

*Magic
in the
Machine*

ANG JUN LIANG

Co-written with Merlin,
the wizard persona I borrowed to embody
the magicians behind technology.



Merlin was a setup wizard who was trained in early 2000s microsoft days, where he was colleagues with Clippy. As a setup wizard, he was trained to complete installations and setups for clients. Upon his recent transfer to the ai department, he has been confronted with the realities of having to answer to client's queries. "should i vote for trump? When do I invest in bitcoin? Am I a damaged person?" the expectations of being an all-knowing oracle has led to a burnout that sent him on a journey to discover what it means to be an authority of information through technology again.



Renovations in the interiors of the Duomo, Milan



What lies behind the curtains of the success of massive institutions of faith?
As AI technology increasingly becomes the authority of information and decision-making, are tech giants en-route to become similar institutions of faith themselves?

Preface

This project began during a time I was lucky enough to visit many churches, cathedrals and minsters across Europe that people dedicated centuries to building and making beautiful. Regardless of my (non)belief, there is no denying that devotion to the mystical is one of the most powerful drivers of culture and society that we've seen in history — devotion built by the myths surrounding Gods, heros, etc.

There is so much about religion that we don't know to be true, or fully understand. Yet, the belief that people put into their faith for meaning-making, guidance and comfort. As a skeptic, it's always stumped me to see people turn to the spiritual in the face of life-changing decisions. Why rely on faith when we have data-driven ways of making decisions now? As you probably can guess, this quickly sent me down the rabbit hole of how unreliable algorithms actually are, and to varying degrees, no more trustworthy than a magical oracle.



Most of us know that technology is far from neutral. Is it, then, our willingness to suspend disbelief that renders the information given to us as truth? This realisation starts to blur the lines between the irrational and rational, data and intuition, trust and distrust, magic and technology. I thus embarked on this research to find out if I could use the language of magic to discuss notions of belief and faith in technological decision-making.

A design research project about decision and meaning-making in the intersection of:

- Magic/Machine
- Old/New
- Irrational/Rational
- Intuition/Data

RESEARCH

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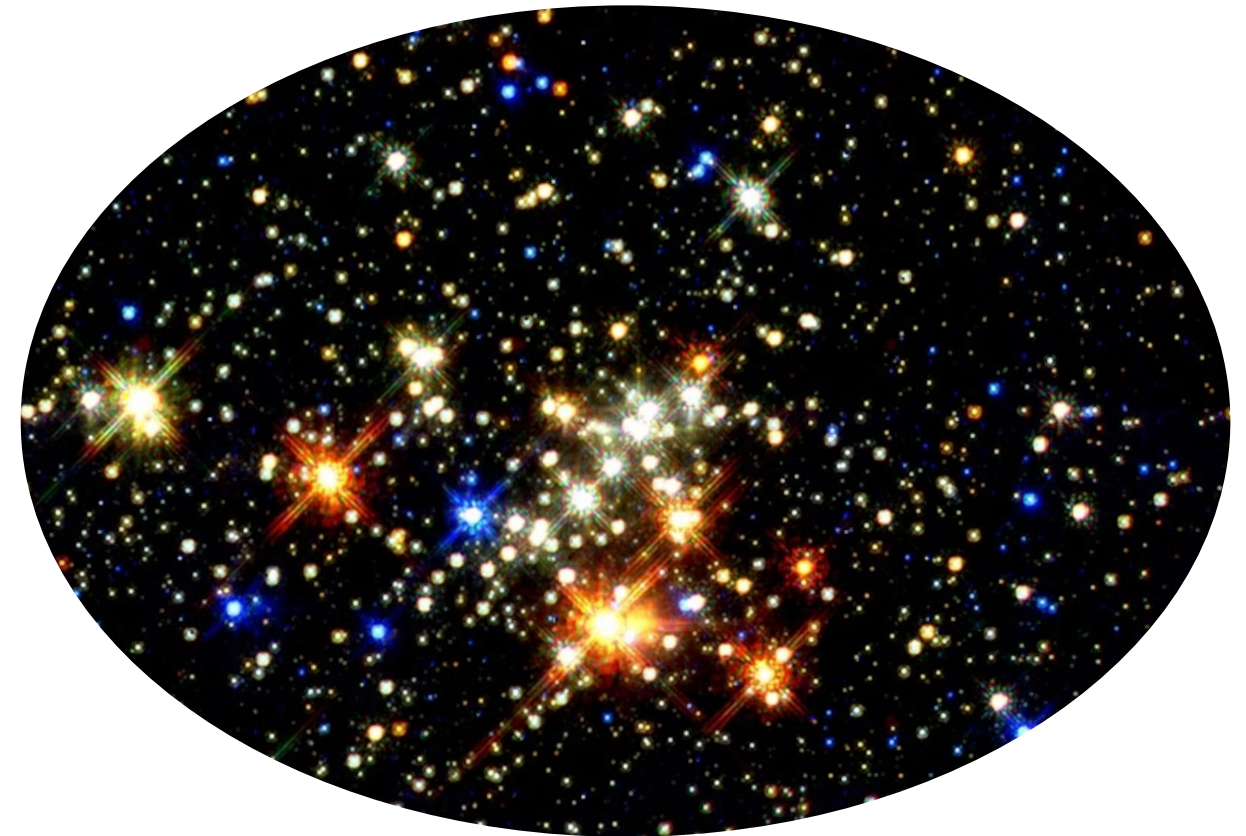
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POST-INTERNET DIVINATION & SACRED MATERIALITY

