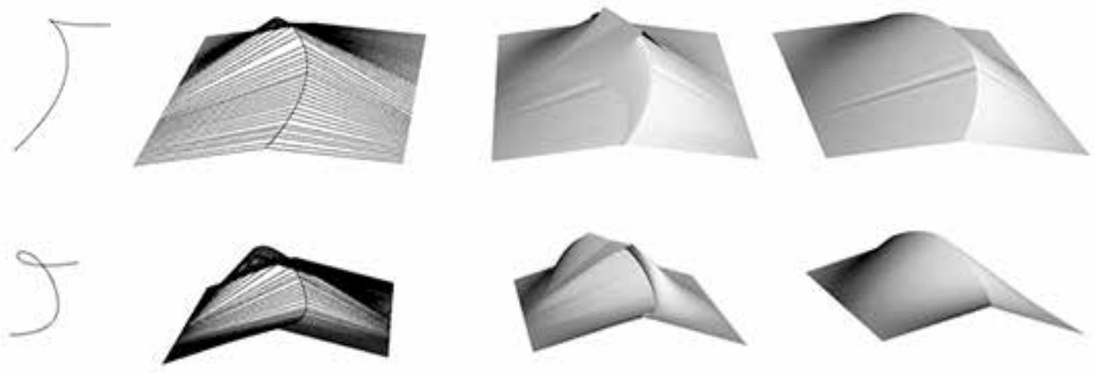


Fig 32.1. Latu, Vena. Digital Fabrication. Turning Lalava Hand Gesture Movements into Architectural Forms. 2021

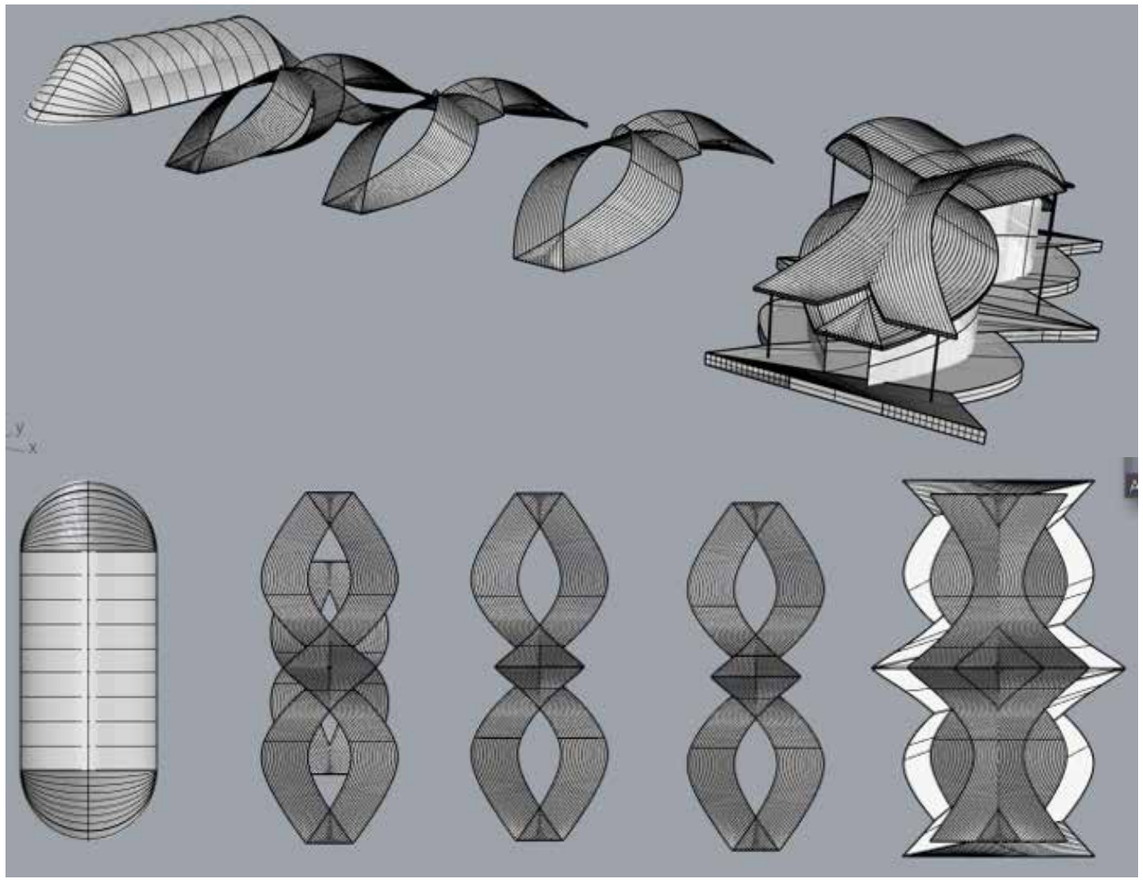


Fig 32.2. Latu, Vena. Digital Fabrication. Lalava Roof, Interpreting the motions of Making. 2021

Reflecting on the metaphorical meanings of lalava, I thought about how the relationship formed by the va and the interconnections of lala can influence an architectural design and operations within the space. The influence of the sea also played factor and I wanted to include it in the outcome, to which, I examined the Makoko floating school (fig 33) in Nigeria designed by Kunle Adeyemi. A floating structure reminiscent in Pacific metaphoric design will be a connection to the voyaging journeys by our ancestors. The triangular shape of the Makoko school captured my attention as most lalava patterns are triangular, and its use of programming is a similar direction envisioned for this project. For my design (fig 34.1) I began with two platforms that were designed in a way that reflects the same format of the double-hulled canoe with the structure standing between them. I used the same shape as the Makoko school while also infusing another structure of the same across the mid-section to resemble the cross intersection of the lalava shown in fig. This is where my structure begins to really differ from the Makoko school as instead of my structure stretching down to the platforms, it stops three quarters of the way, allowing an entry way between the platforms (fig 34.2). The intentions were to create a va between platforms, building and water but also allowing to become a passageway that allows people swim within or paddle their vaka across – intersection of the va, as the people engaging in the space act as the lala thus creating a form of lala-va outside of its traditional sense but through a bodily experience. Spaces have been included into the structure to hold workshops for lalava making as well as other traditional Tongan and Oceanian arts and general functions such as weddings and birthdays. A chapel has also been added due to influence on Pacific culture. This design too was experimental contained a lot of flaws in its structural format too obvious to ignore.

Fig 33. Adeyemi, Kunlé. Makoko Floating School. Retrieved from https://www.dezeen.com/2014/03/25/makoko-floating-school-nigeria-nle/. Image edited by Latu, Vena. 2021

Fig 34.1. Latu, Vena. Digital Fabrication. Lalava Inspired Floating Structure. 2021

Fig 34.2. Latu, Vena. Digital Fabrication. Entry way between Platforms of Floating Lalava Structure for kayaking, swimming and other water activities. 2021

Fig 34.3. Latu, Vena. Digital Fabrication. Perspective shot of Floating Lalava Structure. 2021

Fig 34.4. Latu, Vena. Digital Fabrication. Interior Perspective Shot of Floating Lalava Structure. 2021

Lalava patterns separates itself from other general patterns familiar to Tongan culture as it serves more than one function, as well as the placement and layering of lines making up its geometry. Architecturally, there is only one structure I have come across where its design is influenced by lalava, which is the Multi-Cultural Fale by McCoy + Heine Architects and Filipe Tohi (fig 35). The Multi-Cultural Fale successfully modernises the traditional fale using ancient traditions as a source of its inspiration, replacing its famous roof with a lalava sculpture sculpted by Tohi. Regarding lalava inspired architecture, the Multi-Cultural Fale, maybe one of a kind, though we kind find aspects of lalava within different types of architecture, it does not necessarily mean that lalava was a precedent in bringing said architecture to life.

Due to COVID-19 influencing the outcome of this research project, I realised that designing a single building, from what I have established from other Master of Architecture thesis, is the conclusion of the research conclusion which personally defeats the purpose and aim of this thesis. In terms of an architectural outcome, I intend to create a series of architectural structures reflective of a combination of the methods and methodologies undertaken throughout this journey of learning and passing on the knowledge of lalava making. By undertaking this approach, it will not allow the architecture outcomes to be more important than the learning how to make lalava but more so a reflection. Architecture influenced by movements can be difficult to express architecturally, but when re-visiting the conducted research, the motions of lalava making does not necessarily have to be reflected in the architectural outcome but maybe through how one operates within the space. As experienced through the faiva lalava and analysis of lala and va, lalava making can be interpreted into that of a bodily experience. The process of making and teaching methods play a crucial part in unravelling architectural outcomes and translating it into digital model making. Programming will play a critical part in how these structures operate, as this thesis focuses heavily on 'learning through making,' it will be missed if the spaces within these structures excluded a place to obtain knowledge through the guidance of indigenous experts. As the structure represents the beams, lalava is lashed onto, how one operates within the space represents the lalava making applied onto said beam – translating making into a bodily experience.

Fig 35. Latu, Vena. Digital Photography. Multi-Cultural Fale by Filipe Tohi and McCoy + Heine Architects, Mount Roskill, Walmsley Park. 2019

