

Two Zen monks upon seeing a wind bell ringing:

«

The Master asks: 'What makes the sound? Does the bell make the sound or the wind make the sound?'

The student answers: 'My mind makes the sound, because the wind causes the bell to strike and vibrate the air, but there is no sound until that vibration reaches my ear and is interpreted by the mind. Sound exists thus only inside of our mind.'

The Master says this is not true: 'Even if my mind is working, if the wind does not blow, the bell does not shake, and the air does not vibrate – then there is no sound. In reality, they are all making the sound. There is no subject who listens and no sound that is heard, but the entire universe is making the sound through this person. This is total dynamic function.'

»

– Zen koan from Master Dogēn's Shobogenzo (Cross & Nishijima, 2006)



The works I create explore modes of investigation and knowledge in a historical, contemporary and futurist setting. Taking the form of sonic sculptures, instruments, visuals, videos and performance pieces, I consider the artworks as philosophical larynxes². I used the project to explore how art can be a tool to seek and represent information about certain experiences in my social world and how an individual path of healing through artistic practice is possible and can be realised in the exhibition.

Notes on this writing:

The limit and scope of this project hinder it from fully delving into the depths of the nexus of my ideas. Much of my influences and research in the domains of art, music, science and cosmology may never be mentioned here, though their presence may in some instances be traceable within the work itself and in the bibliography. I refer to one instance of a specific historical return to wayfinding in the main text, a 'deep' story of which I can give only a surface overview, and two brief discussions about wayfinding methods and their place in the world of ideas in the Addendum (the Voyager Spacecraft and the Mechanical Clock). This supporting text and the exhibition itself seek to contextualise the specific patterns of thought that constellated this project and brought it into being.

An improvisational script generated through states of being induced by free improvisation as I practice it separates the sections of this essay. This same script is etched into the control panel of the "Polyphonic Space Simulator" ("POLYSS"), the unique stringed instrument I designed and built as part of this Masters project.³

Improvisation and the sites/sights
and sounds of healing
Kamil Hassim

In partial fulfilment of the requirements for the award
of the degree of Master of Fine Art.

Michealis School of Fine Art
Faculty of Humanities
University of Cape Town
2022

DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed and has been cited and referenced.

Signature:

Date:

1 Koan – noun: a paradoxical anecdote or riddle without a solution, used in Zen Buddhism to demonstrate the inadequacy of logical reasoning and to provoke enlightenment.

2 This concept is developed in the sections "Prototyping as studio praxis" and "Improvisation in a sonic/musical context".

3 This is described further in the chapter "Prototyping as studio praxis".

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Final notes on this document:

The unconventional digital format of this document owes to its real world manifestation and the design of its physical counterpart. In keeping with the themes and ideas discussed in this text, the physical document is itself an artwork which forms part of this exhibition.

The physical design of the document is inspired by Ancient Buddhist sutras; a historic collection of philosophical aphorisms and axioms of the Zen tradition which the opening quotation also stems from.

This “Wave Book” is constructed meticulously by hand and utilises the soundboard of my first guitar as a cover on one side, and a chalkboard as the cover on the other. When closed the book resembles an ancient sutra text, but when opened the reader can either read it in a double page spread as one would a conventional book, a quadruple page spread or as a series of waves in which the entire book unfolds to a three meter length.

In this way the book is a symbolic representation of the philosophical larynx mentioned in the text and is itself a literal sounding out of the ideas contained within the words. The book takes the physical shape of a waveform and is itself made from the wood of a musical instrument. This draws a relationship to the history of Wayfinding, as well as its relationship to sound and the material form of sound as waves in space and time.

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The Addendum in the text is included at the end to supplement the conversation of Wayfinding, instrument making and the relationships of the relative ways cultural paradigms organise and reflect an otherwise shared physical reality (As in the case of the Voyager Record). This inclusion is important to recognise Wayfindings inherent connection to Science and instrument making despite Wayfinding itself presenting as a cultural / spiritual instrument which makes use primarily of the human body as an instrument of navigation.

The document questions about how embodied practices and archival conventions (including dissertation writing itself) interact in a generative rather than reductive way.



*  *

Improvisation and the sites/sights and sounds of healing: Wayfinding as a studio praxis



Figure 1:
Sonic improvisation
35 mm film
2021

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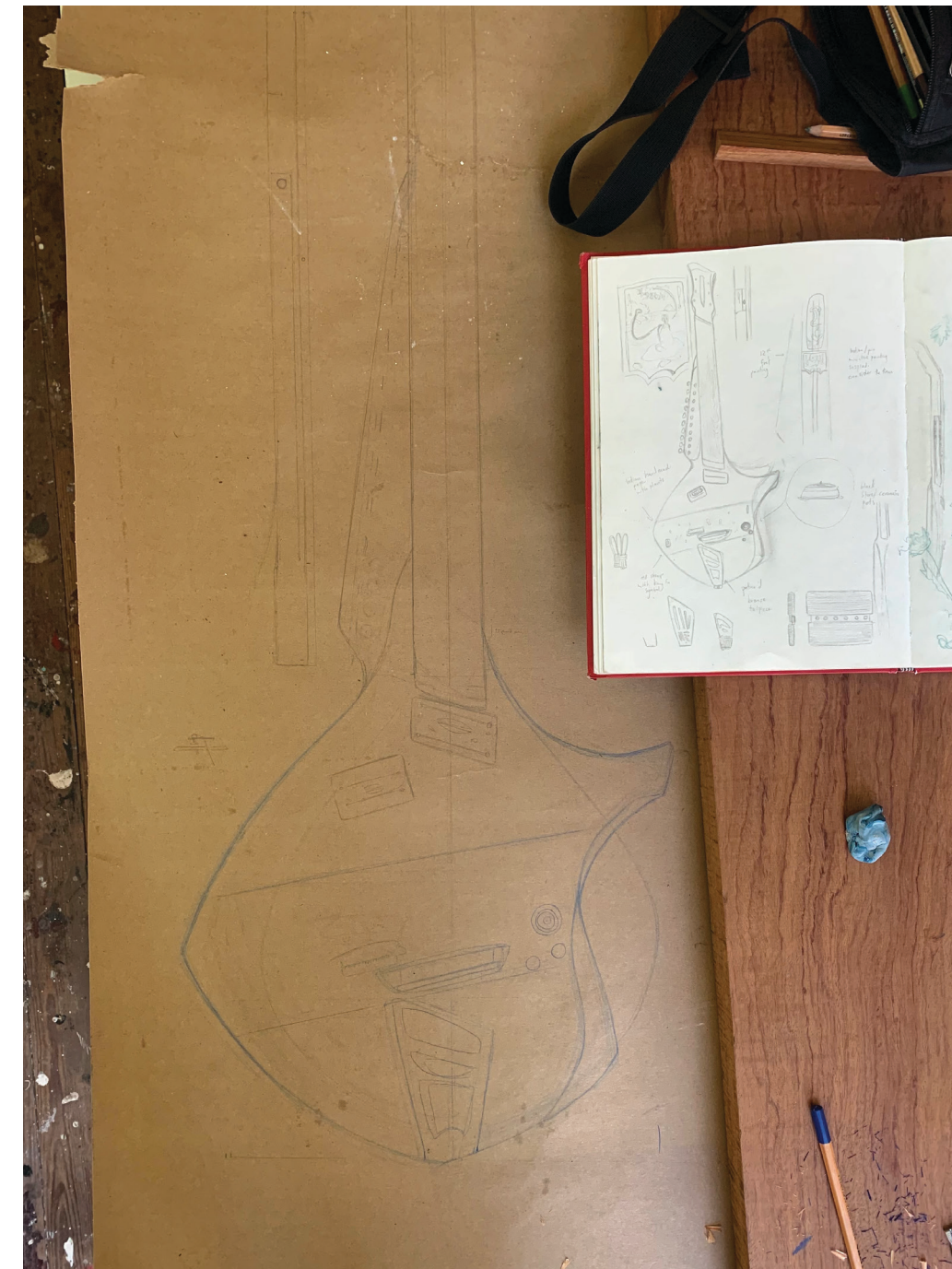


Figure 2:
Electric sutra draft
Preliminary sketch, draft paper
2 m x 1 m



Figure 3:
"Electric Sutra prototype no. 1"
Various woods, strings, metal hardware,
paper, electrical components,
110 cm x 46 cm

ॐ श्रीगणेशाय नमः

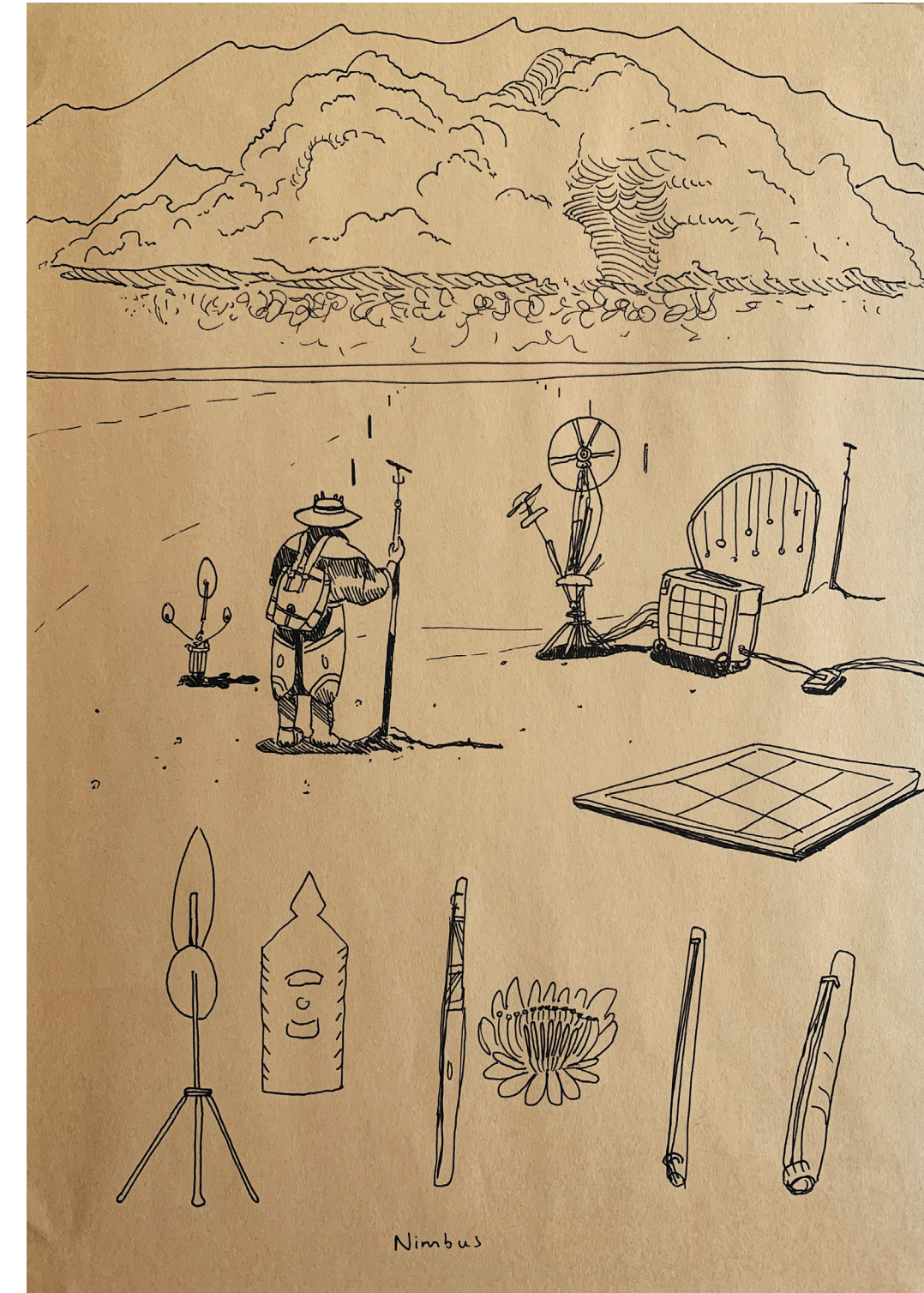


Figure 4:
Instruments as technology
Ink on newsprint
A4



Figure 5: Kimesh Chauhan and I in my studio testing the magnets.