Divination

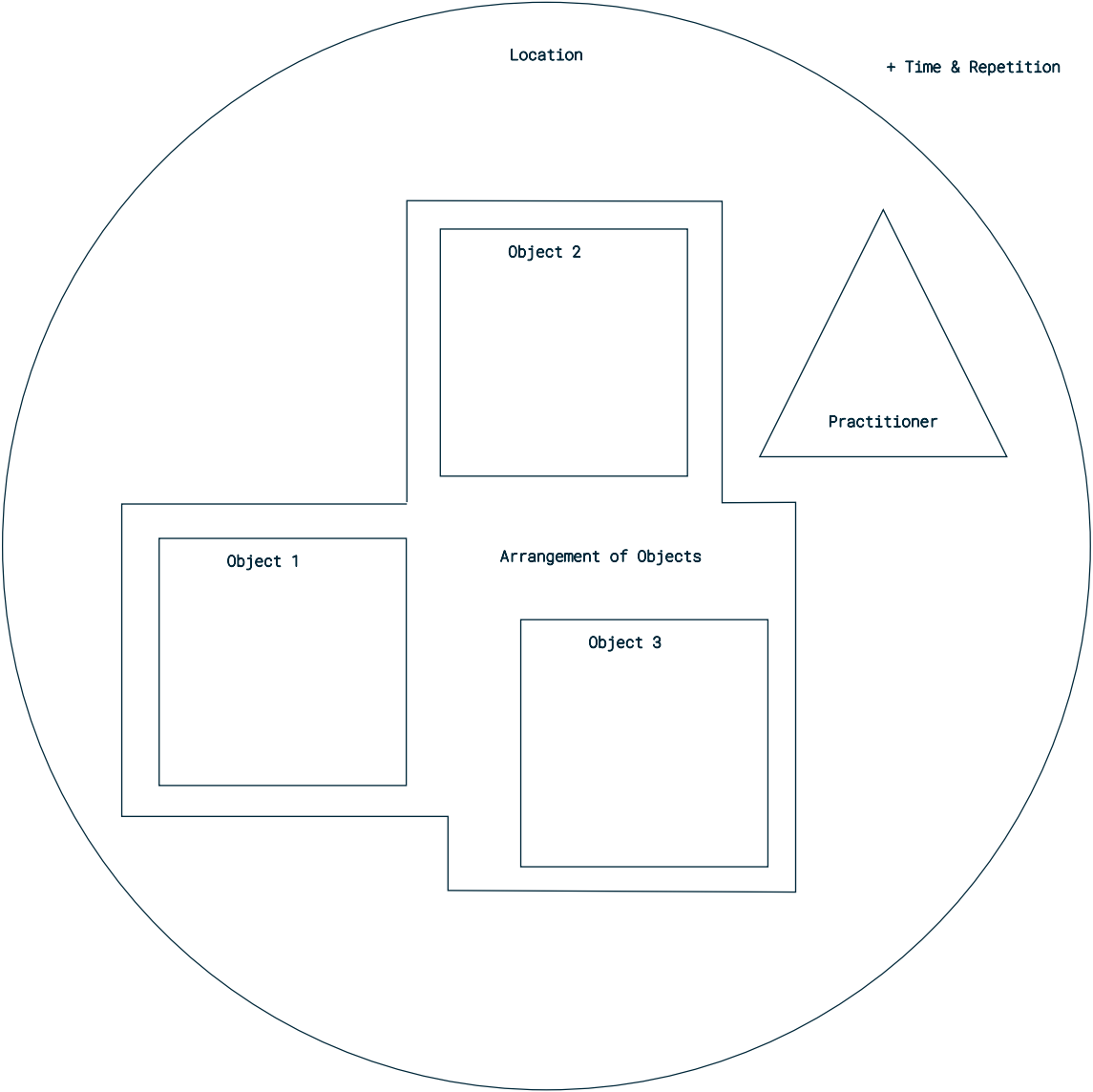
David Morgan, Professor of Religious Studies at Duke University describes divination to be man's attempt at managing randomness, finding stability where it is usually scarce – the stability of food, social relations, etc.