Concept Ideas and Design

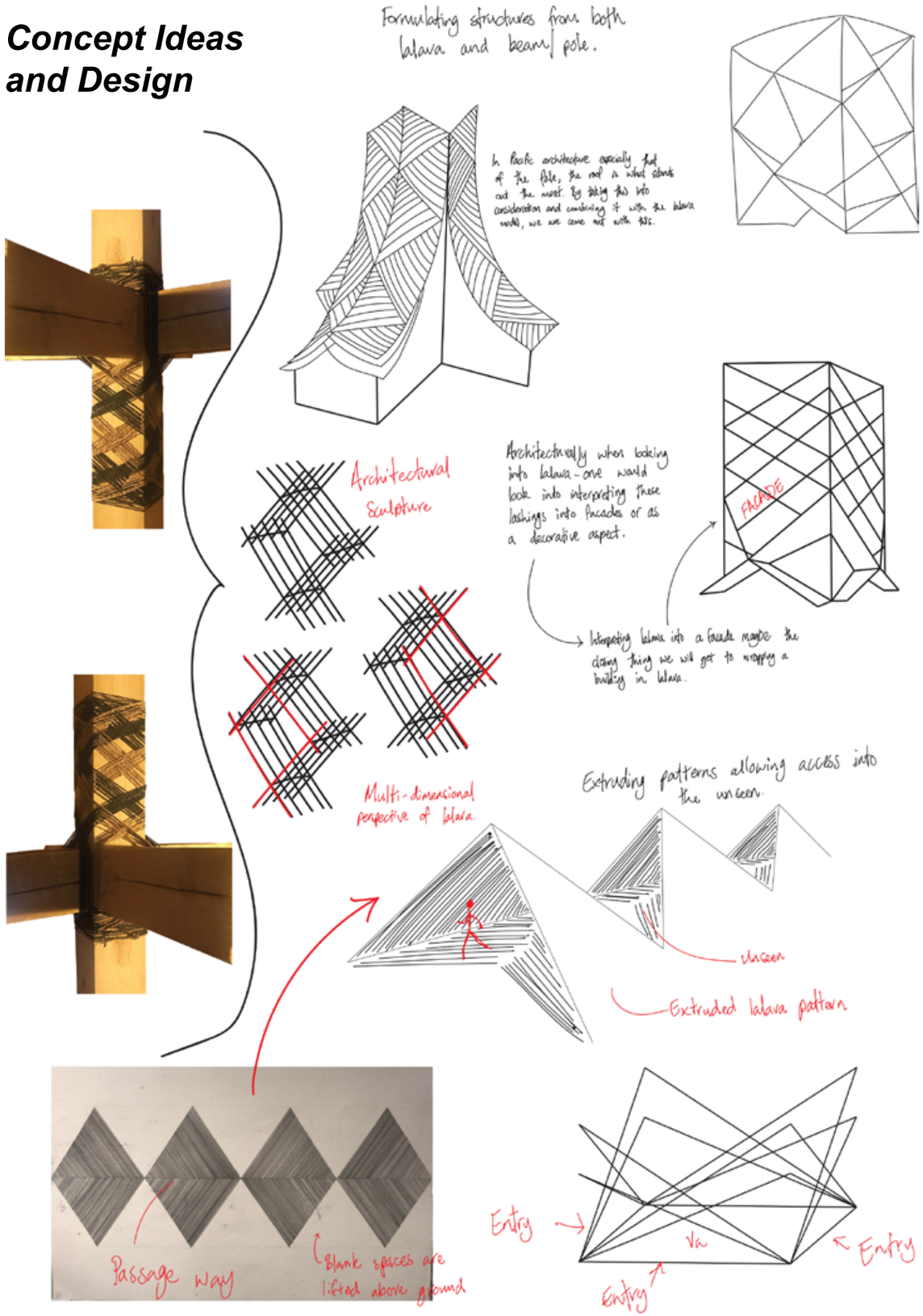


Fig 36.1. Latu, Vena. Concept Ideas and Design. Disecting Lalava Model Patterns and Movements Making to Unravel Architectural Forms. 2021

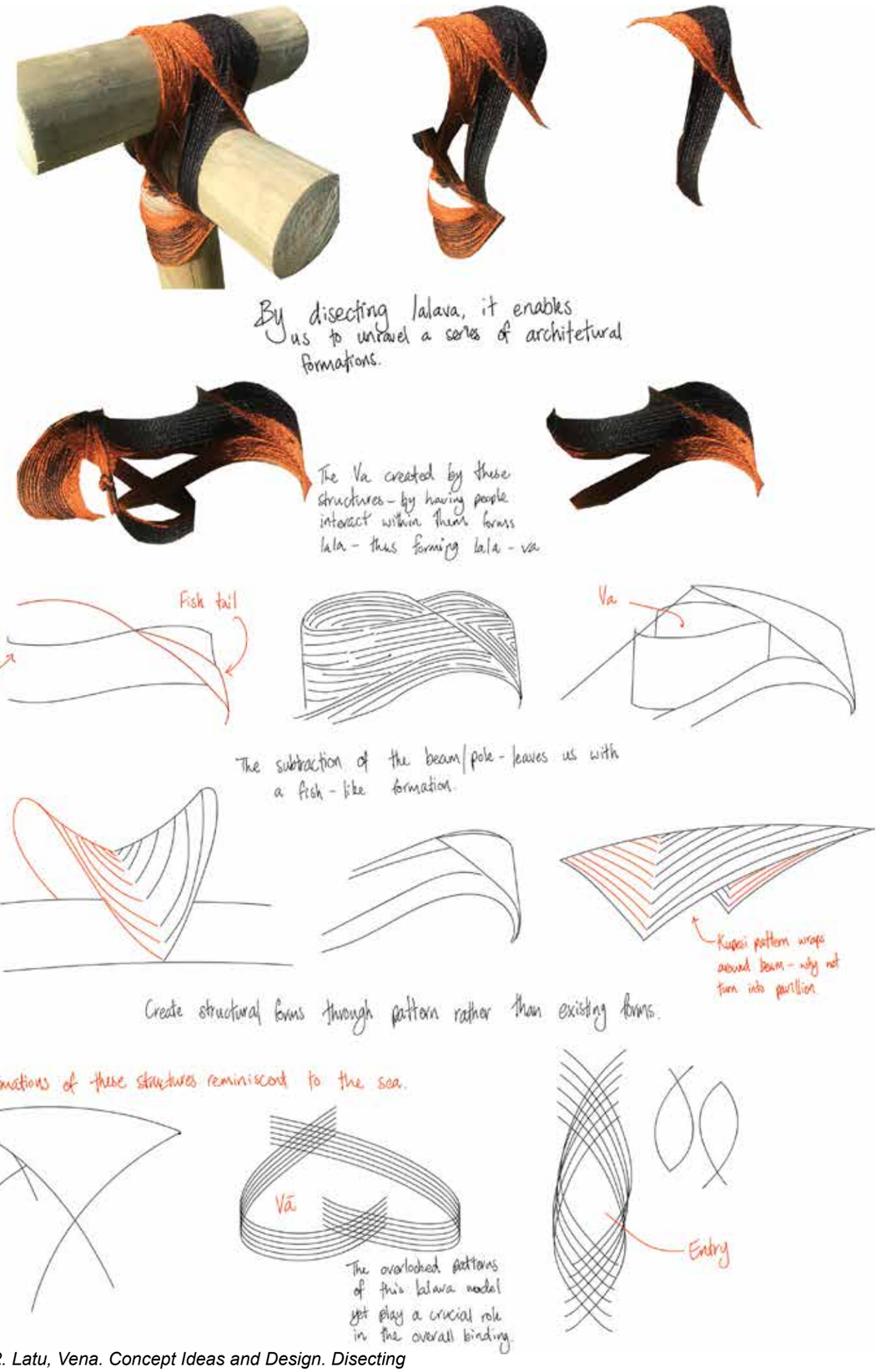


Fig 36.2. Latu, Vena. Concept Ideas and Design. Disecting Lalava Model Patterns and Movements Making to Unravel Architectural Forms. 2021

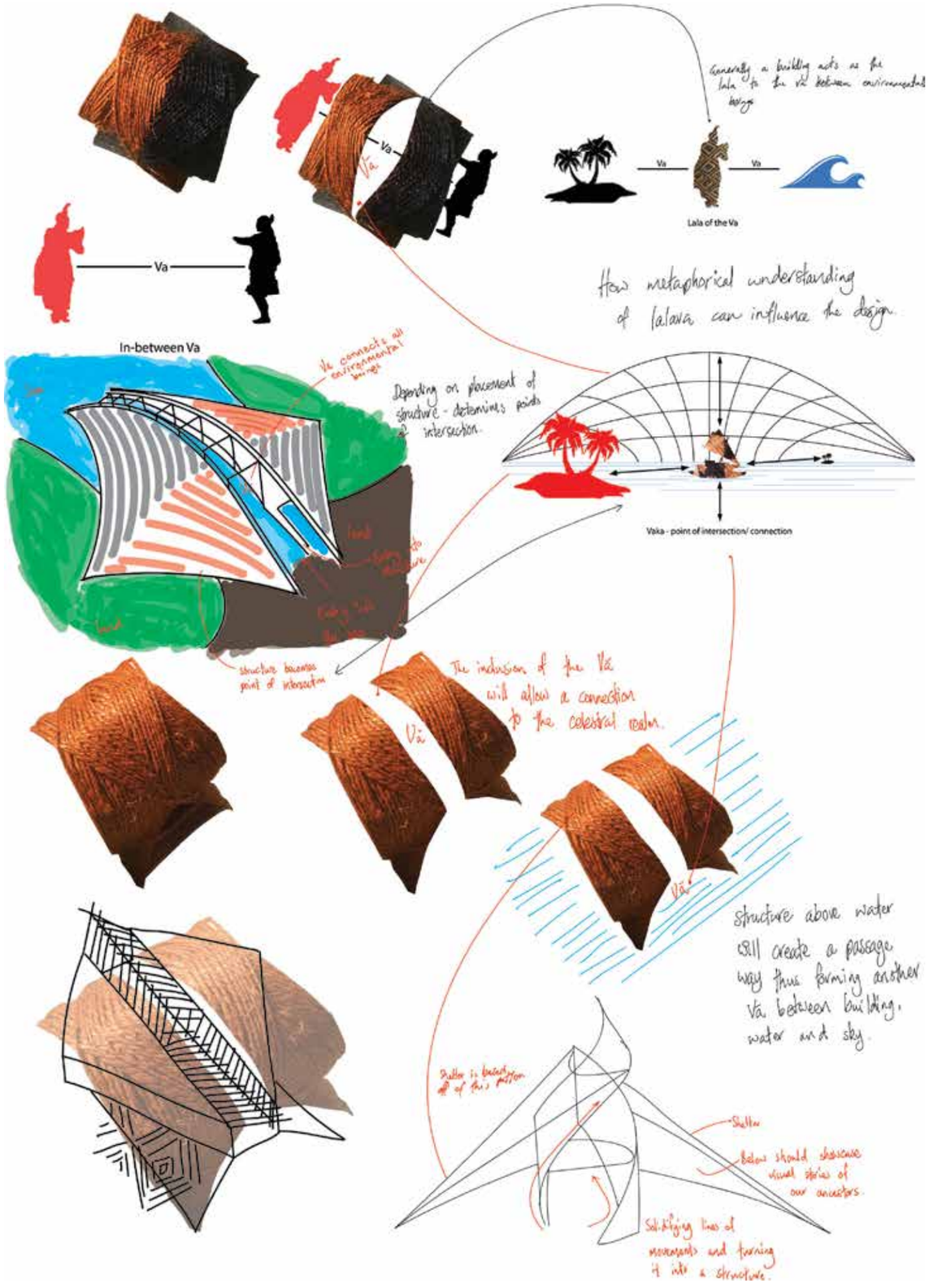


Fig 36.3. Latu, Vena. Concept Ideas and Design. Disecting Lalava Model Patterns and Movements Making to Unravel Architectural Forms. 2021