Figure 6: Kimesh Chauhan wiring the POLYSS control board.

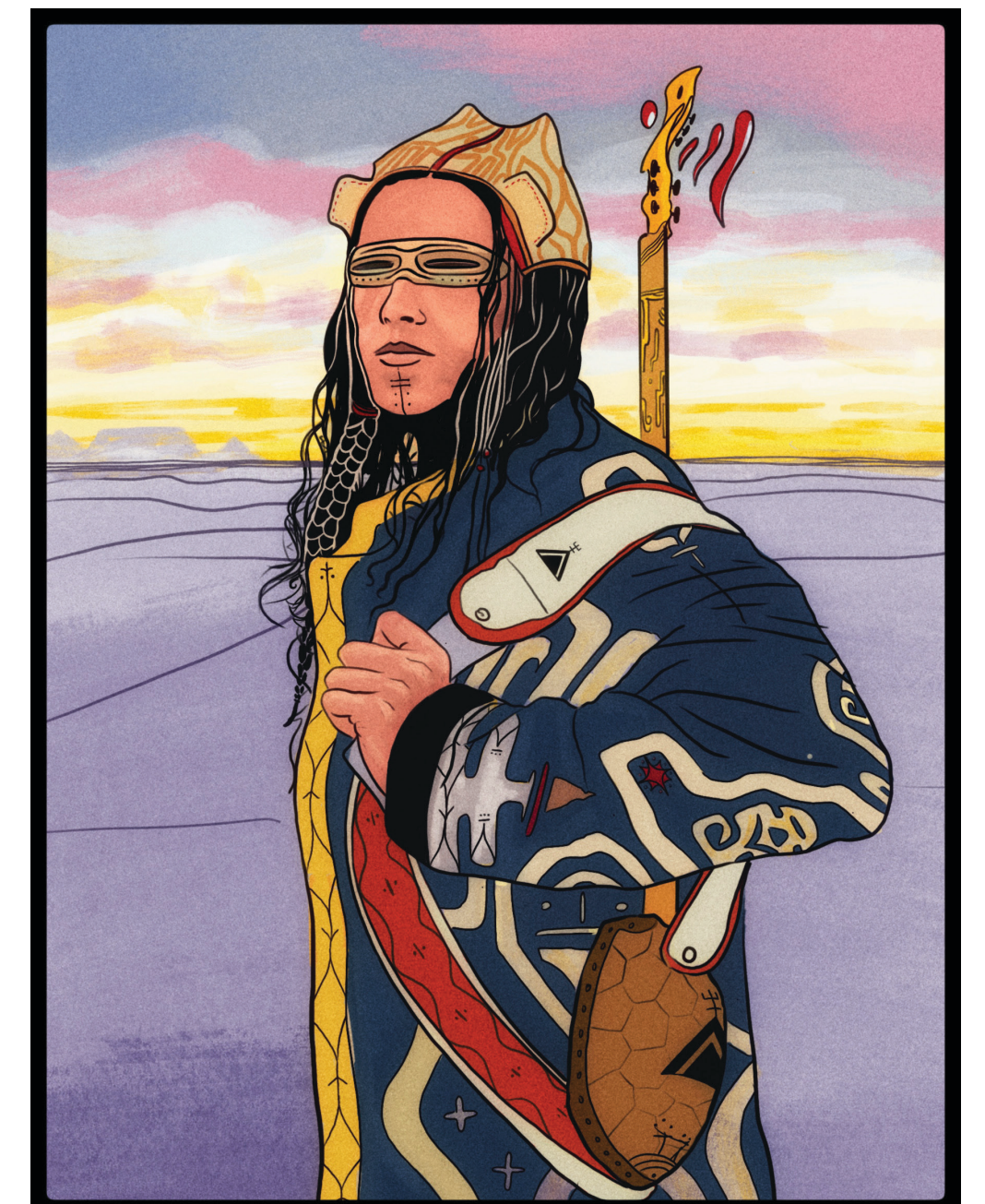


Figure 7: Untitled digital sketch
2020

Contents

1. Introduction to a language of wayfinding	1
2. Wayfinding as studio praxis: Site of healing	3
3. Finding my way: Production of the Polyphonic Space Simulator	5
Indigenous instruments as technology; technology as interface to the numinous	7
Improvisation in a sonic/musical context	9
Conclusion	13
Acknowledgements	13
References & Additional reading	14
Addendum	17

1. Introduction to a language of wayfinding

- How do cultural paradigms inform the ways in which we interface with the universe and thus enable or forestall the kinds of information that become accessible to us?

A discussion of ancient wayfinding will help make aspects of my own concerns as an artist visible. Two primary understandings are applicable to indigenous Polynesian wayfinding:

Wayfinding involves navigating on the open ocean without sextant, compass, clock, radio reports, or satellite reports. The Wayfinder depends on observations of the stars, the sun, the ocean swells, and other signs of nature for clues to direction and location of a vessel at sea. Wayfinding was used for voyaging for thousands of years before the invention of European navigational instruments. (Davis, 2009)

A more holistic definition, one shared by a subculture of navigators and best expressed by master navigator Chad Baybayan, is simply that wayfinding is “really a model for living”.

Chad distinguishes Wayfinding from navigation – the technical art of finding land without the use of instruments or charts. He will tell you that Wayfinding is “a way of organizing the world”. He has also said that it’s “a way of leading”, “of finding a vision”, “a set of values”, “how to take care of the earth”, and, in general, “a model for living my life”. (Love, 2000: online)

The example below shows how cultural models have been used to solve a problem in creative ways by artists and craftsmen from unique backgrounds. Nainoa Thompson and Mau Piailug have revived the near-extinct art of wayfinding, and artist Herb Kane uses the *Hōkūle‘a* of the ancient nautical world to help his people solve the problem of a contemporary cultural crisis.

Traditional knowledge of wayfinding and the Hawaiian renaissance

“Five centuries before Columbus, the Polynesians had over the course of only eighty generations settled virtually every island group of the Pacific, establishing a single sphere of cultural life encompassing some 25 million square kilometres of the earth’s surface” (Davis, 2009). But by the early 1970s the Hawaiian people felt they were on the brink of cultural extinction. Hawaiian artist Herb Kane was predominantly a painter whose depictions explored life in Hawaii before European contact and in the early days of the European presence. Kane dreamed of recreating the double-hulled boats in his paintings that were central to his culture’s history. Although no one had seen such a vessel in six hundred years, his dream led to the founding of the Polynesian Voyaging Society and the building of the *Hōkūle‘a* (Figure 9), both of which still operate today.⁴

“In 1976 the Hōkūle‘a, so named after Arcturus the North Star of Hawaii, an accurate recreation of the ancestral double hulled catamarans which first brought people to the Hawaiian Islands, completed its first trip to Tahiti using no modern instruments.” (Davis, 2009)

Collaborations between Kane and local navigator Nainoa Thompson revived the ancient art of wayfinding (Figure 8). Thompson sought out and learned from Mau Piailug, who at the time was one of only five people in the world still in possession of traditional wayfinding knowledge.⁵ Together they designed and built an exact replica of an ancestral vehicle, and in 1976 they sailed it across 2,200 miles of open ocean using ancient indigenous knowledge, a feat not accomplished for hundreds of years.

The success of that voyage validated Polynesian history and disproved western historical narratives in the wake of Hawaiian cultural destruction. The kind of knowledge that the Wayfinders enacted overturned the erasure of indigenous history and the contention between indigenous and post-colonial historical narratives. The act became a symbol that ignited the Hawaiian cultural renaissance.⁶

The *Hōkūle‘a* became known as Kane’s “living sculpture” and helped pave the way for the cultural revival of indigenous knowledge systems that rooted the cultural identities of the Hawaiian people and edified the spiritual and scientific foundations of their lived practices (Figure 3).

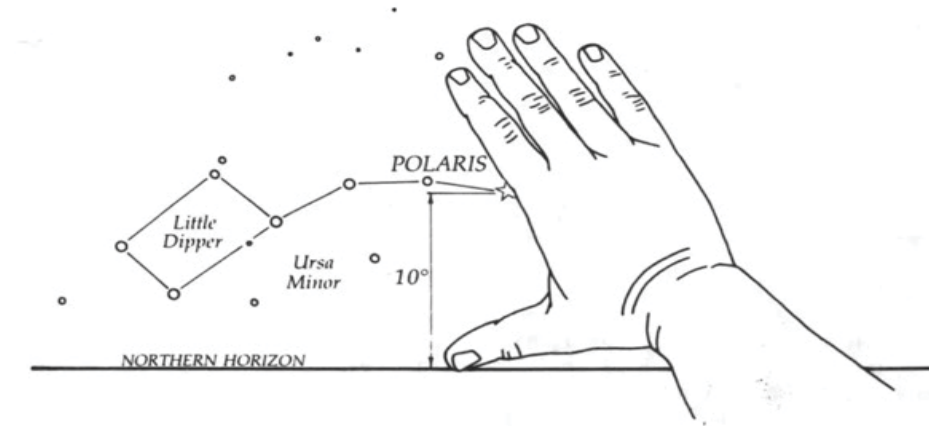


Figure 8: The hand method used by Nainoa Thompson to find the altitude of Polaris. *Journal of the Polynesian Society*

What began in 1973 as a scientific experiment to build a replica of a traditional voyaging canoe for a one-time sail to Tahiti became an important catalyst for a generation of cultural renewal and a symbol of the richness of Hawaiian culture and of a seafaring heritage which links together all of the peoples of Polynesia. (Polynesian Voyaging Society, n.d.)

(Figure 5) It may seem at first a distant connection to be making. How do these historical narratives relate or inform an art practice in South Africa? The *Hōkūle‘a* and the art of Wayfinding which are created as animated, living entities that ignite and inspire significant cultural and scientific movements are to me as an artist at the highest level of artistic achievement. This story encapsulates all my present concerns as an artist: tracing ancestral roots, knowing and developing cultural values, integrating science, art and indigenous knowledge systems into a way of being which is in conversation with nature and holding a vision in the imagination to manifest it.

The story of the *Hōkūle‘a* illustrates the significance in how relative cultural paradigms inform the ways we interface with reality and the kinds of data that becomes visible to us through these lenses.⁷ It illuminates the disparities between “paradigms”⁸ and proves that there can be multiple solutions to the same fundamental problems. This web of diversity in cultural modalities is what anthropologist Wade Davis (2009) refers to as the “ethnosphere”. It is this possibility of alternate cultural modes that may be used to develop thought and practice that I embrace in my art making project. This mode of art operating outside the traditions of western art hegemony is also mirrored in the 1992 Pacific Arts Festival, where Wayfinding itself became an artistic expression within the cultural framework of the people:

The prime minister of this historic island said, “Let’s dedicate it to our historic voyaging ancestors,” and he asked that each island group bring a model of their canoes to display. And somebody said, “No, we will sail our canoes.” And you know Polynesians, how they are! That challenged everybody else. So they decided to build their canoes. (Thompson, 1996)

Projects like Wayfinding and Voyager (discussed in the addendum) become artistic expressions in and of themselves, in ways that represent the ideals of my own art practice. Wayfinding is to me an evocative synthesis of art, science and spirituality⁹ applied directly to notions of cultural reimaginings and the possibilities of new ways of being and navigating the world. It is a discipline predicated on embodied knowledge. This is an incredibly attractive notion for me as an artist and musician, because wayfinding proposes the possibility of honing artistic instincts connected to an almost mystic intuition of natural phenomena through consistent practice.