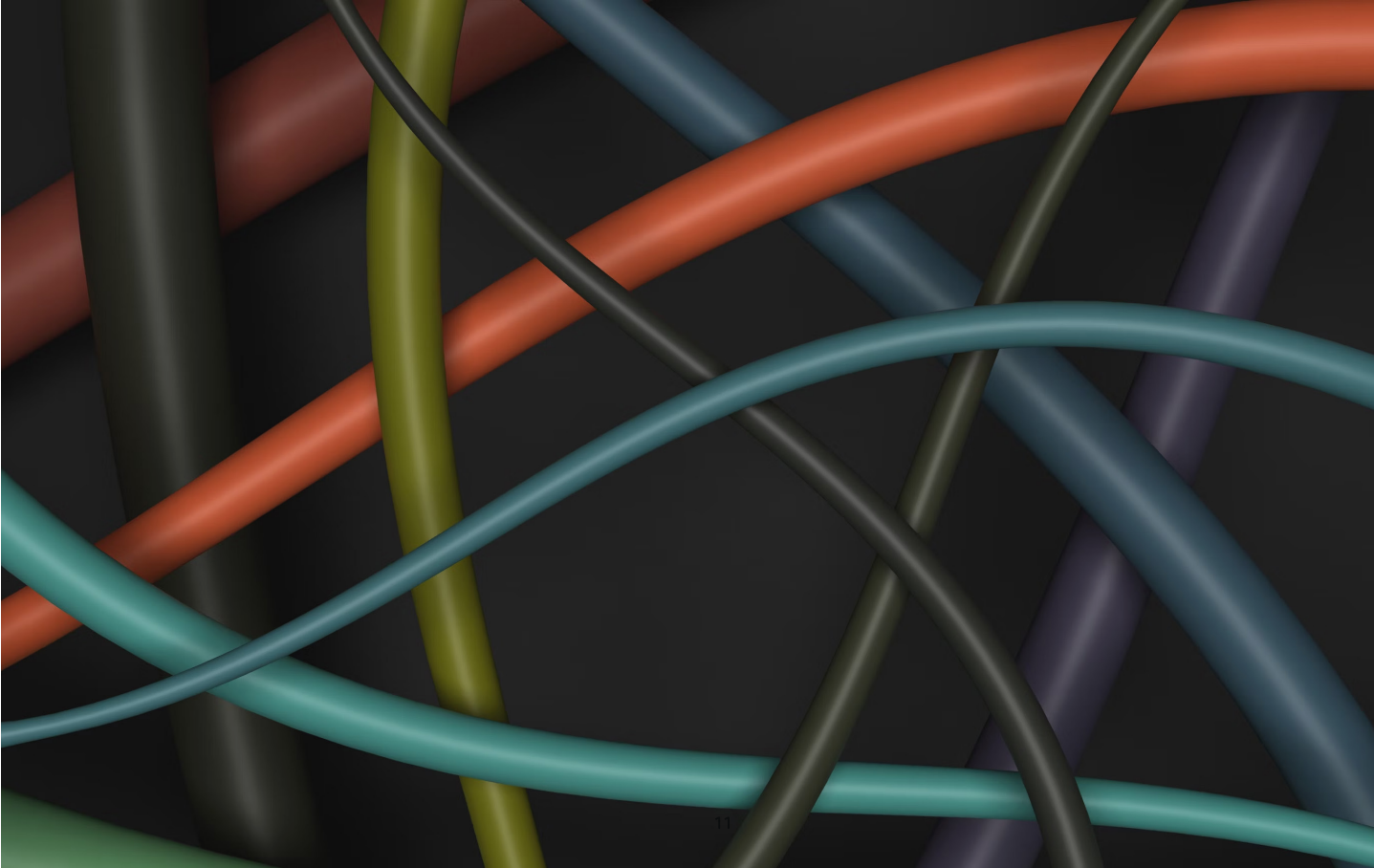
Despite its contentious nature in a world dominated by science and rationality, divination has proven to be ubiquitous across various cultures. The definition of divination varies across cultures, but most refer to the practice of seeking meaning, truth, or direction from non-human sources. (Thorley et al. 252). Often thought to be rooted in the spiritual (traditional forms such as astrology, tarot readings, etc.), secular societies practise their own forms of divination as well – often in less overt or institutionalised forms. For instance, in most US federal courts, a lottery system is used to select a judge for each new case. (Heimlich 144) We may employ informal modes of divination to guide everyday decision-making processes – for instance, "if the phone rings in the next five minutes, I will...". The universality of this practice has even led to its commercialisation as pop culture artefacts such as the Magic 8-Ball.