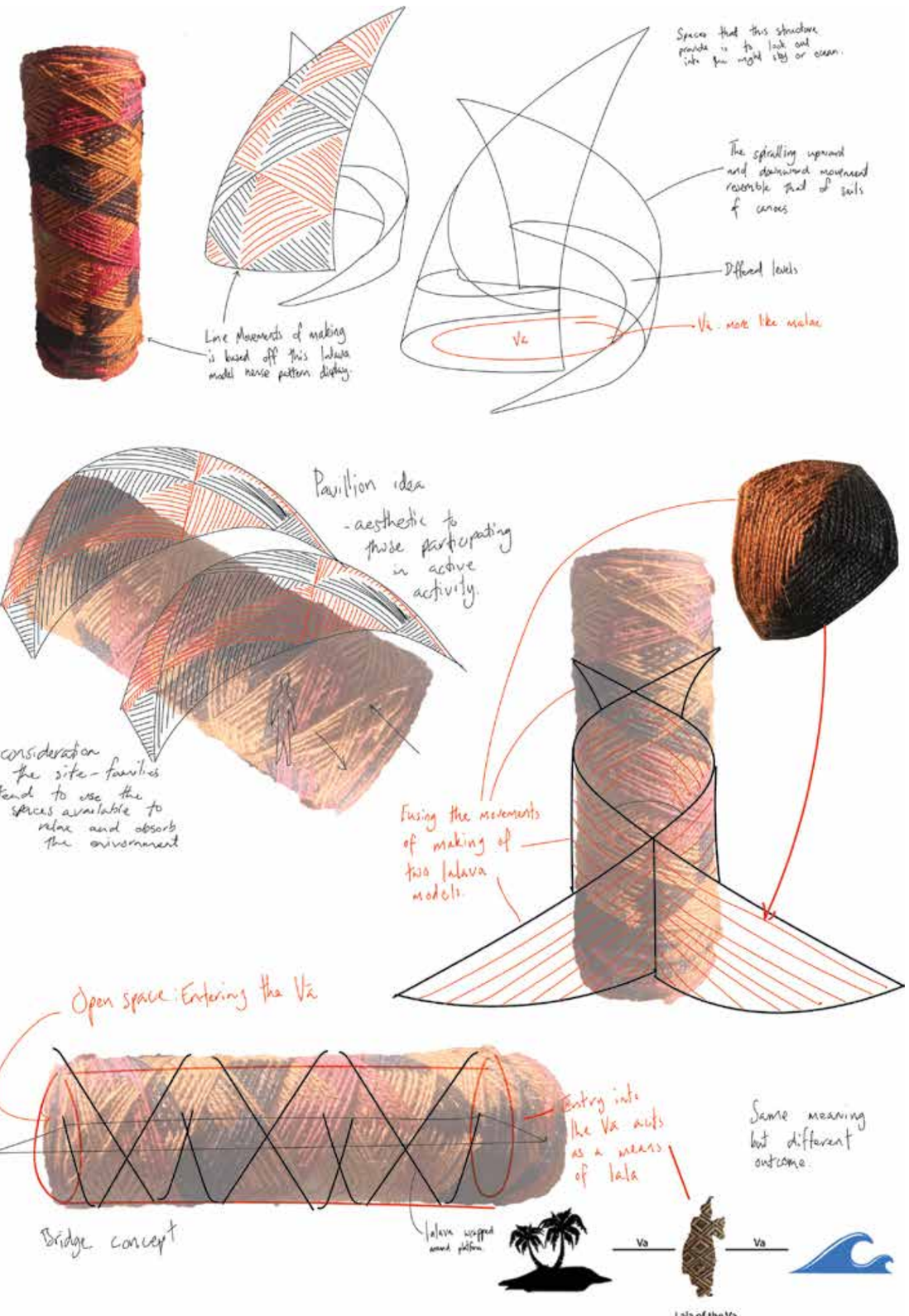
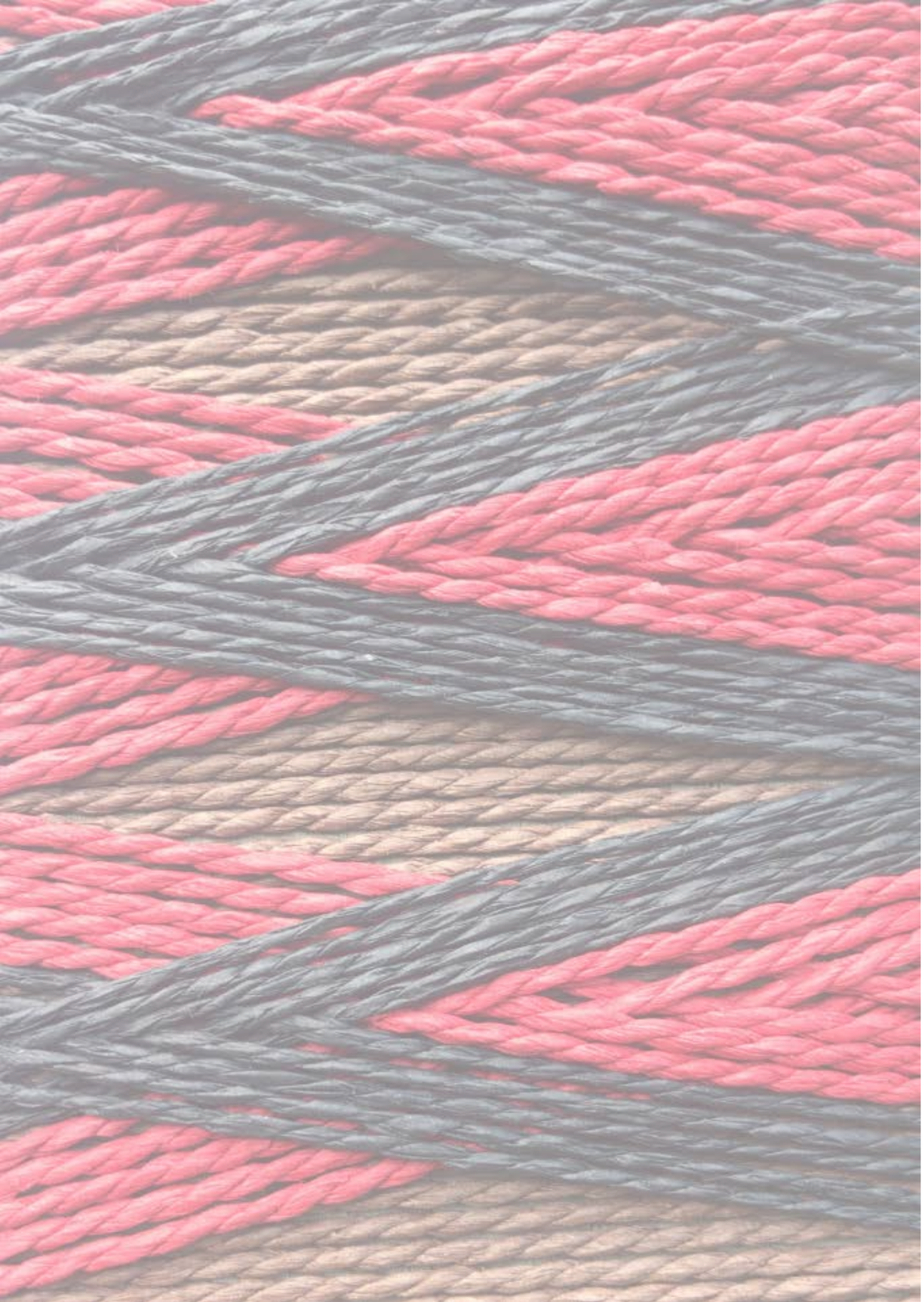


Fig 36.4. Latu, Vena. Concept Ideas and Design. Disecting Lalava Model Patterns and Movements Making to Unravel Architectural Forms. 2021



Conclusion

In conclusion this journey of this thesis dates to my undergraduate years, unravelling the Tongan Cultural Knowledge embedded in lalava to uncovering ways of learning its practice. The journey uses a phenomenological methodology and observative method in unravelling and making lalava. From a personal perspective, researching lalava has opened an unknown world of culture and knowledge, uncovering a genealogical connection to my ancestors – a connection I never knew I needed. Despite a heavy influence of Western Culture in the modern world, the cultural practices and indigenous knowledge passed down from our ancestors is still strong in Tongan society along with its interpretations with time. Cultural practices are a massive part of Tongan identity, and the ancestral memories are remembered through the participation of art.

As this thesis uses a practice base approach to obtain knowledge, the contextual review part of this thesis presents a solid ground to build off from as it reveals the cultural understanding intertwined within lalava, demonstrating a perspective unique to Tongans and Oceanian's. Analysing existing fales and their structural systems reveal the relationship between lalava and fale as well as the living and ancestors. Investigating the metaphorical meaning behind lalava showcases its versatility as an art form and constructional method – not separating the two contexts but embracing both as one.

Growing up in Aotearoa, I had seen and heard Tongan culture but never partook in it, therefore lacking in a genuine cultural experience. Conducting this research project helped me to understand that the indigenous knowledge embedded passed down by ancient Tongans is more than what is seen but its practice reveals a way of life that is labouring but very social. What I have discovered on this journey is that the social part of lalava informs a feature that reflects a natural approach among Pacific peoples in terms of 'art' or general attitude to everyday life. Lalava has enabled me to get insights into my ancestors' regular lifestyle and translate those phenomenological narratives into an architectural framework, allowing me to expand my understanding of Tongan culture beyond what it was previously. What this research unravels is the unseen influence lalava has on Tongan culture and society. Providing a series of methods and methodologies familiar to present Tongans and Oceanians in translating the making of lalava patterns both as an art and constructional method. As this modern world continues to develop its resources and technology, the ways of the past becomes forgotten, this thesis wishes to demonstrate that it is worth maintaining ancestral knowledge in envisioning the new world.

Appendix

Fale Analysis

My first experience of the Tongan fale came during my visit to Tonga in 2019, to which I visited three fales (Tupou College's Memorial Moulton Chapel, Pelehake Free Wesleyan Church of Tonga, and Sione Motu'a Chapel), all of which consisted of different structural systems. Through an analysis of these fales, there were no documentation on the Moulton Chapel and Pelehake Free Wesleyan Church's structural systems therefore I have interpreted earlier iterations of the Tongan fale as influences for its structural outcomes. Through a combination of analysis of my experience of being in the fale, pictorials and literary sources, I have been able to unravel influences of the modern renditions of the Tongan fale within their ancient descendants. The Moulton Chapel of Tupou College for example, the interior does not consist with a series of pou that support the roof structure as well as a sequence of vertical, horizontal and diagonal timber pieces that inhabit the roofs va. Rather its structure comprises of timber pieces that penetrates the ground and curves to a central rift beam while also splitting into a "V" like shape (fig 37.1). I believe this structural outcome was influenced by the fale faka-funa with the inclusion of a round enclosure on each end while also being elevated from the ground. From my perspective, the absence of a timber framing draws the viewers' attention to the va of the roof's domain – the lalava lashed onto the timber pieces is decorated with pieces of seashells. The combination of lalava, seashells, and roof domain creates an atmosphere reminiscent of the night sky where the shells represented the stars, along with the lalava and its timber structure indicate the night horizons that guided our navigating ancestors. This interpretation reveals a connection to where the chapel resides, Toloa, which is ironic as this is the name of the albatross, which ancient Tongan navigators interpreted the Southern Cross (fig). When stripped of its walls and end roof enclosures, the fale then becomes a pavilion, which expresses its versatility in functionality – this is evident in some of Tonga's modern architecture as they incorporate aspects of the fale in their design.

The Pelehake Free Wesleyan Church of Tonga is interesting as its timber structure is unique in the sense that there is no documents or pictorials that resemble its structural system. Similar to my approach with the Moulton Chapel, I analysed the structure of this church in the hopes to uncover influences of older renditions of the Tongan fale (fig 37.2). Like the fale fakamanuka and fale Faka-Tonga, the Pelehake Free Wesleyan Church of Tonga comprise of a series of pou that holds and supports the roof and timber pieces that teuteu the roofs va. I reinterpreted the timber structure as a rearrangement of the fale faha'iua structural system subtracting its two main pou's as it uses six main post to support the roof. The 'secondary posts' of the fale faha'iua is lifted into the va standing on both sides of the triangular structure – these secondary post plays the role of supporting the 'ato aoniu. The pou and horizontal post that sit upon them are made from concrete (a similar occurrence in the Saione Motu'a pou) which is an indication of modern times. The lalava displayed on these concrete posts don't serve a binding function but an aesthetic visual that speaks of ancient narratives.