But in his world, he practices a kind of science that is a blend of observation and instinct. Mau observes the natural world all day. That’s how he relates to nature. There are no distractions, so his instincts are strong (Thompson, 1996)

⁷ My ongoing work the “Polyphonic Space Simulator” explores this idea. If it is true that we exist in a shared physical reality and that discoveries as to the nature of these realities are filtered through cultural lenses, the instrument explores what kinds of information can be synthesised by more holistic or complete approaches.

⁸ As I use the term here, a paradigm describes models of reality as understood by different cultural frameworks

⁹ There is a distinction in traditional wayfinding between a navigator with magic (Pwo navigator) and non-magical navigators. Nainoa and Mau are Pwo navigators. Wayfinding as a mode of being thus becomes a way to negotiate the fields of science, art and mysticism in a single cohesive framework.



Figure 9: The *Hōkūle‘a*



Figure 10: Grandmaster Mau Piailug teaching his son navigation with a star compass.

⁴ The Polynesian Voyaging Society is an active group of individuals whose work pertains to the cultural preservation and evolution of indigenous Polynesian navigational traditions.

⁵ For details of Mau Piailug’s life, see Polynesian Voyaging Society (n.d.).

⁶ For details on the cultural resistance, see Davis (2009).

2. Wayfinding as studio praxis: Site of healing

“In November of 1979, Mau and I went to observe the sky at Lana'i Lookout. We would leave for Tahiti soon. I was concerned—more like a little bit afraid. It was an awesome challenge. Then he asked, “Can you point to the direction of Tahiti?” I pointed. Then he asked, “Can you see the island?” I was puzzled by the question. Of course I could not actually see the island; it was over 2,200 miles away. But the question was a serious one. I had to consider it carefully. Finally, I said, “I cannot see the island but I can see an image of the island in my mind.” Mau said, “Good. Don't ever lose that image or you will be lost.” Then he turned to me and said, “Let's get in the car, let's go home.” That was the last lesson. Mau was telling me that I had to trust myself and that if I had a vision of where I wanted to go and held onto it, I would get there.

-Nainoa Thompson (Polynesian Voyaging Society, n.d.)



Figure 11: “The Wayfinder”, 2021
Muji ink on A4 newsprint

Improvisation and Vision

The opening anecdote of this chapter illuminates an integral part of my process as it pertains to vision in the context of wayfinding. The “Wayfinder” illustration above is one of a series of drawings I have made that are an integral part of my initial mythmaking process. I developed characters and technologies as a basis for my own storytelling to explore ideas in my art practice.

The “Wayfinder” character in my sketch is the product of a routine improvisational drawing process in which I draw whatever comes to mind. These drawings are done in ink, making my marks permanent; the lines cannot be second-guessed, committing me to a deep focus. The wayfinder in the drawing is a mythical archetype that personifies philosophical concepts. The figure is depicted with a range of instruments attached to his head, a lens extending above his right eye and a series of antennae extending from his cloak. Here technology is used to augment and extend the Wayfinder’s sensory capabilities such that he can perceive an extended spectrum of light, sound and ambient energy. Attached to his back and extending out of frame is the neck of a stringed instrument – the primary mode of his synthesis of understanding.

Bring to these the raw power of empirical observation, of universal human inquiry. The skills of the traditional navigator are not unlike those of the scientist; one learns through direct experience and the testing of hypotheses, with information drawn from all branches of the natural sciences. (Davis. 2009, 63)

The characters I create populate the same world my instruments come from, in many ways representing my own artistic ideals and facilitating a process of reflection that helps develop my ideas. The contents of the drawings and the meditative practice necessary to make them allow for a process of encoding. The products of the rituals of these drawings can be seen on one side of my “binary walls” – two-sided chalkboard drawings. On one side a chalkboard shows an ephemeral process of improvisational thinking, where previous diagrammatic ideas are repeatedly created and permanently erased. On the other side is a series of crystallizations of another kind of improvisation in the form of the ink drawings. All the instruments I create originate from drawings such as these.

This method is best demonstrated in my instrument design for the “Polyphonic Space Simulator” (POLYSS) (Figure 10), a vision of which I held in my mind like an island. This process was not so much characterised by a process of ‘making’ as a process of ‘navigating’ through space and time to a point at which my vision was made manifest. The effectiveness of this technique is evident in the final instrument’s correlation to the initial sketch created two years prior.

My instrument POLYSS (Figure 10) and its conceptual successor (Figure 9) enquire into notions of indigenous instrumentation as a form of technology to precisely this kind of extended “human sensory cortex” (Bello and Gracie, 2020: 8). The instrument itself is a technological expression of my sonic and musical praxis, one grounded in the study and holistic absorption of art and sound into daily rituals of being as they pertain to ancestry and the potentials contained in indigenous knowledge systems.

Prototyping as studio praxis

How can improvisational art forms lead to a path of discovery, knowledge production and self-healing praxis in my own practice?

Prototyping has become an important part not only of the process of creating instruments but also of the practice itself. Notions of constant dynamic evolution, iteration and experimentation are central to my artistic concerns to create from an act of constant learning rather than to produce static objects. Thus, I “integrate knowledge about the discipline and into the discipline as we work on the database just as wayfarers integrate knowledge along a path of travel” (Zanettin et al., 2015: 166).

“POLYSS” and the “Electric sutra prototype no. 1” (Figures 2, 3 & 12) are both handmade from raw materials. The only commercially manufactured parts are the metal tuning pins and standard circuitry components. Every other part of the instruments is custom designed and made by hand – from the wood, metal and hand-soldered circuits to the hand-wound electromagnets.

Handcrafting is so time and labour intensive that it has profound physiological, emotional and spiritual effects on me. As I worked on the project and it became transformed into a more realised state, so too did I. Spending all day in the workshop and all night solving the problems encountered that day sculpted the shape of my life.¹⁰ Thus, I also explore the process of ‘self’ as prototype.

The care I take in this craft should not distract from the fact that my art is process driven. The work itself is ongoing, a series of experiments and a mode of learning and knowledge production rather than a production of completed artefacts. To this end, artistry is used as a ‘practice-based’ research method with which to interface with scientific knowledge and modes of iteration and experimentation.

Not only is practice embedded in the research process but research questions arise from the process of practice, the answers to which are directed toward enlightening and enhancing practice. (Candy and Edmonds 2018, 64)

¹⁰ This notion is expanded on in the discussion of Willem Boshoff’s “370-day project” in Chapter 3.



Figure 12: “Electric Sutra prototype no. 1”, 2021
Various woods, strings, paper, electrical components,
110 cm x 46 cm

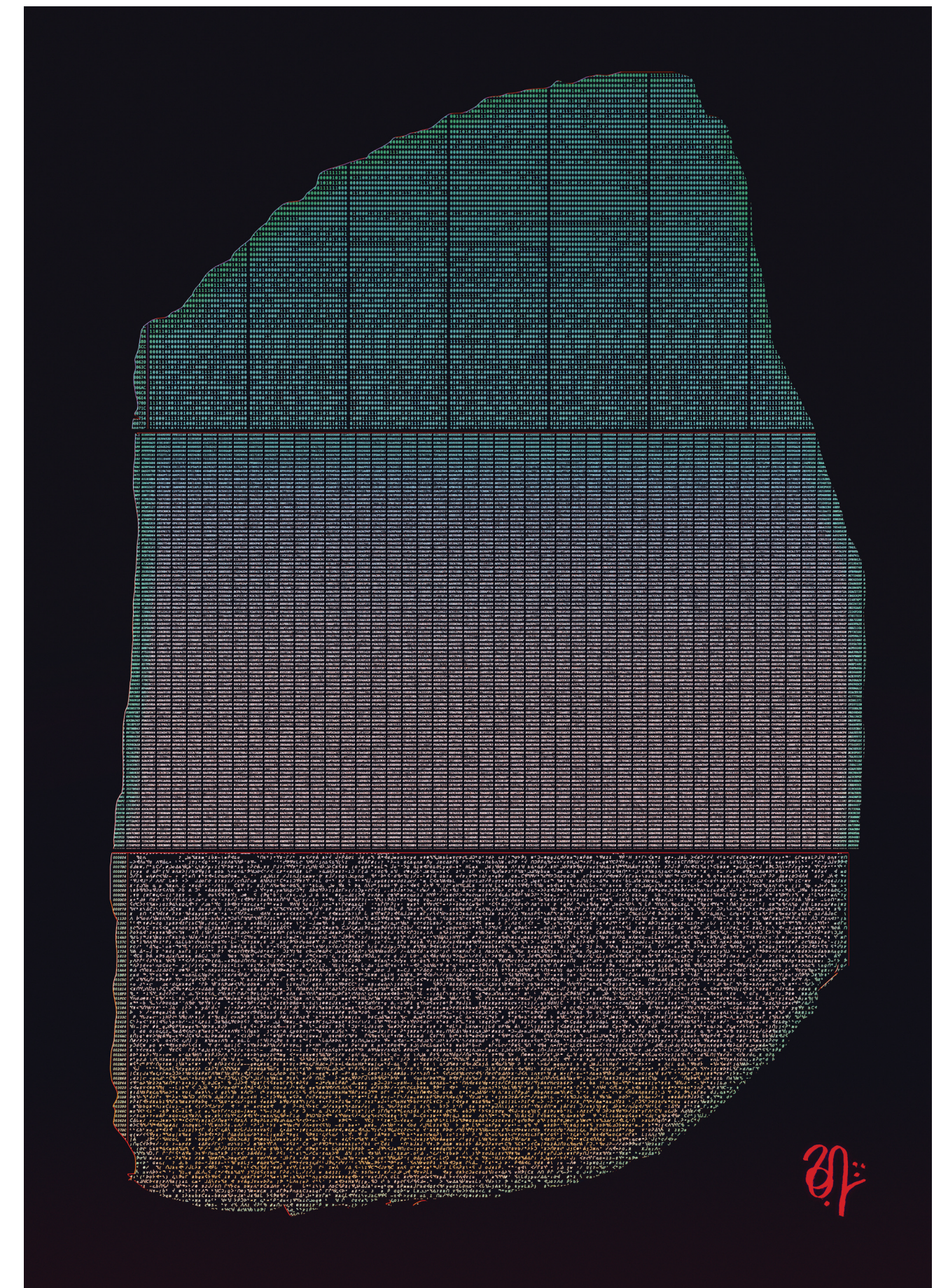


Figure 13: “Rosetta”
Self-portrait JPEG represented as binary,
hexadecimal and ASCII
Digital print
73 cm x 42 cm
2022



Figure 14: “Rosetta”, 2022
(detail)

3. Finding my way: Production of the Polyphonic Space Simulator

The stink of the ocean seeped into the car as I rested my cheek on the window, contemplating this planetary system from which all terrestrial existence began. The sun was setting over the western horizon, and behind me rose the moon above the face of an eastern cliff. The mechanism of time symbolised by these stellar objects; framed in that moment my own minute and singular existence.