Images

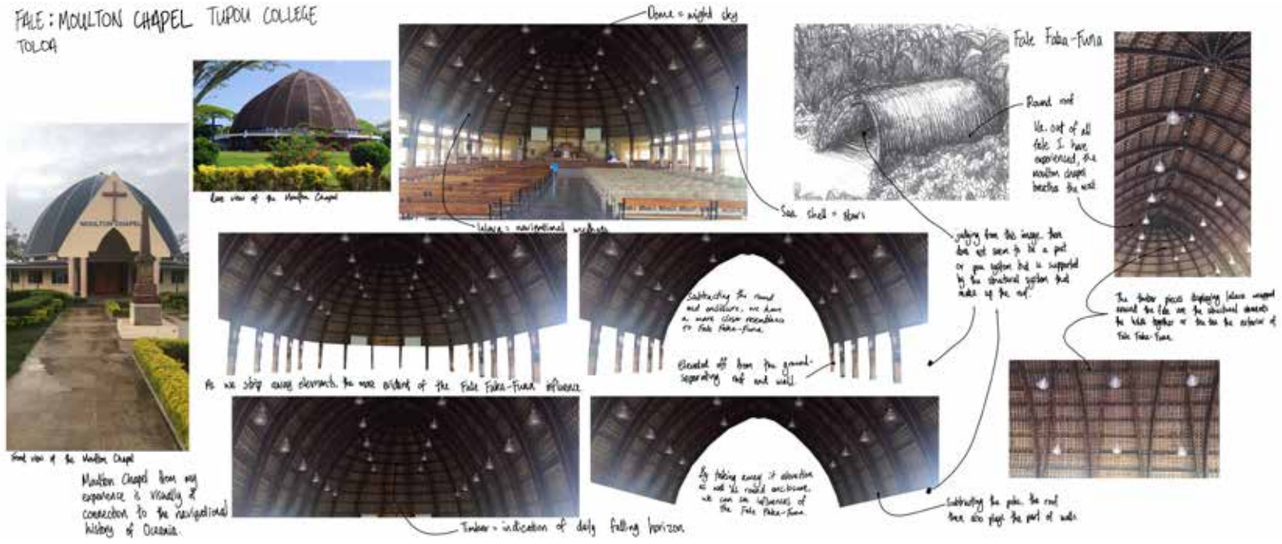


Fig 37.1. Latu, Vena. Analysis. An Analysis of the Tupou College's Moulton Chapel Fale Structural System. 2021

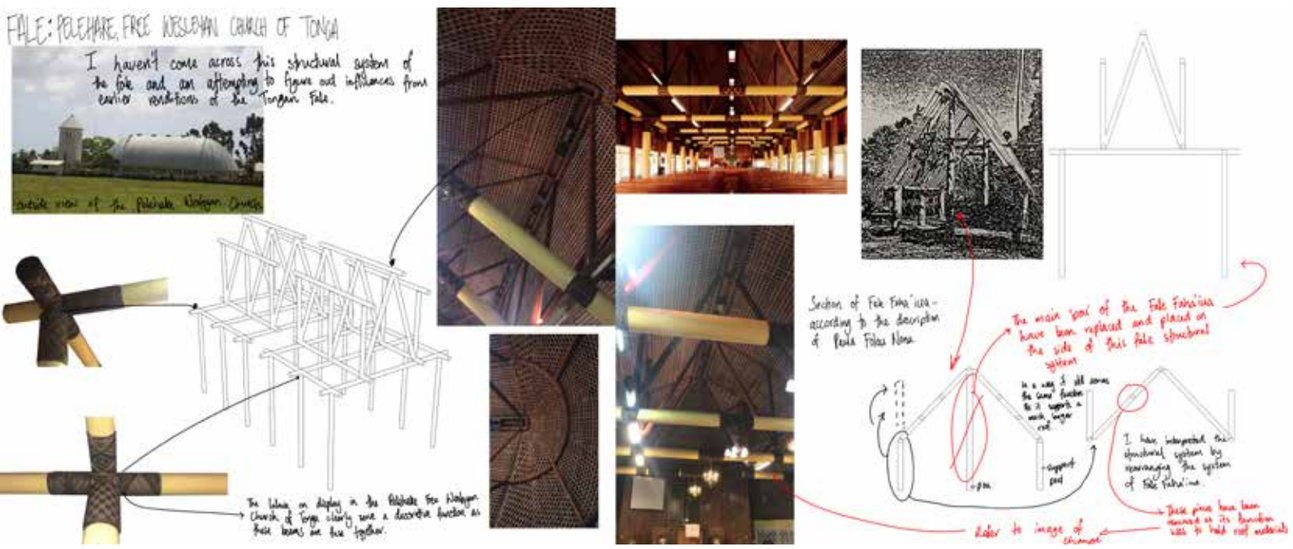


Fig 37.2. Latu, Vena. Analysis. An Analysis of the Pelehake Free Wesleyan Church of Tonga Fale Structural System. 2021

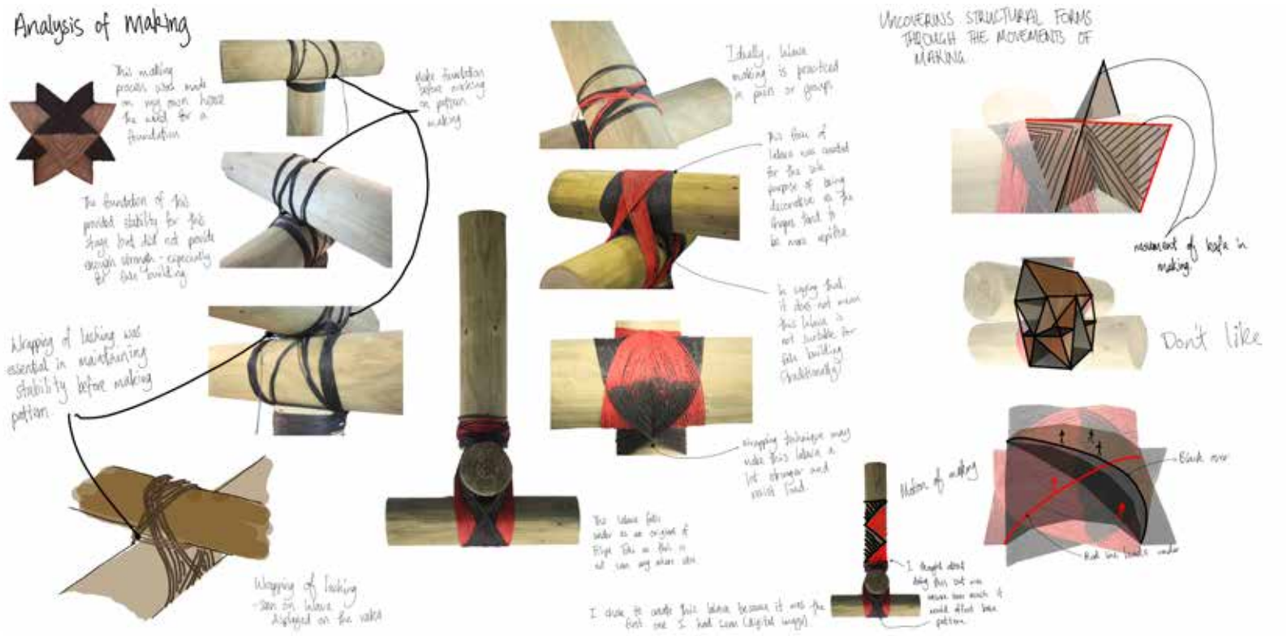


Fig 38.1. Latu, Vena. Analysis. An Analysis of Making the three conjunction lalava model. Model by Latu, Vena. 2021

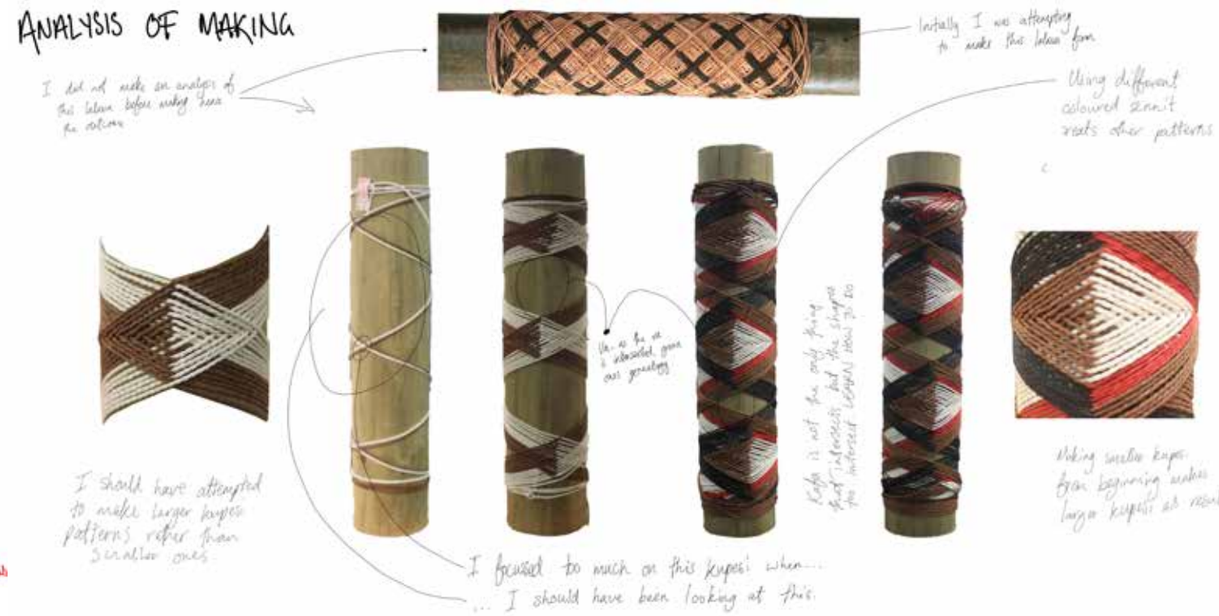
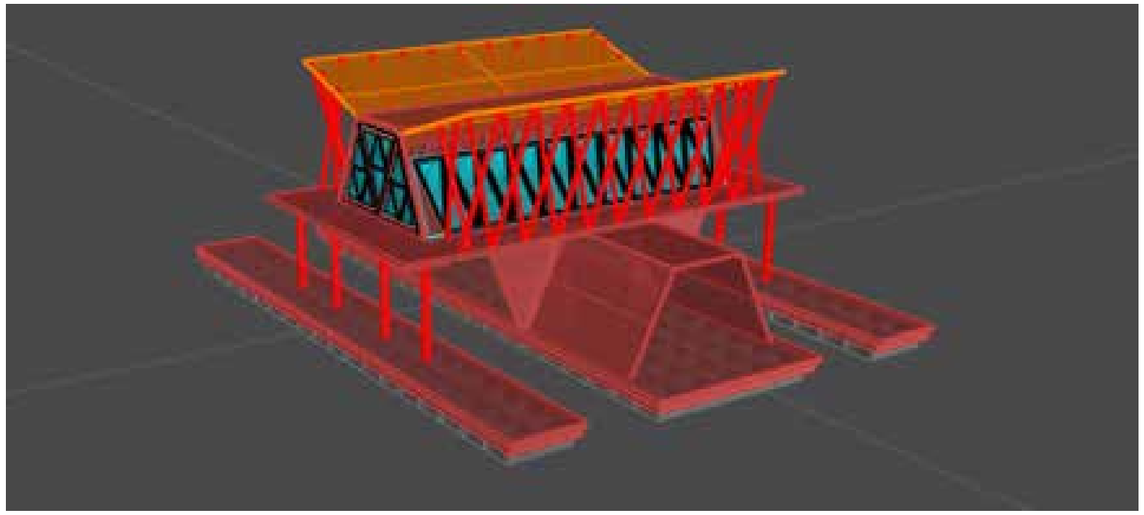