As I meditated so, an exotic insect landed opposite my eye on the other side of the window. I felt the muscles of my iris contract as my eyes' focus shifted from the vista to the ancient form of the minute creature. For the slightest moment, I subtended hundreds of millions of years into the past and visited a place of origin in which it and I were biologically connected by a common ancestor. Backdropped by the sea, from whence life began, I felt the thread which connected us as organisms through the eons. A flow of adrenaline erupted my skin in goosebumps and a tear formed in my eye at the emotional weight of this vision. As I became self-aware of this overwhelming sense of the sublime, that awareness sobered me, and the feeling disappeared.

– My recollection of a moment in the process

A key aspect of my praxis and a goal of its study is to elucidate states of being that are sympathetic to artistic visions – for in them lie epiphanies that catalyse prerequisite knowledge and often bring wisdom and perspective. In my practice, moments like these come and go in the process. They highlight interesting patterns in how information in the form of particles, waves and energy permeate and make up the universe around us, and I often meditate on these themes in my work.

The digital print in **Figure 13 and 14** is one of five self-portraits converted into the datasets that construct the file. The contents of this digital “Rosetta stone” are roughly 1/1000 of the data of the file. If you were to feed all this data back into the computer, it would render a JPEG of me. The Rosetta stone evokes notions of hieroglyphics and the key to permeating languages between the boundaries of otherwise locked paradigms. Using the form of the Rosetta stone to contain the digital code to an image of me is a meditation on the ancient (ancestral) patterns that make us up.¹

These prints are intended to function as thinking devices rather than as purely aesthetic or conceptual objects. The visualisation of “the self” as a matrix of underlying bits of information is intended as a tool for reflection. Like my anecdote reflecting on my vision of biological ancestry, my Rosetta stone is an impression of the underlying phenomena that construct the world (Royal Institution, 2019). This explores contrasts and similarities between analogue and digital information systems and notions of how information is represented at different scales, from the macro to the micro. As Khalili (2020) writes, “Information allows for order to be created from disorder.”

This same process is mirrored by another process I employ, in which abstract information is encoded into the actions of automatic drawing exercises designed to generate a written script. This written script is generated by states of being induced by improvisation and contributes to a self-generated mythology that contextualises my instruments and the beings that operate them.²

The act of “practice” is itself a method of encoding intended to internalise external, learned information and to allow that information to constitute a real part of oneself. I activate this through ritual and performance. The everyday is itself the most important ritual, because it is this ritual that lays the foundation for what information will manifest when states of being that amplify the subconscious are accessed. To freely improvise through art in this way can help stimulate a mental and spiritual process, which can in turn facilitate a process of healing.

The daily act of holding a vision in my mind and creating a physical external voice in this manner serves as an axis for the fingerprint of patterns that construct my existence in those moments. The patterns surrounding my studio, the workshop, the people, the molecules in the materials, their histories, how the wood grew, the effect of labour on my body and so on all become distinct but amalgamated details in this extended choreography.

¹ Mesopotamian cuneiform writing dates back to roughly 3,500 BC and the system of clay tablets, which, according to Professor Irving Finkel “saw over three thousand years of continued use” (The Royal Institution, 2019).

² It is this script that separates the chapters of this essay.



Figure 15: The script as it appears on the control console for “POLYSS”.
2021

Willem Boshoff’s “370-day project” (Figures 29 & 30) is an interesting example of what these ideas about information and paradigms might mean in an art context. Boshoff carved symbols relating to his reflections on his daily activities into wood every day for 370 days. The symbols he carved constitute a complex cypher that only he can understand. Each piece of wood is a different species endemic to South Africa, with some margin for error for those species that are very similar. Boshoff then organised the pieces into a cabinet with 370 slots, one for each wooden tablet.

Boshoff invented a language to encode and record the action of daily activity within a set parameter. He translated his everyday lived experience into a series of objects, which in their composition are considered fine art. The real substance of the piece is what is recorded by the symbols written on each piece of wood – daily action, which here has been very literally translated into a medium readily accepted as Fine Art, while retaining its original substance of simply being a daily activity (Vladislavić et al., 2005).

The piece exists in both dimensions simultaneously, whereas more conventional artworks assume a kind of importance as an object that supersedes the network of actions surrounding them. A sculpture in a museum or gallery is conventionally valued more highly than the collections of drawings and studies that preceded it or other daily activities enacted by the artist at the time of making. The act of sculpting is simply active expression created through a particular medium, but on a fundamental level it is not inherently any different from any other “acting”. Boshoff’s work acknowledges this by taking ‘action’ on its most fundamental, even mundane, level and translated it across multiple forms and mediums to maintain the same meaning on various levels of scrutiny.

The “370-day project” is not simply a collection of wooden tablets organised neatly in a shelf; it is a form of data. Those data exist in both time and space as activities expressed by the artist in daily life and as the symbols encoded onto the pieces of wood that represent them. The woods they are inscribed on are likewise data sets in and of themselves, biological relics from across the country with the phenomenon of the everyday stretched out across time and encoded in their forms and DNA.



Figure 16: Improvisational script as a method of impressionistic coding of automatic thought. Developed for data representation in code and myth-making.
2021



Figure 17: POLYSS 2.0 concept (front view)
Digital render
2022



Figure 18: POLYSS 2.0 concept (back view)
Digital render
2022



Figure 19: POLYSS back view
2021



Figure 20: POLYSS front view
2021

Indigenous instruments as technology; technology as interface to the numinous

POLYSS facilitated a process of exploring the intersections of art and science. Much of my work is influenced by physics, astronomy and other scientific fields. Collaboration with an engineer allowed me to expand my pallet to these mediums.¹¹ The underlying motivations of the instrument's design pertain to my own personal artistic and spiritual inquiries. The invention of this instrument was thus a technological embodiment of philosophical principles as a physical interface with the ideas and practice that created it.

Invention itself has a long history in Western society. It emerged out of the classical rhetorical arts as a guideline for the fine arts. By 1350, it referred to the discovery of knowledge or knowing, and two centuries later, it referred to makers and their artifacts. (Mawhonga, 2017: 8)

The body of the instrument is both symbol and totem of the body of knowledge that it represents, generates and is generated by. This forms the ecology of my practice.

This amalgamation of mythical thinking in conversation with modern science is also reflected in the work of Yunchul Kim, who had completed a CERN residency in collaboration with scientists. While conducting my own residency at CERN,¹² I found time to visit the Venice Biennale to see Kim's work. His solo show Gyre in the Korean Pavilion consisted of five sculptures that combined supremely engineered experimental technologies motivated by deep philosophical thinking:

Gyre consists of three themes: The Swollen Suns, The Path of the Gods and the Great Outdoors. In this exhibition, nameless materials, purposeless apparatuses, the micro-world, and cosmic events mirror the world as a labyrinth. Through such transformative entanglements of senses and sensations gyrating all together, the Korean Pavilion turns into a dreamscape, a fluctuating horizon where matterless events remain ceaselessly generative. (Kim, 2022)

The space is characterised by "Argos – the Swollen Suns", a working muon-particle detector that creates analogue electric signals in the form of light bursts and sound from the decaying particles of cosmic rays colliding with Earth's atmosphere in real time. The particle detections inform the movements of Gyre's other kinetic sculptures, chiefly "Chroma V", a fifty-metre-long parametric structure mathematically generated by physics-based algorithms (Figure 21). Its 382 cells resemble dragons' scales and are made from transparent laminate polymers that refract colours – not through pigmentation, but by literally warping the electromagnetic spectrum through their iridescent properties. This effect is created by a material invented as a result of the artist's own chemical experiments.

As the sculptures communicate like a nervous system, they create a pulsing microcosm of the universe, and of the mechanisms of the human body – itself a small cosmos. Gyre is as much an artistic experiment as it is both a heartbeat and a miniature cosmic event, vivified by the atmosphere. (Uszerowicz, 2022: online)

Gyre's exhibition space is an ecosystem that encourages a particular kind of meditative reflection. As one sits in the room, the sculptures within it undulate, flicker, flow and react to the omnipresent dynamic energies and signals of the cosmos that are otherwise invisible.

My method to create instrumentation as cosmic interface is underpinned by a set of intuitive principles that govern the practice and intention of the wayfinding process. Although the instrument itself is a significant undertaking, it is but one aspect of a broader artistic gesture, one that encapsulates the world of myth and performance and that ultimately facilitates knowledge creation. The instrument is designed as a tool to illuminate passages of data from ancestral streams of thought and consciousness unknown or not accessed. Through an autodidactic process outside of set tradition, my sonic interactions with POLYSS facilitate a space of learning through music.

A particular set of lived conditions informed this wayfinding process and were necessary to render it a possibility. To maintain its essence as a tool for peace and altruistic intention, I consumed no meat during the crafting process. I also maintained a particular martial arts regimen throughout the process to imbue the instrument with a particular energy. In keeping with the idea of total dynamic function (Cross and Nishijima, 2006) described in the introduction to this text, I lived with the understanding that every motion and action committed by me affected the eventual manifestation of the instrument. This can be considered an ascetic research approach (Wiltshire, 1990), in which the practice and archiving of improvisation and healing are recorded in both my praxis and the artworks I create.

¹¹ I came to believe that a hands-on working relationship between the artist and the engineer was the best way for the artist to access technology.

¹² From April 2022 I travelled for three months to various astronomical observatories (SALT, SKA, HartRAO) and to CERN in Geneva as part of an international residency programme. At CERN I engaged with top thinkers in the fields of physics and astronomy and at the intersection of art and science.



Figure 21: Yunchul Kim. 2022. Installation view of Gyre at Korean Pavilion, Venice Biennale.

Here, the artifact plays a vital part in the new understandings about practice that arise. In this sense, practice and research together operate in such a way as to generate new knowledge that can be shared and scrutinized. (Candy and Edmonds, 2018, 64)

I believe this philosophy to be the most critical aspect of my artistic engagement and it is this process which embodies improvisation from an intuitive sensitivity, a sensitivity the practice itself cultivates. This sensitivity when applied to other aspects of life away from the work, facilitates a self-knowing which both guides the process of the art as well offers a path of healing.

I had to trust myself and that if I had a vision of where I wanted to go and held onto it, I would get there. (Thompson, 1996)

As a philosophical larynx, the instrument is a tool used to express a unique conceptual language that is the product of my reconnection to ancestral knowledge systems. Through the concepts encoded in my praxis, my sonic practice itself became a language with which to interface with ideas inaccessible through English as a spoken or written language.