Fig 38.2. Latu, Vena. Analysis. An Analysis of Making the the single beam/ post lalava model. Model by Latu, Vena. 2021



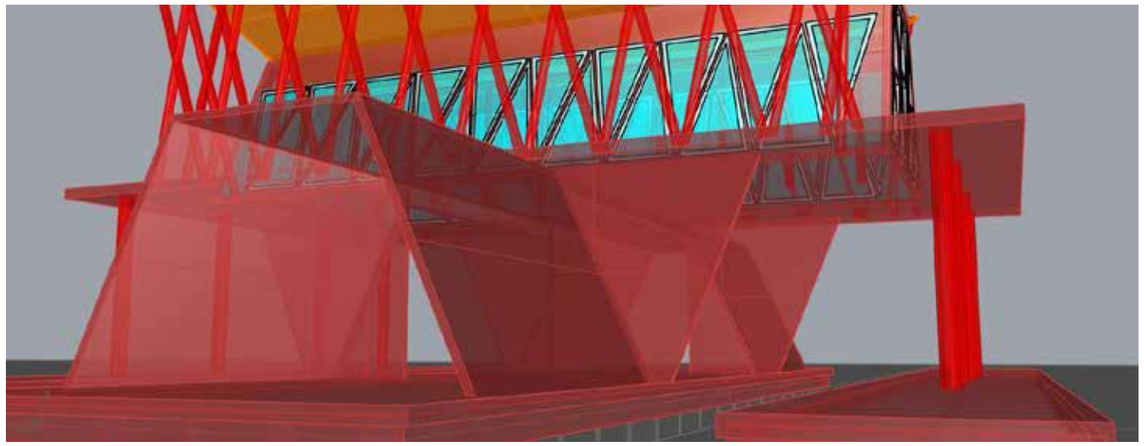
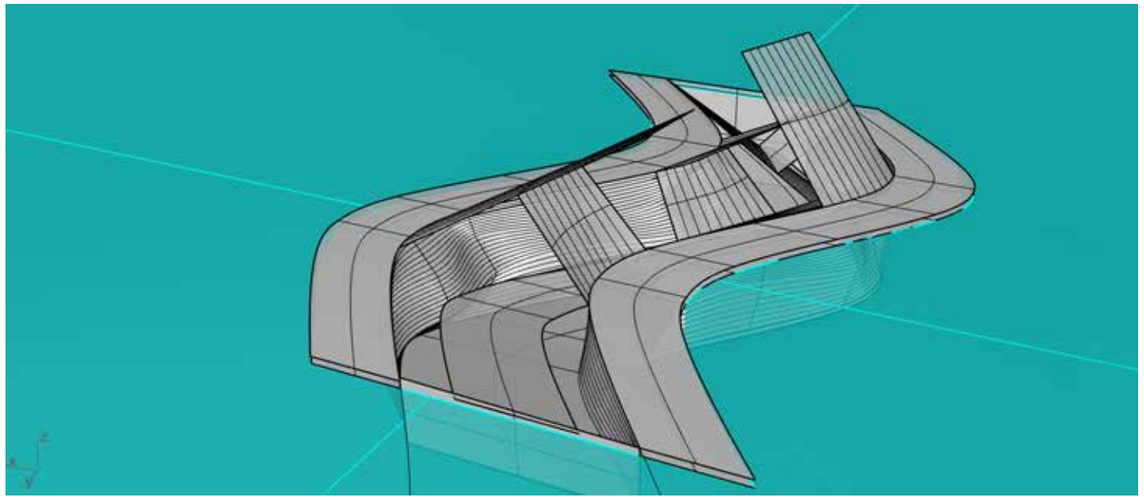
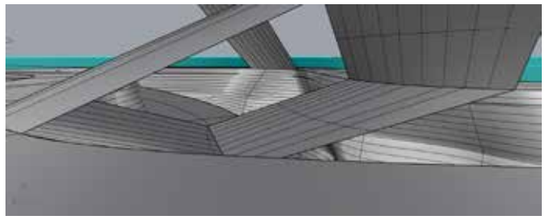


Fig 39. Latu, Vena. Digital Fabrication. Concept of Lalava Inspired Floating Structure. 2021





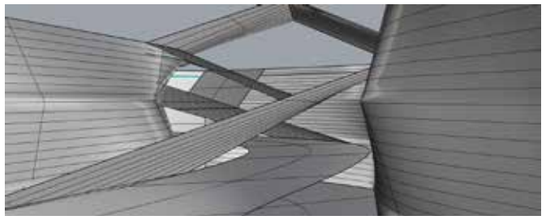


Fig 40. Latu, Vena. Digital Fabrication. Concept Idea of structure intersecting the underwater realm as well as lalava inspired sculptural elements. 2021

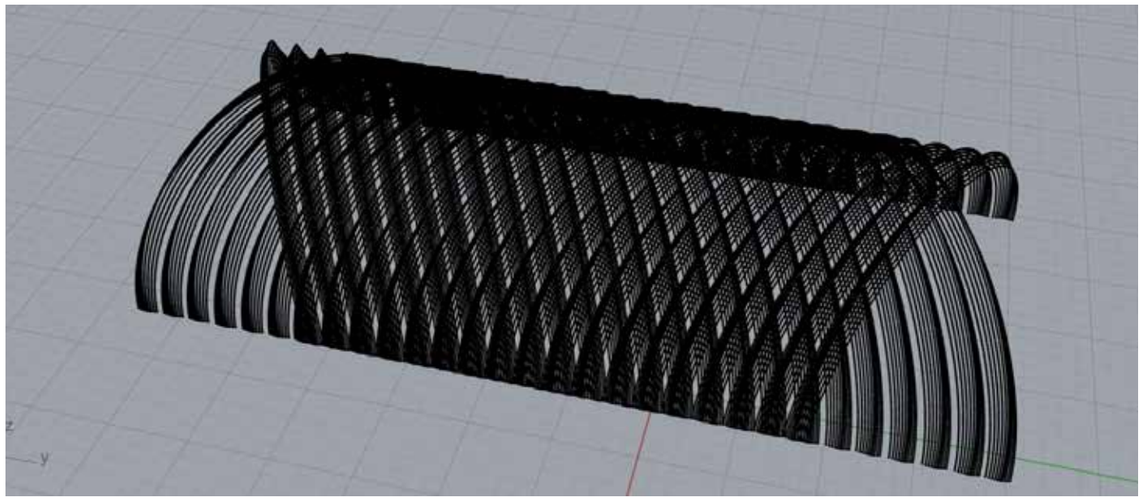


Fig 41. Latu, Vena. Digital Fabrication. Concept Idea of Lalava Pavillion. 2021

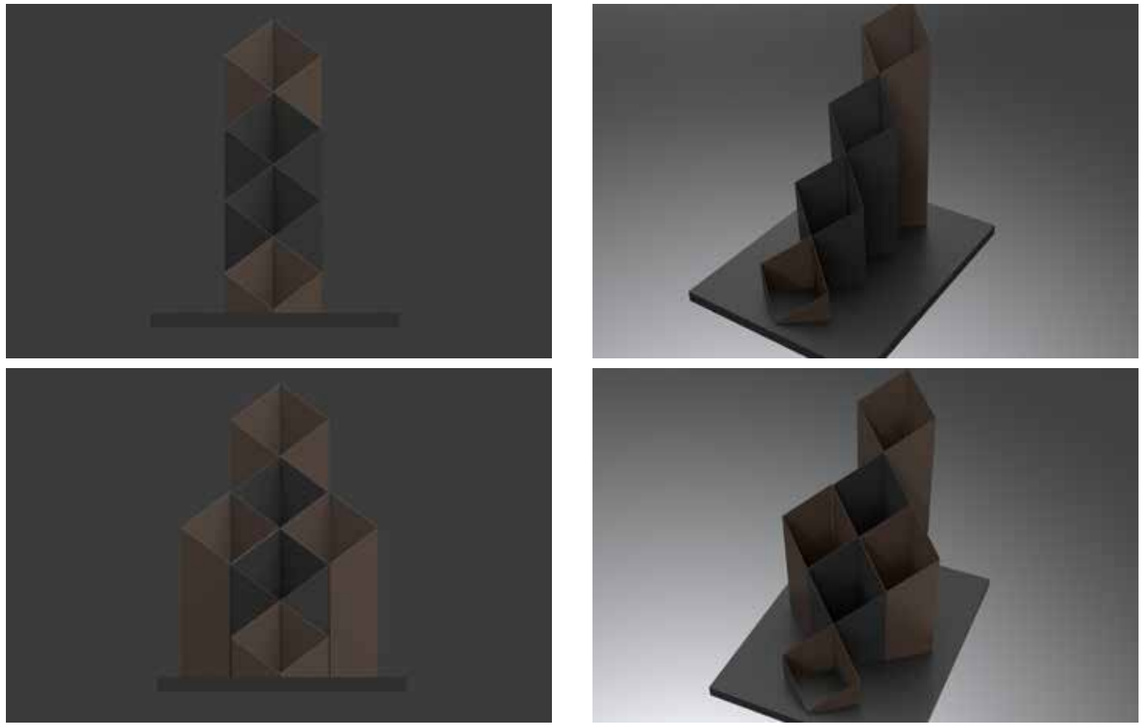


Fig 42. Latu, Vena. Digital Fabrication. Architectural Structure based off of Drawing (fig 16.3). 2021