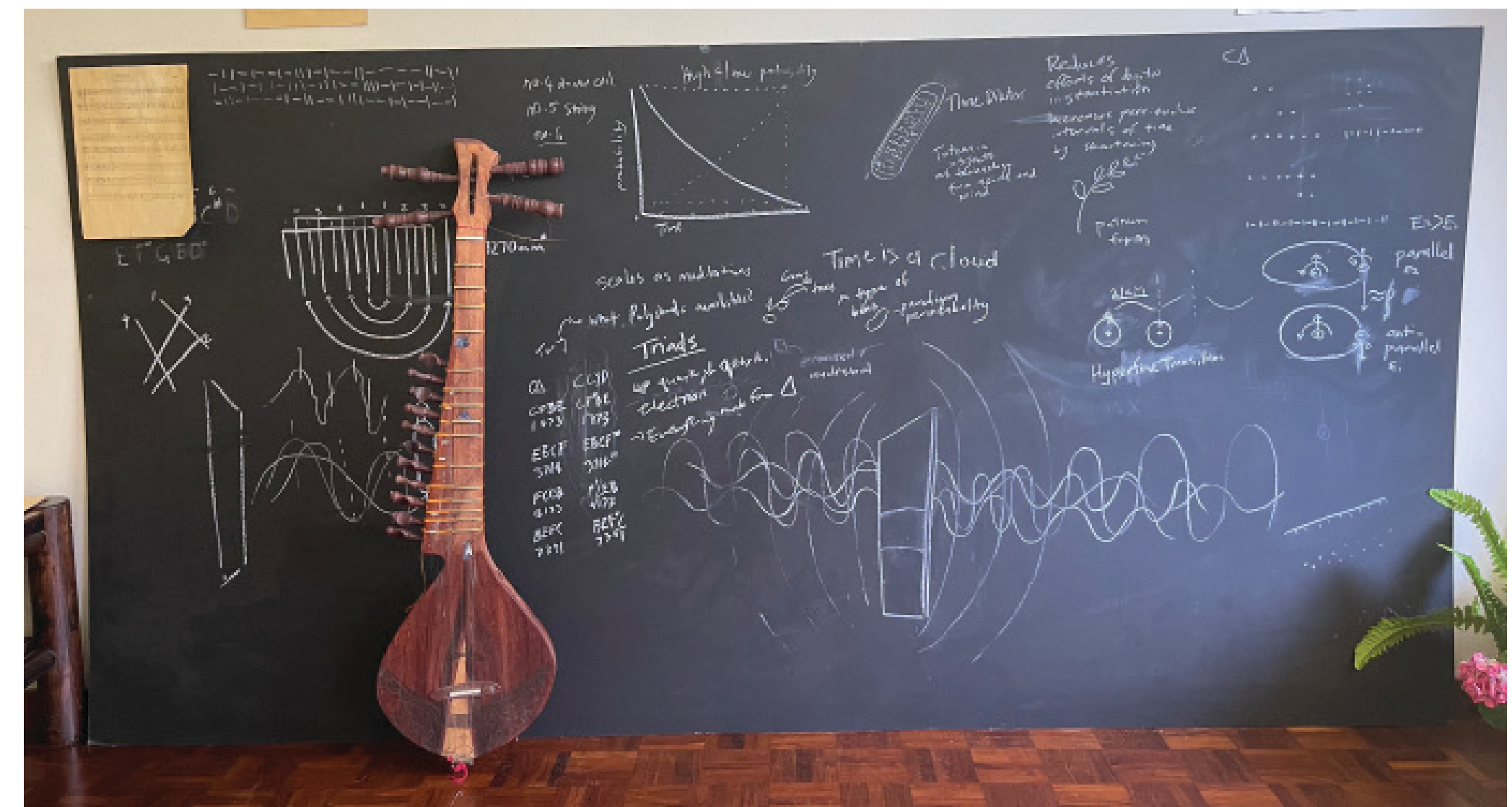
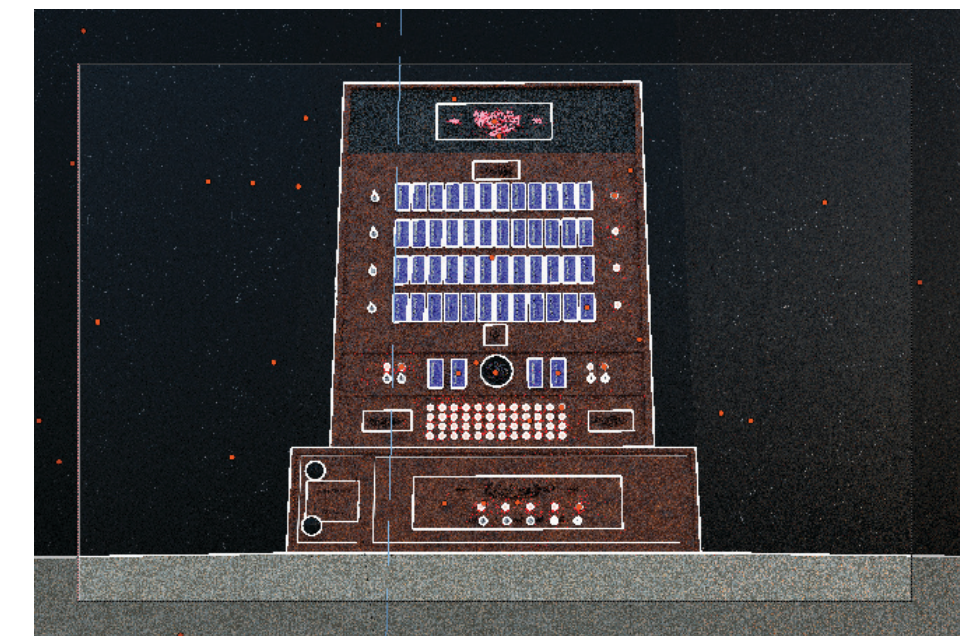
This began as my response to the loss of diasporic language fluency in the South African Indian community and my inability to speak any ancestral languages. Indians were one of the most multilingual communities in South Africa in the first half of the twentieth century, but "The rich vein of multilingualism within the [Indian] community eventually yielded to a largely monolingual habitus" (Meshthric, 2007). 'Languages' here also pertain to the systems of knowledge from which they stem. How I explore music and other sonic practices facilitates this act of giving voice to lost voices of knowledge.¹³ Practicing sound as I do offers a waypoint into learning my own history and a means of re-forming personal notions of identity.

The essence of my practice then lies not in any of the isolated objects or works that come out of it, but in their combined synthesis. In this project, the ultimate art gesture is not necessarily the creation of artefacts but how the practices surrounding their making can inform a new consciousness that activates new cultural paradigms as ways of being. The mode of practice itself thus becomes the work.

My sensitivities have become heightened through my practice of art and music such that I am now aware of phenomena that used to be invisible to me. In this way the body itself functions as an instrument, which in turn generates new instrumentation to further enhance the sensitivities of the body. This notion is addressed in indigenous Polynesian wayfinding, where Nainoa Thompson says of Mau Pailug:

We don't sense things in exactly the same way as the next person does. To help me become sensitive to the movements of the ocean, Mau would steer different courses into the waves, and I would try to get the feel and remember the feel. Mau can unlock the signs of the ocean world and can feel his way through the ocean. Mau is so powerful. Satellite technology was in its infancy then, and many times Mau's predictions would be right and the National Weather Service would be wrong. (Thompson, 1996)

¹³ For the most part, 'vernacular education' (as it was called) played a cultural and religious role, imparting some knowledge of the language and culture of a physically distant but spiritually close homeland (Meshthric, 2007).



Figures 22–26: Construction and design of POLYSS 2021

Improvisation in a sonic/musical context

I would like to discover a method so that if I want it to rain, it will start right away to rain. If one of my friends is ill, I'd like to play a certain song and he will be cured; when he'd be broke, I'd bring out a different sound and immediately he'd receive all the money he needed. But what are these pieces and what is the road to travel to attain a knowledge of them, that I don't know. The true powers of music are still unknown. To be able to control them must be, I believe, the goal of every musician. I'm passionate about understanding these forces. I would like to provoke reactions in the listeners to my music, to create a real atmosphere. It's in that direction that I want to commit myself and to go as far as possible. – John Coltrane (in Porter, 1998: 211)

Accessing “the true powers of music” (Porter 1998: 211) is the motivation behind my creation of instruments as tools and technologies. This writing would not be complete without recognising the enormous presence and influence of music in my practice, especially of jazz and Indian music. My endeavours in instrument building have naturally been in companionship with a journey into music, which this project has facilitated. This has resulted in a daily musical practice in which my knowledge and abilities have grown through an autodidactic process of learning.

As it has evolved over the course of this MFA, my work has sought to learn from and with southern African indigenous and diasporic knowledge systems to develop a method of artistry in conversation with those sensitivities. This is characterised by a process of “embodied sonic meditation” (Wu, 2020) deeply influenced by the improvisational practices of musicians such as John Coltrane, Alice Coltrane, Keith Jarrett, Sun Ra, Kurt Rosenwinkel, Pharaoh Sanders and Nduduzo Makhathini (to name but a few). Beyond all being widely regarded as masters of improvisation, they all share the view that music reflects the underlying structures of reality¹ and that musical tones and rhythms can affect listeners in very specific ways (Petsche, 2009: 150). This philosophy is also central to Indian classical music.

Coltrane shared the Indian belief that specific ragas should be played at specific times of the day or night and could be used as media to induce a particular state of being. (Washington, 2001: 234)

Accessing these states of being via this media characterises my sonic and musical practice. Contemporary improviser and healer Nduduzo Makhathini is a master of this art. I was fortunate enough to meet Makhathini in person through a *lekgotla*² to which we were both invited as speakers to share our work. He sees musical improvisation as an extension of his practice as a sangoma and thus also understands sound as a mode of healing. In a text accompanying his contribution to an exhibition at the Melrose Gallery in Johannesburg in 2021, he explains: “The project proposed that improvisation, in jazz, could be viewed as a method of gathering sonic concoctions, similarly to a sangoma in the wilderness gathering herbs” (Makhathini, 2021). This notion of a kind of sonic alchemy informs my own approach to improvisation and mirrors the insights I gain through that process.

My sonic praxis is characterised by unique self-made instruments designed to open up possibilities of discovering and interfacing with the world in ways that are sensitive to dynamics in the environment. My work deals with the belief that “ancient art is encoded with a hidden knowledge of cosmic truths, and if a modern artist deciphers this knowledge and translates it into art, it becomes ‘objective’ ” (Gurdjieff, 1950: 488). I explore these phenomena through installations activated by ritual performance that reflect my lived practices’ explorations of sound. In developing instruments, my interest is to follow the line of inquiry drawn by the knowledge systems of my research and to explore them for their potentials as they pertain to new technologies. They are designed to facilitate an intuitive artistic practice that expands my sensory experiences to illuminate otherwise perceptible but invisible dynamics in our environments.³ POLYSS was designed and built as a vehicle for improvisation and as a portal to the numinous. Influenced by this ethos, my instruments are technological experiments into gaining access to these same spiritual realms.

The function of... [objective art] was not the invocation of aesthetic beauty or the imitation of surface reality, but rather the initiation of the recipient into a completely different place of understanding, to awaken him into experiencing the sense of cosmic place and time, to permanently shatter and enlarge his socially delimited notion of personality. (Petsche, 2009:150)

As an object, POLYSS occupies more space than its visible wooden form. Once activated it generates an electromagnetic and sonic field that permeates and surrounds the instrument. By dialling in the harmonic character of the instrument in particular ways the space around it can be intentionally affected. The sound waves emanating from the instrument generate nodes and

1 Einstein claimed that music underpinned the insights that led to his theory of general relativity (Shneiderman, 2019).

2 A meeting or communal gathering.

3 Invisible dynamics such as the fields generated by the instrument. This line of thinking has expanded through my Connect Africa residency in collaboration with CERN and South African astronomical observatories.

interference patterns that change depending on the tuning of the instrument and the location of the observer. In this way the air around the instrument is sculpted and space becomes an extended medium of the piece.