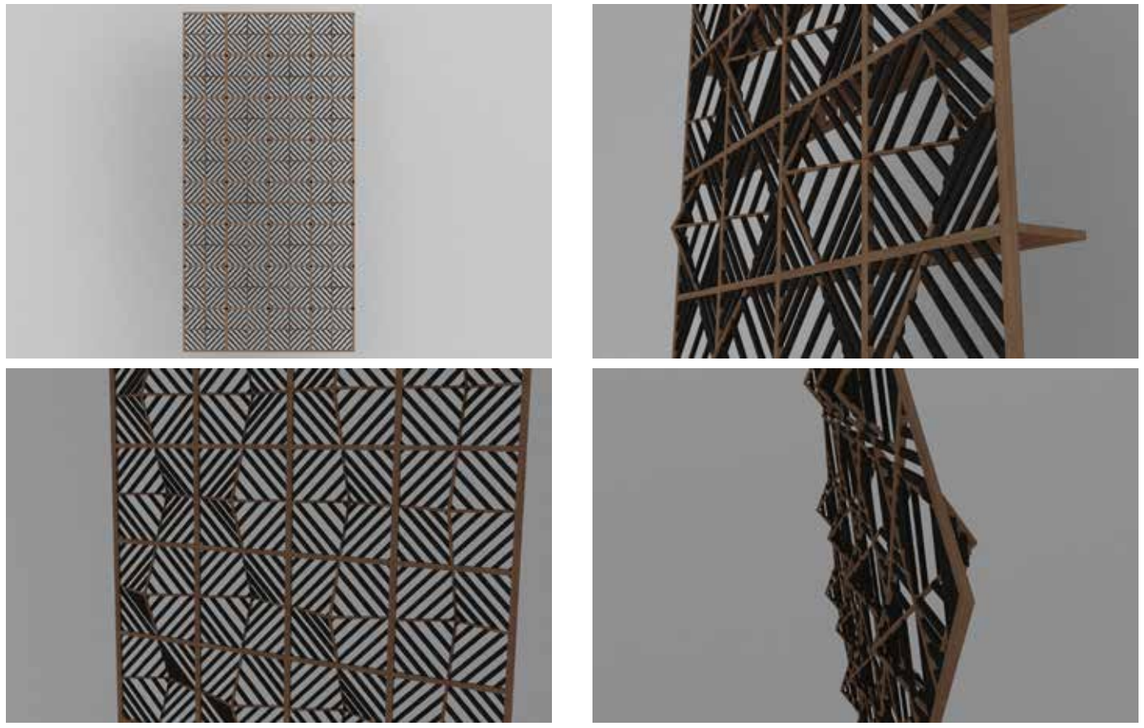


Fig 43. Latu, Vena. Digital Fabrication.Lalava Facade. 2021

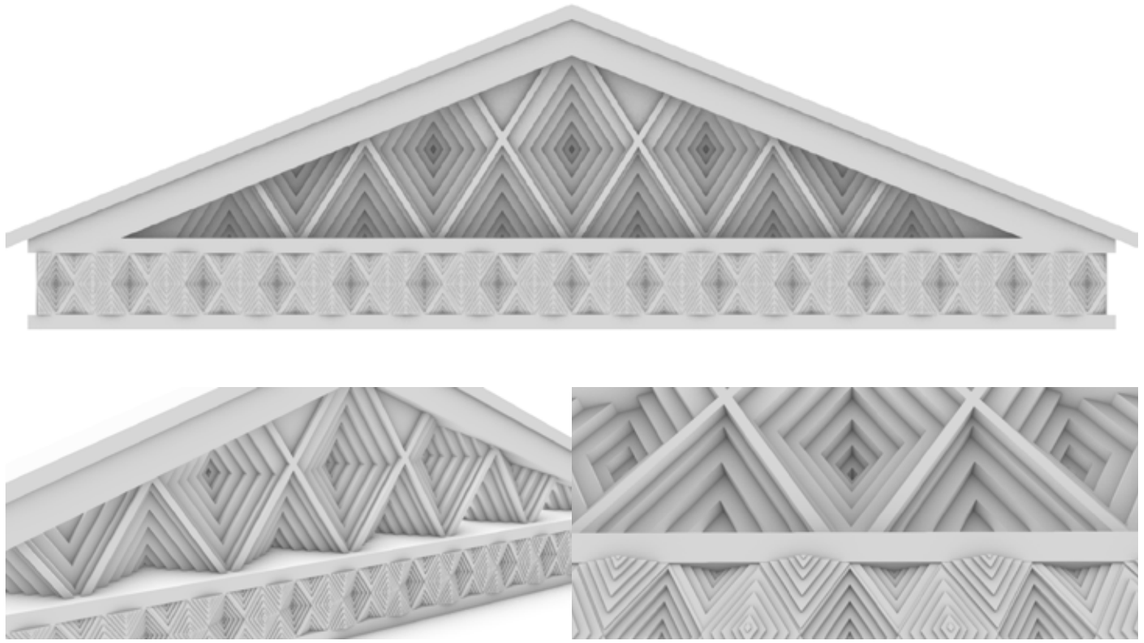


Fig 44.1. Latu, Vena. Digital Fabrication. Architectural Sculptures using Lalava - Inspired by the Greek use of Architectural Sculptures. Story Telling through Architecture. Triangular Roof. 2021

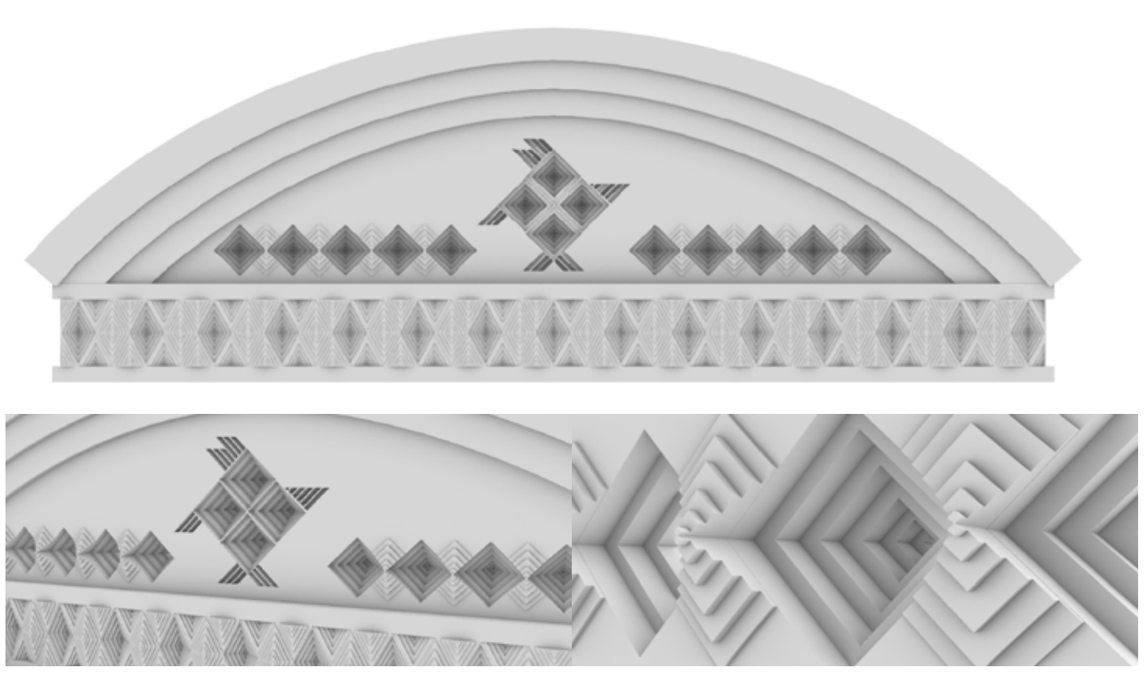


Fig 44.2. Latu, Vena. Digital Fabrication. Architectural Sculptures using Lalava - Inspired by the Greek use of Architectural Sculptures. Story Telling through Architecture. Round Roof. 2021

Fig 45. Latu, Vena. Studio. Work Space. 2021

Architectural Outcome

The Tongan Cultural Knowledge embodied by lalava is manifested into the architectural outcome, as metaphors are interpreted into a bodily experience in how one engages with the structure. A series of four structures have been designed and placed along the shoreline of the Manukau Harbour (fig 48) with three of the four structures positioned to intersect the va between land, water, and sky. When researching for case studies of architecture that captures the geometry of pattern making through lines, I stumble across Kengo Kuma's GC Prostho Mueseum Research Centre and Sunnyhill's Apple as I am reminded of the aluminium sculptures of Filipe Tohi (figs 47.1 and 47.2). As the encounter of lalava is usually through observation and touch, Kuma's design influence will allow the viewer to experience lalava from within. This design approach will allow three of the four structures to create enough intrigue for people to engage with it through aesthetics despite the absence in programme. In saying that relying on aesthetics, is not a strong enough outcome for a master's thesis project, therefore, the cultural meaning lalava embodies becomes even more crucial when interpreted into how people engage with the structures.

As mentioned in the 'Investigating Lalava' section of this thesis; the diagrams visualising the meanings of 'lala', 'va', and 'lala-va' helped framework how the space engages with the public. Despite his influence, I chose not to replicate Tohi's designs as the outcome would become an enlarged replication and my contribution to this outcome would be very limited, therefore, making the project, unoriginal. As Tohi looks to enlarge lalava patterns allowing viewers to experience lalava through his eyes, one element I have theoretically examined throughout this thesis but have failed to take into consideration in terms of physical design was the 'point of intersection.' As the placement of these structures are intersecting the three environmental realms (land, sea, and sky), it made sense to create something that physically intersects and connects these realms. The interiors of these structures are covered with glass walls (besides end) to prevent strong winds and rain from affecting the experience.

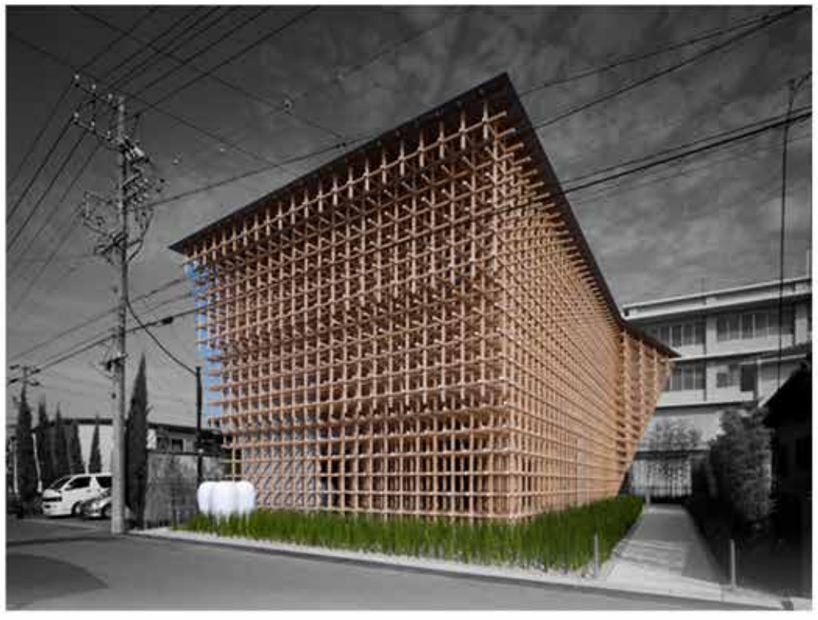


Fig 46.1. Kuma, Kengo. Sunnyhill's Apple. Retrieved from : https://kkaa.co.jp/en/project/sunnyhills-apple/ . Edited by Latu, Vena

Fig 46.2. Kuma, Kengo. GC Prostho Museum Research Centre. Retrieved from: https://kkaa.co.jp/en/project/gc-prostho-museum-research-center/ . Edited by Latu, Vena

Fig 47.1. Tohi, Filipe, Aotea (White Cloud). Retrieved from: https://www.aucklandartgallery.com/whats-on/exhibition/sopolemalama-filipe-tohi-aotea-white-cloud?q=%2Fwhats-on%2Fexhibition%2Fsopolemalama-filipe-tohi-aotea-white-cloud

Fig 47.2. Tohi, Filipe. Matakimoana. Retrieved from: https://blog.tepapa.govt.nz/2012/09/03/celebrating-tongan-language-week-1-september-to-8-september/tangata_01-2/

The point/s of intersection create the geometry that make up the patterns of lalava. Three of these structures are patterned after three different stages of lalava making and are solidified into a structural format and positioned in a way that allows access for humans (figs 49.1, 49.2, and 49.3). The solid walls are then substituted with a series of steel squared steel pipes – allowing access for sunlight thus creating a sequence of interesting shadows forming relationships between the materials and immaterial. As one enters these structures, they enter through one line before inhabiting the point of intersection in which the other line is reserved for the 'line of sight.' Immaterial and material relationship reappears again as the shadows highlighted by the sunlight through the structure not only intersects the physical lines of the structure itself, but the line of movement by people as they make their way through the structure. These elements and interactions create a complex form of spatial relationships through linework (imaginary lines, inhabited lines, built lines, and line of sight). The various intersection of linework through this project is a metaphor for lalava making through a bodily experience. The interior of the space could also be interpreted as the va, therefore, the intersection of all linework turns into a 'lala' of the 'va.' Through the line-of-sight sector of these structures also point directly to the sky, a reference to how ancient navigators favoured reading the night sky in search of land. As these structures intersect the three environmental realms, people inhabiting the space become the point of intersection between the realms – similarly to how we are connected to the environmental realms through the va.