Spacetime is another extended medium of the piece: POLYSS is also a sonic timekeeping device that can be programmed to cycle between notes and chords in trillions of different potential sequences. As it does so its internal wires can be seen through the cloth mesh, like blood vessels in the body. When operating, it becomes as if a living thing, responding to the environment and to me as I play to/against/with it. The instrument exists in conversation with the technology of the clock and with wayfinding as a discipline that facilitates a praxis of embodied learning. (discussed in the addendum to this text)

The instrument’s name, “Polyphonic Space Simulator”, is a prompt to the myth attached to it. The instrument is said to be able to affect, augment and emulate reality through a field of sound and frequency. This is an invitation for the observer to use the instrument as a philosophical device with which to question the nature of reality and how its physical manifestation shrouds reality’s true nature.⁴ Its intended function for the user is to facilitate a process of meditation that can guide the user to a path of enlightenment. In the liner notes to his album “Spirits”, Keith Jarrett says:

Art exists as a reminder. All true art is a reminder of forgotten, or soon-to-be forgotten, relationships, whether it be God and man, man and woman, earth and humanity, colour and form etc... What if art is the only way left to penetrate the armour we've built up to eliminate seeing our true nature?⁵

The alphabet etched into the instrument is a product of my improvisational drawing exercises and thus speaks to the instrument not being from this realm but from that realm of improvisation that it is designed to take you to musically.



Figures 27 & 28:
Improvisation experiments
35 mm film
2021



4 The notion of the material world being an illusion is also a central observation in Buddhism and other eastern philosophies (Cross and Nishijima, 2006).

5 K. Jarrett, liner notes to Spirits, ECM 1333/34 (1986).



Figures 29 & 30: 370 day project. Willem Boshoff, 2020.

W. Boshoff

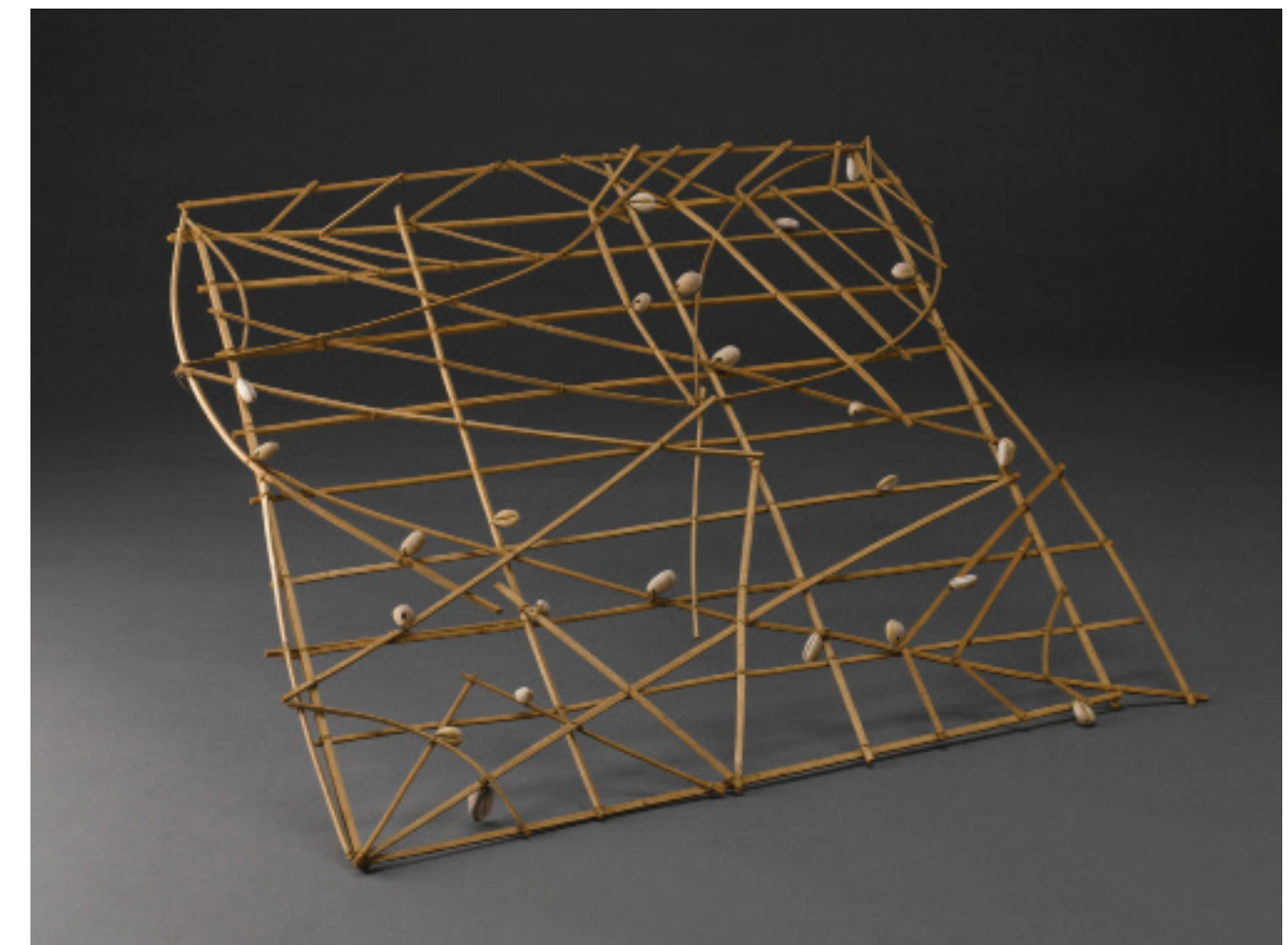


Figure 31: Marshall Islands stick chart

Conclusion

The physics is a relational ontology. What is real is real by virtue of a set of relationships, and if one looks for absolutes then they disappear. Relatively speaking, we inhabit a world, we share that world, we can do science in that world, we can have knowledge and so forth... But we have to be careful not to project what is true in that context into an absolute. (Arthur Zajonc in Peacefulness 2013: 02:26:22)

In conversation with the *Hōkūle‘a* and its contemporary cultural revival, wayfinding was used in this text to demonstrate its capacity to enact profound cultural change by validating indigenous stories of myth and origin. This facilitates a culturally representative framework for peoples from that background to understand their own histories independent of the western historical archive and creates a space for healing.

Similarly, my artistic practice facilitates a space wherein I can encode ideas, philosophies, knowledge and ways of being in the artefacts and practice that constellate them. This ecology of thought and practice iterate and improve on my ideas while further deepening my embodied sensitivities and notions of self. The process of research and the knowledge discovered through improvisational experimentation in my practice thus offers a path of healing through embodied practice grounded in a personal synthesis of ancestral knowledge systems, art and sound making.

I offer a particular understanding of wayfinding as a language of studio praxis: not only does it fully encapsulate all the concerns and sensitivities of my art practice, but it historically demonstrates itself to be a legitimate mode of enquiry and artistic expression. Its contemporaneity is a testament to its effectiveness as a method of cultural revival and a model for navigating through life by manifesting visions.

When applied to a visual and sonic praxis, this approach benefits from an improvisational axis. The self functions as a prototype, and the experimental creations of wayfinding can serve as a series of experiments, knowledges and technologies that nourish its ecosystem.

This emphasis on a dynamic process of continual exploration and learning rooted in an embodied practice of accessing ancestral knowledge offers new and multiplicitous ways of relationship and engagement to the world around us. In this exhibition I demonstrate how artistic thinking and collaboration can be a vehicle for cultural innovation. The technologies generated from an artistic perspective offer a path of improvisation and healing, as demonstrated in this project.

The art I created in this project seeks to exist in a spiritual, poetic or philosophical sense, drawing inherent political meaning from the contemporary South African context in which it exists. I believe that the importance of telling these stories and having them realised is culturally and historically valuable and adds to the library of knowledge that this part of the world has inherited.

At the very least, the realisation of this project and the POLYSS is the culmination of a process that offered a measure of personal healing for me, as the principles it demonstrated in construction and use both protect and assert my personhood and complicated cultural iteration as an act of volition. I have found a way to move through socio-cultural terrain that coheres the movement materially, as an affective object that is the site/sight of improvisation and healing and literally sounds out to me at frequencies that have emancipatory implications.

Acknowledgements

I am deeply grateful for the people who constellate this journey.

Crucial aspects of this process would simply not have been possible without key figures who arrived precisely when they were needed.

Without Rory, Melusi, Uncle Thomas and Uncle Stanley – none of these instruments would exist, and I might have not found a way through these almost seven years.

If not for Kimesh Chauhan, I would not have been able to solve the problems of the Polyphonic Space Simulator and create the electronics which bring it to life. I would not have met Kimesh had the process of building other instruments and following the path of my art not led me to his dad, Guruji Jannadas Narotam Chauhan. Back in third year, when I built my first instrument, an Uber driver saw it and asked if it was a sitar, telling me he knew a teacher here in Cape Town. I did not know that there was a sitar teacher in Cape Town. I got Mr Chauhans number from the driver who then called him “Uncle John.” An old voice answered the phone and told me he hadn’t heard that name in thirty years. I told him what I’d been doing and he invited me over and shared the story of his remarkable life. The strings on POLYSS are all indian sitar strings Mr Chauhan imported himself.

My knowledge and experience of music would not have expanded as it has in the course of this degree were it not for the seeds planted by the lockdown teachings of Reza Khota, who generously offered to share his knowledge of music and guitar over Skype when Covid caused a global lockdown. I am a big fan of his, and much of the music that inspired this work and that I listen to today was discovered through Reza’s recommendations.

To all my dear friends – you know who you are, thank you for supporting me at my worst and celebrating me at my best. I probably wouldn’t have made it if not for the repose of the moments we shared.

To my supervisor Kurt for committing to this almost three-year, three-round intellectual pugilism with an at times perhaps challenging student. I know my methods and inclinations can be pretty ‘out there’, so I appreciate your ability and willingness to assist me to hone this writing and the thoughts behind them. To my co-supervisor George, who in the second half had to contend with a shifting relationship to his student when I was awarded an international residency, one half of which you convened – your professionalism, influence and artistic guidance has been paramount, and I would not be here without you.

The Siyakhula fund agreed to support such an ambitious project and enabled its research and execution. I wish for more such all-encompassing economic support for the arts here in South Africa.

None of this could have happened without my parents, Larissa and Anice – because you created me (in one sense) but also because of your constant and unwavering support. Thank you for trusting me on a path less travelled, recognising that it is the path of who I am and loving me for that.

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List of figures

All images by the author unless otherwise indicated.

Figure 1: The hand method used by Nainoa Thompson to find the altitude of Polaris. *Journal of the Polynesian Society*/B. R. Finney et al. (1986)

Available at: <https://www.planetary.org/space-images/the-hand-method-used-by>

Figure 9: The *Hōkūleʻa*. Source: National Geographic. Photograph Cristina Mittermeier/NAT GEO image collection.

Figure 10: Grandmaster Mau Piailug teaching his son navigation with a star compass. Source: doorofperception.com

Figure 21: Yunchul Kim. 2022. Installation view of Gyre at Korean Pavilion, Venice Biennale. Photo by Roman März.

Figures 29 & 30: Willem Boshoff. 2020. 370-day project. Wooden cabinet, 370 different species of wood, two diaries handwritten by artist. Five exhibition boxes together: 450 x 183 x 62 cm; one box: 183 x 52 x 62 cm; one block: 24 x 5 x 1 cm.

Available at: <https://saffca.com/artwork/ftlob_1801/> 5. Beith Digital

Figure 31: Marshall Islands stick chart depicting islands and ocean swells. 69 x 69 cm. Source: Science Museum/Science & Society Picture Library.

Figure 34: H4 Chronometer. National Maritime Museum, UK.

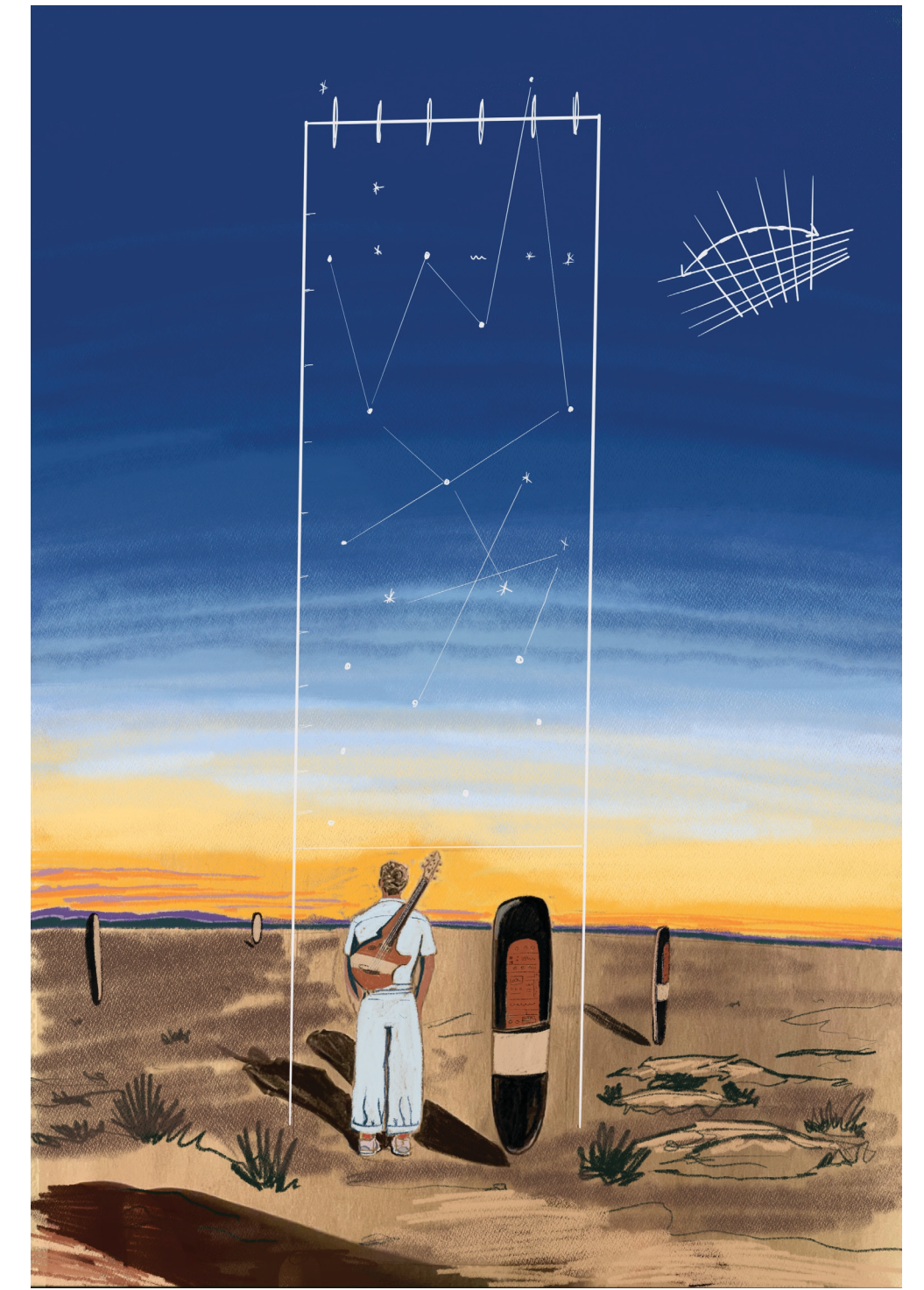
Figure 35: Voyager 1 Sky-path, 1970–2030. credit: NASA Jet Propulsion Laboratory (JPL).

Figure 36: Voyaging path of *Hōkūleʻa*'s circumnavigation of the Earth without the use of instruments. source: Polynesian Voyaging Society.

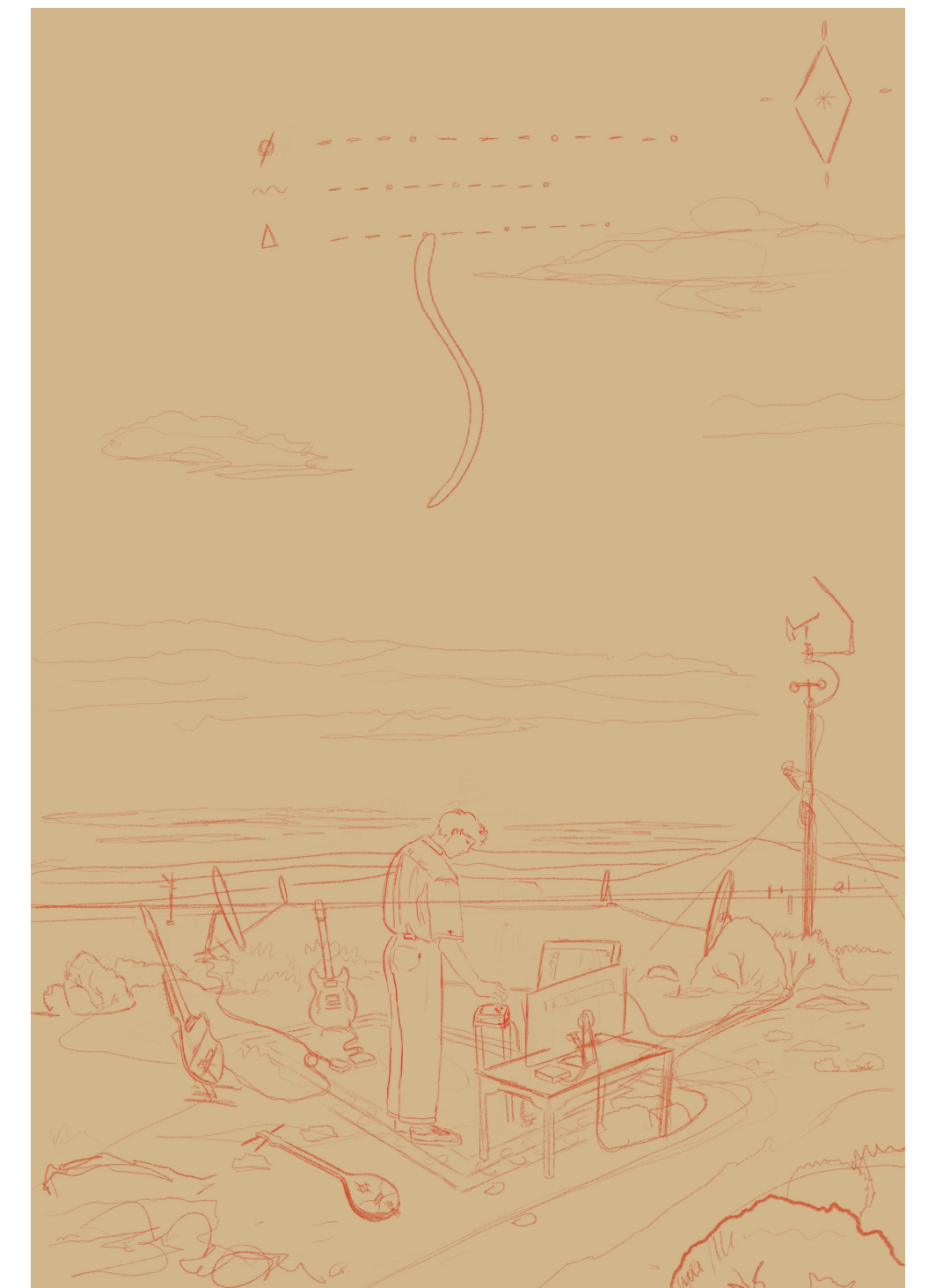
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Figure 37: Voyager Record. Courtesy NASA JPL. Used under a Creative Commons Attribution 4.0 International license

Figure 38: Diagram of the golden record and its cover plate. Courtesy NASA JPL. Used under a Creative Commons Attribution 4.0 International license



Figures 32 & 33: "Meditations on a Harmonic Galaxy"
Digital sketches drawn at the SALT Telescope, Karoo.



The clock and the stars

The two examples that follow are the chronometer and the ancient traditional art of Wayfinding, used historically by the British and indigenous Polynesian peoples¹ (respectively) for navigating the ocean.

Both these tools are used for navigating, but their discovery and existence is only really possible through the ingredients of their unique, respective, cultural paradigms. Just as a mechanical clock is unlikely to have been designed and invented by the island people's of the Polynesian archipelago, the art and science of Wayfinding is as much an unlikely invention and development by British civilisation. These differences highlight what I would consider a western scientific paradigm and that of other cultural scientific paradigms.² They individually have distinction from universal scientific paradigms³ of which they both overlap as both are studies of the natural world which produce tools or knowledge with universal efficacy and utility.

The clock and Wayfinding are working physical instruments regardless of ones ideological subscriptions, because they function on a fundamental understanding of nature.

A discussion of these two paradigms in the story of each civilisation's respective invention in the chronometer and ancient Wayfinding is particularly helpful to make aspects of my own concerns as an artist visible. I use these examples because they show how two different cultural models have solved a problem in creative ways and in both instances by artisans from unique backgrounds.

John Harrison solves the problem of longitude via the invention of the clock. Nainoa Thompson and Mau Piailug successfully revive the near extinct art of Wayfinding and the artist Herb Kane uses his art to revive the *Hōkūle'a* that comes from the ancient nautical world which allows his people to solve the problem of contemporary cultural crisis. These historical intersections link to my artistic practices and how they too have this same capacity to enact cultural change and ultimately do not need to be contained by western art theories and heterodoxy by virtue of existing within their own paradigm.

Invention of the mechanical clock: The chronometer

In 1714 during a period when one hundred pounds could fully furnish a mansion, the British crown was offering twenty thousand pounds to anyone who could solve the problem of longitude. The reward was offered at a time when thousands of deaths at sea were commonplace. Without the ability to account for longitude the ability to sail the open ocean with any degree of accuracy was an impossibility (Davis, 2009).

The solution to the problem was time. A man by the name of John Harrison invented the first chronometer in 1735 and submitted it to the prize committee. The remarkable thing about it is that its gears were hand-made entirely of wood and accurate to one second a month. It was the first mechanical clock with such an unprecedented degree of accuracy. The committee rejected his idea as something that "didn't fulfil the criteria of the competition." (Leeds Museums, 2013)

Over the course of the next forty-seven years Harrison repeatedly improved on his design eventually creating his first "sea watch", the H4 (Figure 33). The importance of this invention was that prior to it, the instruments available to sailors allowed them to calculate for their distance from the equator and thus indicate their latitude, but this did not tell them their location. (Leeds Museums, 2013)

Harrison purported that if you were sailing the open ocean you could know when noon was based on the height of the sun, but if you had a clock that was set to your port of exits noon time you would know exactly how many hours ahead or behind you were from where you left and could pinpoint your exact coordinates.

However, the committee in charge of the prize money denied him qualifications repeatedly, saying he did not fulfil the necessary criteria. Only through the intervention of the King did Harrison receive the full amount at the age of eighty, three years before he died. The captain who finally tested his H4 sea-watch and considered it their "ever faithful friend" was none other than Captain Cook.⁴ (Davis, 2009)

1 Polynesia (Greek: "polys" many, and "nesos" island) is a subregion of Oceania made up of more than one thousand islands in a triangular shape with the Hawaiian islands at the apex in the north and its bases in New Zealand (Aotearoa) and Rapa Nu. It is the largest nation territory on the planet.