The remaining structure (fig 56) is placed at an area with the most human activity as it is the only structure that consists of a programme. The design of this structure is based on one of the concept drawings from figure 36.3. The process was to substitute the beams and make use of the space/s it leaves behind, becoming the interior space and transforming the lashing into the exterior. The lalava is then split down the middle into two halves and separated to create the va between two structures – connected through the va, it becomes 'one.' A series of beams are incorporated on both sides of the building, piercing through the ground as it follows the flow of the roof out the top end intersecting the sky realm as well as each other. The buildings va is a space for vaka making as well as outdoor lalava and carving workshops. As these activities function within the va, they also are intersecting it through a bodily experience, as human interaction become the 'lala' to the 'va,' formulating relationship between human and building. The interior spaces also hold workshops such as 'faiva' classes, 'nimamea'a' workshops as well as other creative practices. As the area around the structure is so large, I have stored the large vakas and thought it would be a great place for groups to use as practice for events such as Polyfest, and Pasifika. These structures fulfil a void in this Master's Research Project, as unforeseen circumstances changed the course of where this thesis was heading, it allowed space for how lalava could architecturally be interpreted into a series of spaces that does not overshadow the main section of this thesis as well as site activity but harmoniously coexist with it.

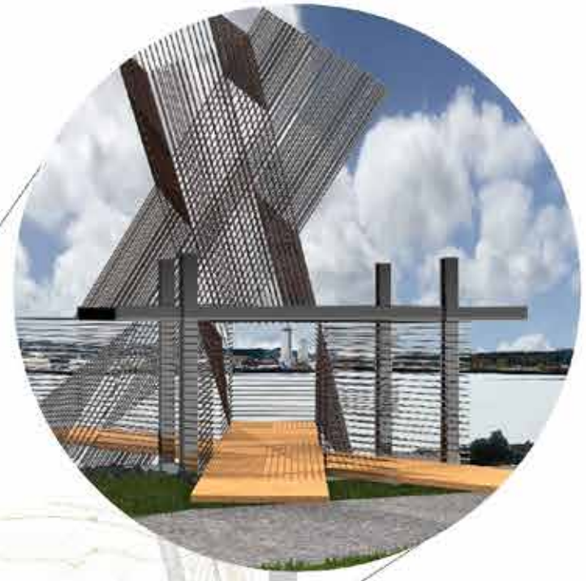
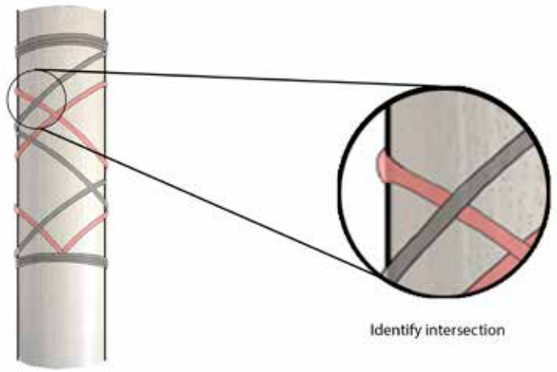
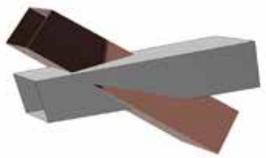


Fig 48. Latu, Vena. Digital Drawing. Placement of Structures along Manukau Harbour Shoreline. Site Map. Final. 2022



Identify intersection

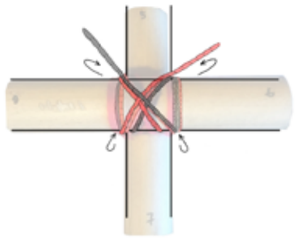
Identify movements of kafa made within steps.



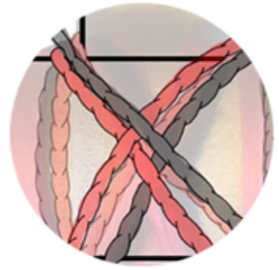
Solidify lines

Position that allows the person to enter the same direction as the movements of red line

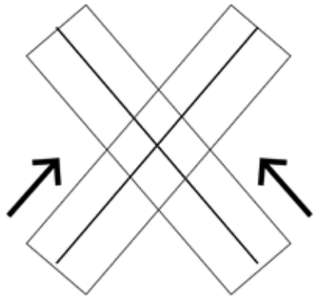
Turn solid exterior into lines - creating lalava-like intersection



Step 11 of the model making process

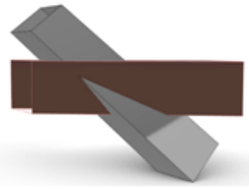


Point of intersection between kafa



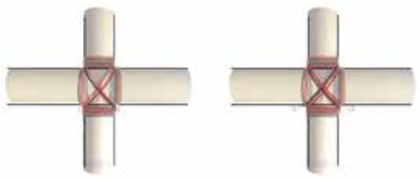
Capture Shape and directional movements and turn into an architectural form

Turn to solid and unravel options of operating in the space using different senses



Operating in space combines both movements of making and observational analysis: movements inside = making, spaces inside that can only be entered through site = observational analysis

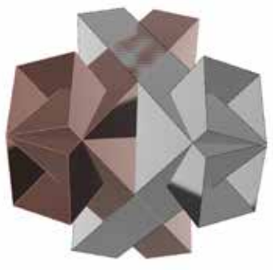
Turn solid into a series of lines and position structure in a way that rthe operation within the space translates to the movements of its step



Steps 20 and 25 identifies the most cross intersection between kafa interection when observing al directions of the lalava conjunction.

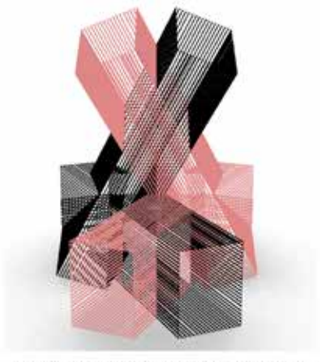
Focus on intersections of main patterns subtracting other movements around conjunction.

Considering movements of making around the conjunction - think about design outcome, translate wrapping.



Solidify conjunction - result will turn out to become a sculptural outcome

Position in a way that is suitable for human entry



Turn exterior into series of lines - unravelling a lalava-like intersection of lines.

Fig 49.1. Latu, Vena. Digital Drawing. Architectural Concepts and Making. Structure 1. 2022

Fig 49.2. Latu, Vena. Digital Drawing. Architectural Concepts and Making. Structure 2. 2022

Fig 49.3. Latu, Vena. Digital Drawing. Architectural Concepts and Making. Structure 3. 2022

Fig 50. Latu, Vena. Digital Fabrication. Lalava Structure 1. 2022

Fig 51.1. Latu, Vena. Digital Fabrication. Lalava Structure 1.
Interior Perspective Shot. 2022

Fig 51.2. Latu, Vena. Digital Fabrication. Lalava Structure 1.
Interior Perspective Shot. 2022

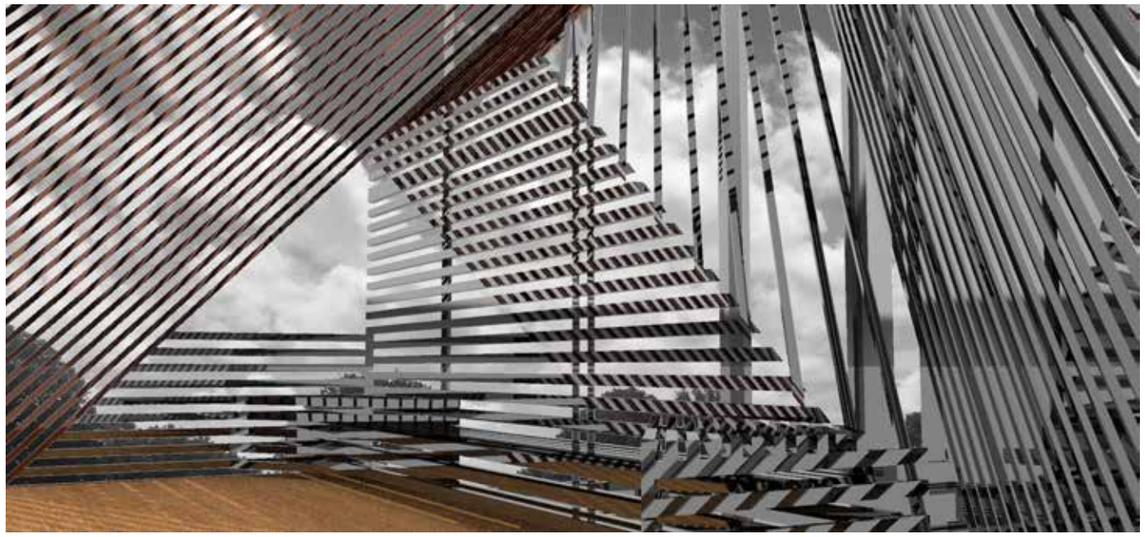


Fig 51.3. Latu, Vena. Digital Fabrication. Lalava Structure 1.
Interior Perspective Shot. 2022

Fig 51.4. Latu, Vena. Digital Fabrication. Lalava Structure 1.
Interior Perspective Shot (Birds Eyeview or Drone). 2022