2 "Today, our definitions of science, technology, and innovation (STI) originate from countries and cultures that have acquired their dominance of others through global empires—military, capital, and media—and are able to purvey to or even impose upon those without such power their definitions." (Mahvunga, 2017.)

3 Science is the pursuit of knowledge. Approaches to gathering that knowledge are culturally relative." (Candiani, 2020)

4 Captain James Cook FRS (7 November 1728 – 14 February 1779) was a British explorer, navigator, cartographer, and captain in the British Royal Navy, famous for his three voyages between 1768 and 1779 in the Pacific Ocean and to Australia in particular. He made detailed maps of Newfoundland prior to making three voyages to the Pacific, during which he achieved the first recorded European contact with the eastern coastline of Australia and the Hawaiian Islands, and the first recorded circumnavigation of New Zealand.



Figure 34:H4 chronometer (National Maritime Museum UK)

When Cook first discovered the Polynesian islands he encountered a people living there intricately connected to the ocean, but he could not account for how they arrived there. The islands are the most remote landmasses on the planet. He was first to theorise that the indigenous people came from Asia, and that their discovery of the islands was entirely accidental. He observed that they possessed no navigational instruments; they carried with them no maps, no compasses and did not possess the technology of mechanical watches. He however did observe that the Hawaiians were able to speak to and understand the Tahitians despite their difference of language and two thousand kilometre separation of distance across the open ocean. (Davis, 2009) For over 200 years the British devised every possible hypothesis for the indigenous human presence in Polynesia which avoided the possibility of Polynesian people's possessing and enacting upon knowledge unknown to the British paradigm.⁵

Wayfinding, Voyager and the Golden Record

In this section I wish to examine the story of the Voyager space program as an extension of my case study on Wayfinding. The juxtaposition of these stories contain what I consider to be immensely interesting intersections.

Hōkūle'a and her crew completed their first trip across the Pacific to Tahiti unaided by any instruments in 1976. In 1977 just one year later, Voyager was launched; an unmanned probe reliant entirely on its instruments.

Voyager was the first human craft to leave the Earth's solar system and journey, as Carl Sagan put it: "into the cosmic ocean" (NASA, n.d.). In each instance these projects pushed the horizons of human exploration in the past and in the future ever forward. While the navigators of the *Hōkūle'a* were proving the ancient indigenous histories of human voyaging to be true, Voyager 1 launched a new era in the scope of where our journeys could go into the future.

What is Voyager?

Voyager is an ongoing American space program in which two robotic probes were launched out through the solar system and into interstellar space. These were the first spacecraft to reach these distances, capture closeup data of the neighbouring planets of our solar system and continue to transmit data from outside of it up until today.

A key element of the Voyager probes which interest me in its intersections with the history of Wayfinding are what is attached to it: "The Golden Record". Not only does the project speak to an extension of notions of ancestry and the intersections between sound, music and science, but it is also, in my opinion, a compelling piece of indigenous conceptual art.

Referring to Figure D: Once every ten million years, the electron spin of a hydrogen atom shifts from being parallel to its proton to being antiparallel in an event called the "Hyperfine Transition" (Dyas Utomo in Aaron Parsons 2011) (Figure D). This phasing in states releases a small amount of energy in the form of a photon with a wavelength of 21cm. The designers of the record posited that on the technology tree to becoming a spacefaring civilisation, this phenomenon would become known. They then offered it as a standard unit of measurement for both time and distance. One Hyperfine Transition of Hydrogen = 21cm or ten million years.

5 The historical and ethnographic histories of the Polynesian archipelago is a vast extensive topic, and it should be noted that I give only a very brief overview of these complex stories. The same can be said of British history at the time of the two civilisations first contact.

The rest of the record is encoded in binary code that uses this standard of measurement as a key to decode its contents. This was devised as a solution to the problem of providing instructions to play the record, how fast to spin it and how to decode the images encoded as sound waves within it to an extraterrestrial intelligence.

This notion of "encoding" information in representative symbols speaks to the advent of language and the written word in itself, but in this instance language is being conceptualised as something that can be - at least theoretically- universally decipherable. Unlike other human languages, the basis for this method of encoding lies in the idea of the "universal standard measurement" of the hydrogen line - which is universally consistent and thus could enable the transmission of information. "At its heart, writing is all about the transmission and storage of information." (Khalili, J. 2020, 0:04:26)

The story of the *Hōkūle'a* encapsulates a journey into ancestry and the validity of indigenous origin stories as they pertain to the fabric of cultural identity. Projects like Voyager extend this inquiry of origin out into interstellar space to explore and uncover knowledge as to our deeper ancestries from the stars as the place of origin. The implementation of science and technology in global, transdisciplinary, collaborative projects of this scale facilitates what Head of Arts at CERN Monica Bello and Artist Andy Gracie consider "a planetary techno-consciousness and the infrastructure of knowledge capital."

"The proliferation of particle detectors, deep space probes, neutrino traps, dark matter detectors and networked observatories effectively extends our human sensory cortex across new domains and dimensions." They describe this age of the Technocene as being characterised by a ubiquitous implementation of large scale scientific infrastructure such that the Earth itself functions as a complex instrument, both oracle and test site. (Bello and Gracie, 2020: 9)

In my chapter on Wayfinding, the disparities between the perspectives of cultural paradigms and the shortfalls of the dogma of imperialism were illustrated. My highlighted concern with the phenomenon of cultural paradigms is the apparent impermeability of certain kinds of information from one framework to another, an "Event Horizon" which conflicts with acts of transmission. How then can my art address this issue of communicating its essence into an external context?

The Voyager record expresses what I find to be an ingenious concept for encoding information through language and a possible solution to this problem. Imperialist British doctrine prevented its recognition of the indigenous Polynesian solution to precisely the same navigational problem.

Built into Voyager's design language is an intention to penetrate exactly this kind of boundary between cultural paradigms. The spacecraft and the Golden Record literally reach out into the cosmos through the capacities afforded to the project by the intersections of art and science.

It is also by definition an artistic gesture in conversation with the cosmos and is not limited to the conventions imposed by terrestrial spaces: a crucial aspect fundamental to understanding the context of my work. My practice is an exploration of ancestral modes of being and the potentials latent in indigenous knowledge systems. The stars are the logical extension of this path of reflection as the sources of beginning.

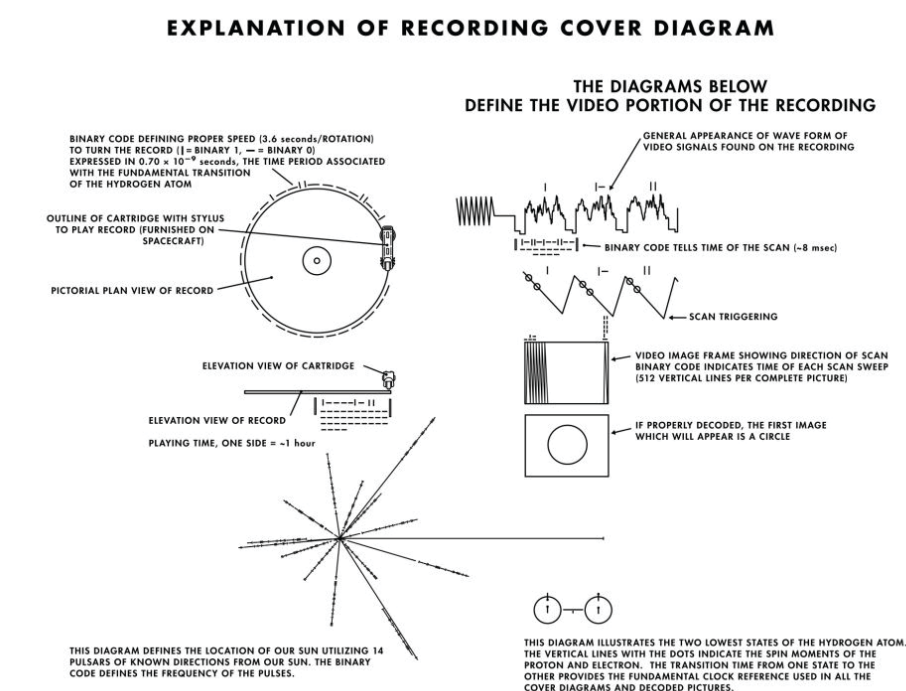


Figure 37: Diagram of the golden record and its cover plate. Courtesy NASA JPL.

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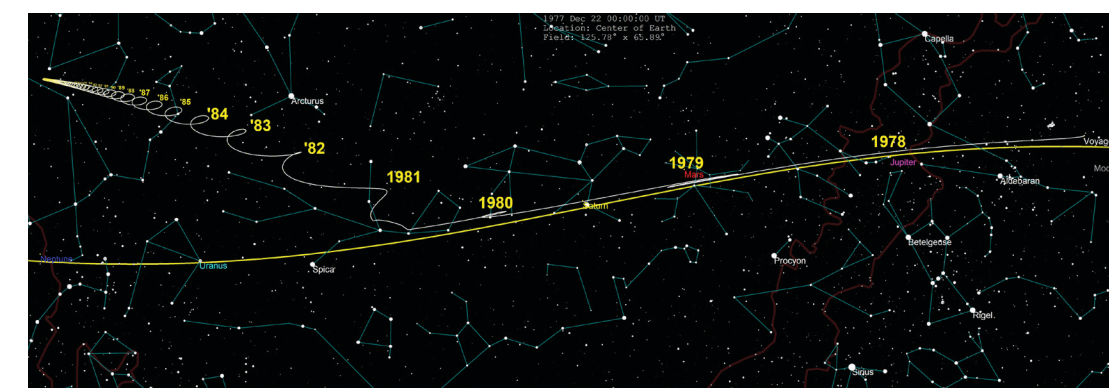


Figure 35: Voyager 1 sky-path, 1970–2030 (NASA, n.d.)

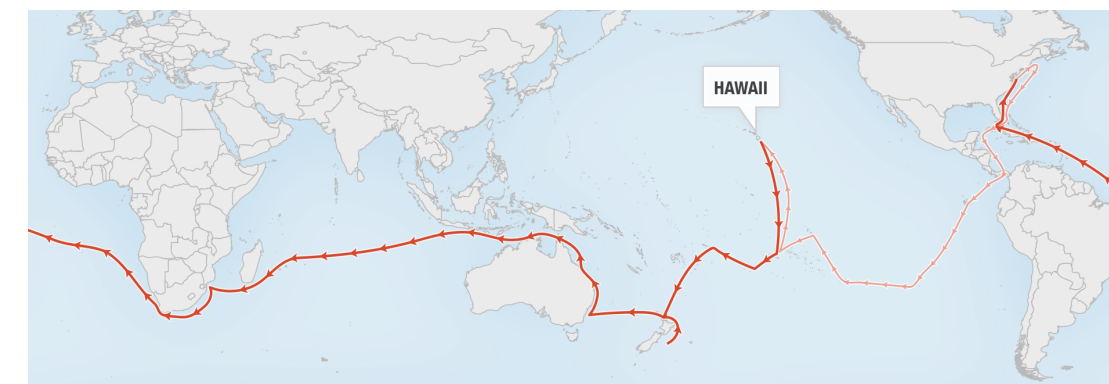


Figure 36: A line drawn in space and time. Voyaging path of *Hōkūle'a's* circumnavigation of the Earth without the use of instruments (Polynesian Voyaging Society).



Figure 38: The golden record. Voyager Record. Courtesy NASA JPL. Used under a Creative Commons Attribution 4.0 International license