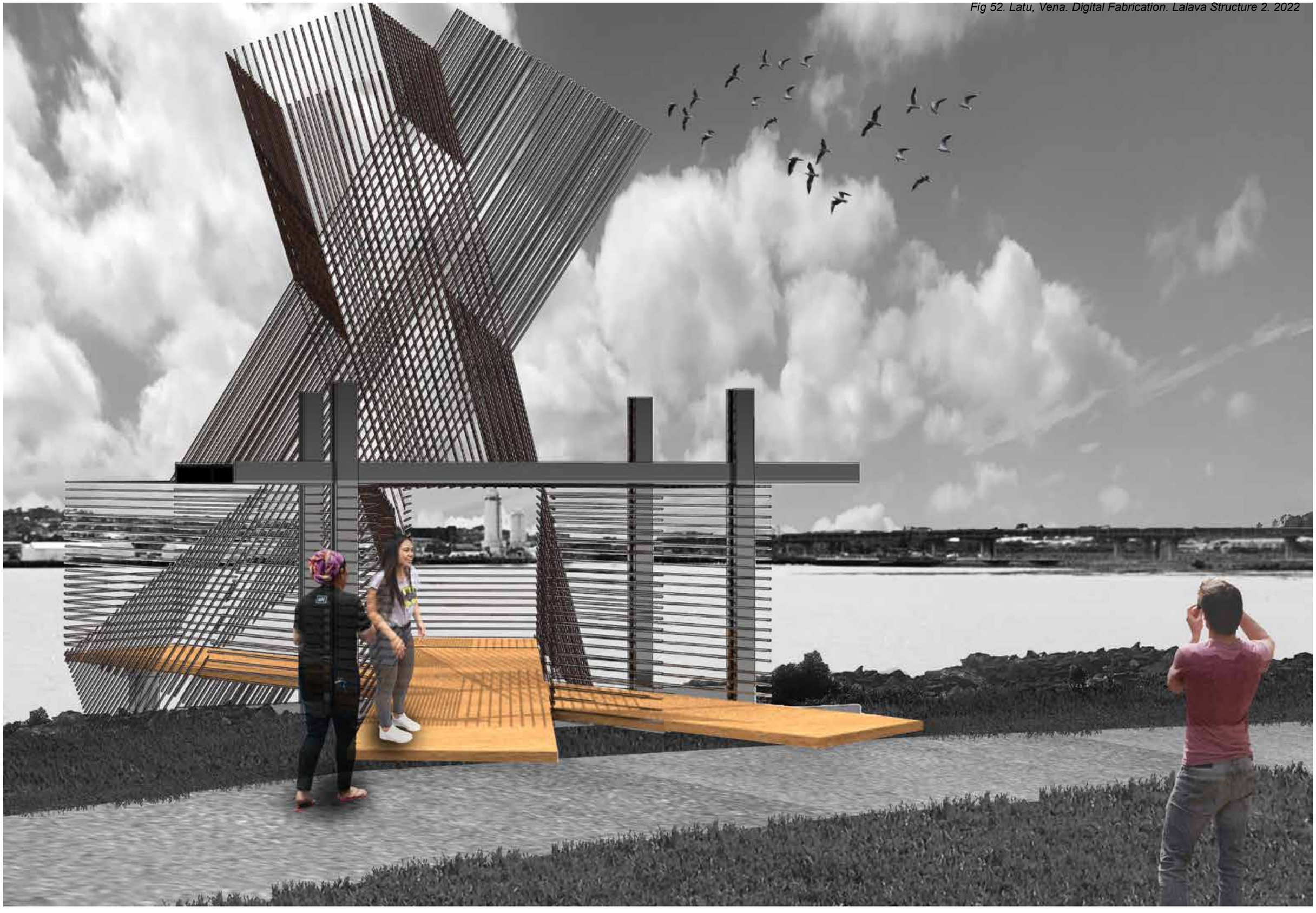


Fig 52. Latu, Vena. Digital Fabrication. Lalava Structure 2. 2022

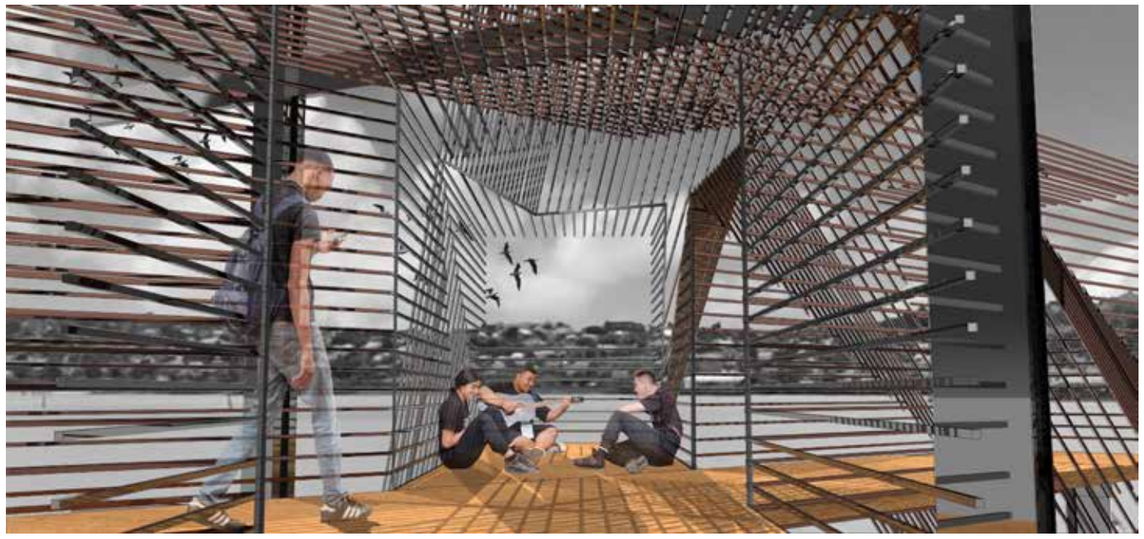


Fig 53.1. Latu, Vena. Digital Fabrication. Lalava Structure 2.
Interior Perspective Shot. 2022

Fig 53.2. Latu, Vena. Digital Fabrication. Lalava Structure 2.
Interior Perspective Shot. 2022

Fig 54.1. Latu, Vena. Digital Fabrication. Lalava Structure 3.
Interior Perspective Shot. 2022

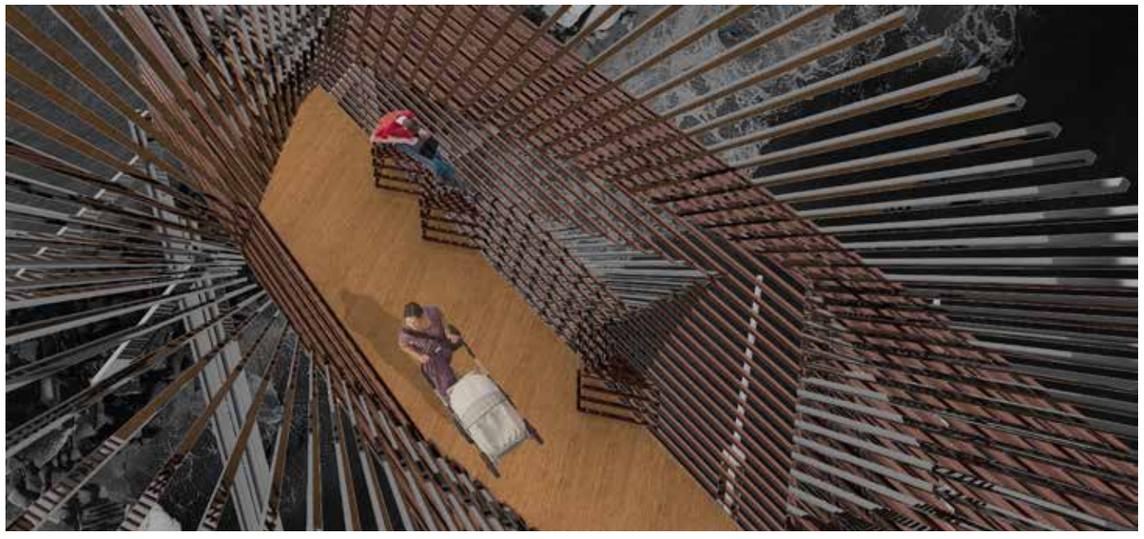


Fig 54.2. Latu, Vena. Digital Fabrication. Lalava Structure 3.
Interior Perspective Shot (Birds Eye View or Drone). 2022

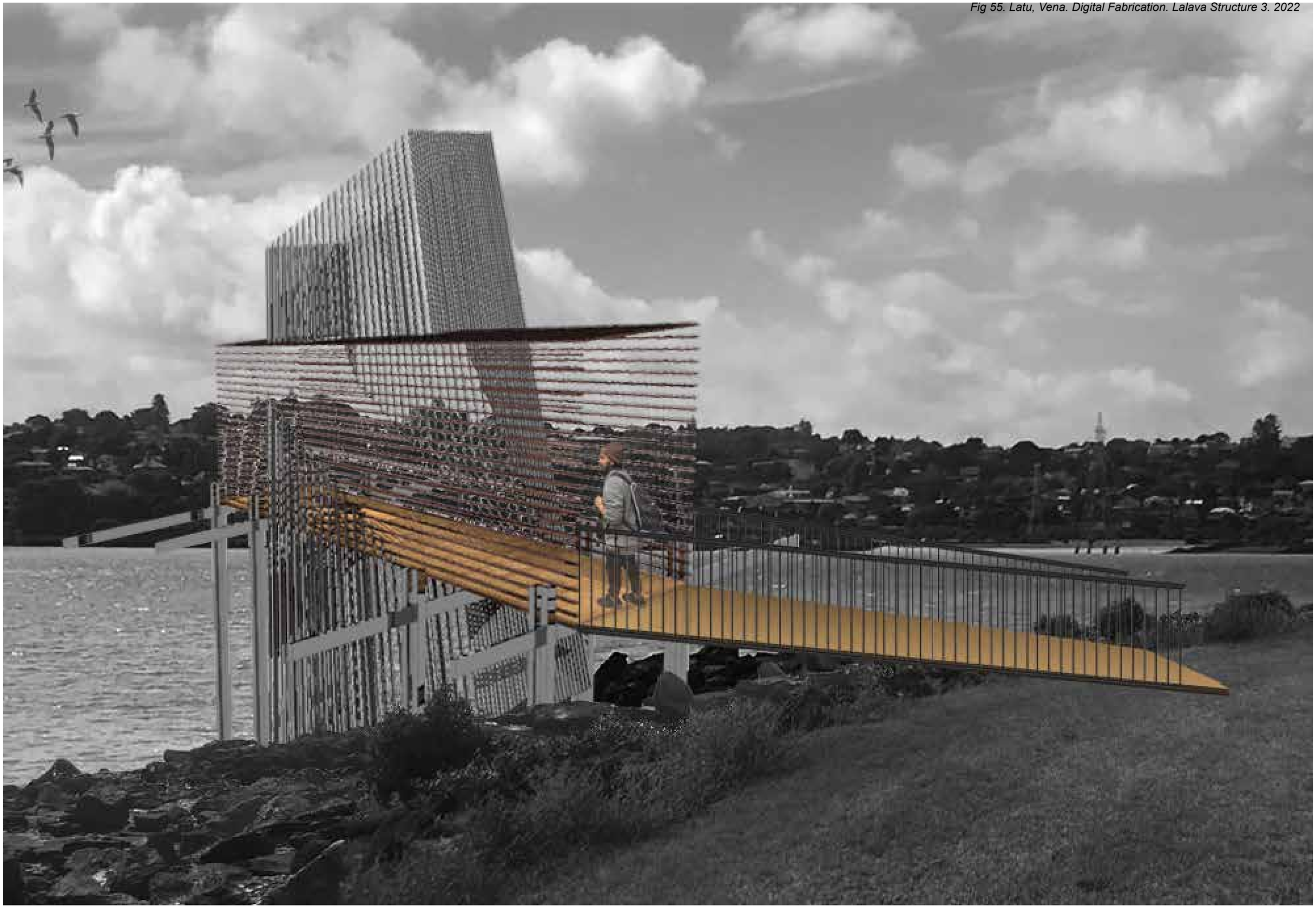


Fig 55. Latu, Vena. Digital Fabrication. Lalava Structure 3. 2022

Fig 56. Latu, Vena. Digital Fabrication. Lalava Structure 4. 2022

Fig 57. Latu, Vena. Digital Fabrication. Lalava Structure 4. Interior Perspective Shot. Programme. 2022

Fig 58. Latu, Vena. Digital Drawing. Lalava Structure 4. IMap Placement/ Site. 2022

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