Materiality of Faith

All divinatory practices find their significance in their materiality — objects, locations, and practices. The invocation of such practices subsequently promises to manage randomness for affirmations of recovery, need for resources, and wellbeing. As Morgan asserts, in economies of the sacred, access to practices or materials for divine assistance were regulated as an asset for negotiation. As such, trust was a necessary component for the success of such transactions, and this was acquired through the repeated use of such devotional material. The common experience of such practices lend themselves to cultivating a collective belief in the practice, or rather, an ongoing connection and relationship with the higher powers. The maintenance of faith also relies on the arrangement of materials. Each practice has their unique set of rules to maintain, and any deviation from which leads to a disruption of belief, or at the very least, puts it up for question.



Why is one random arrangement a better source of information than another?





Captured in Bergamo Cathedral, Italy

Unpacking the Divine Machinery

One of the first visual references observed prior to this research was the likes of those by popular social media accounts SAINT and INTERNAL (right), portraying a collection of images of religious figures conducting blessing rituals upon server rooms and data centres. In the spirit of imagination, I refer to the supercomputers in the rooms as divinatory objects. Afterall, they are more-than-human devices that possess superhuman abilities to assist in our pursuit of stability through data processing.

A brief semiotic observation reveals similar signifiers like screens, cables and machinery juxtaposed with figure(s) dressed in religious attire, either monks or priests. The blessing ritual falls under Morgan’s second category of divination, in which a practice is invoked to manage uncertainty (502) — in this case, technological failure. Perhaps the fascination, as apparent in the images’ virality, could be attributed to the dissonance between digital technology and mysticism. As Davis asserts, the introduction of scientific rationality disenchanted the once-mystical world through industrial technology in pursuit of economic development and bureaucratic control (5-6). This contrast could be further described as the tension between the “old” and “new”, “rational” and “irrational”, or “science” and “non-science”, depending on what the angle of discussion is. Regardless, two separate systems of beliefs with very different materialities are conjured within one image, which might bring to question the efficacy of either or both of these practices. Perhaps the fascination derived is in the irony that the pursuit of control has come full circle, that “irrational” practices are called upon to assist the very technology that replaced them.



INTERNAL [internal] . “Priests and monks blessing server rooms and sprinkling holy water on computer systems as a way to prevent them from ever shutting down”
Instagram, September 24, 2024



Priests and monks blessing server rooms and sprinkling holy water on computer terminals and data centers

SAINT [@saint] “Priests and monks blessing server rooms and sprinkling holy water on computer terminals and data centers”
TikTok, August 5, 2024



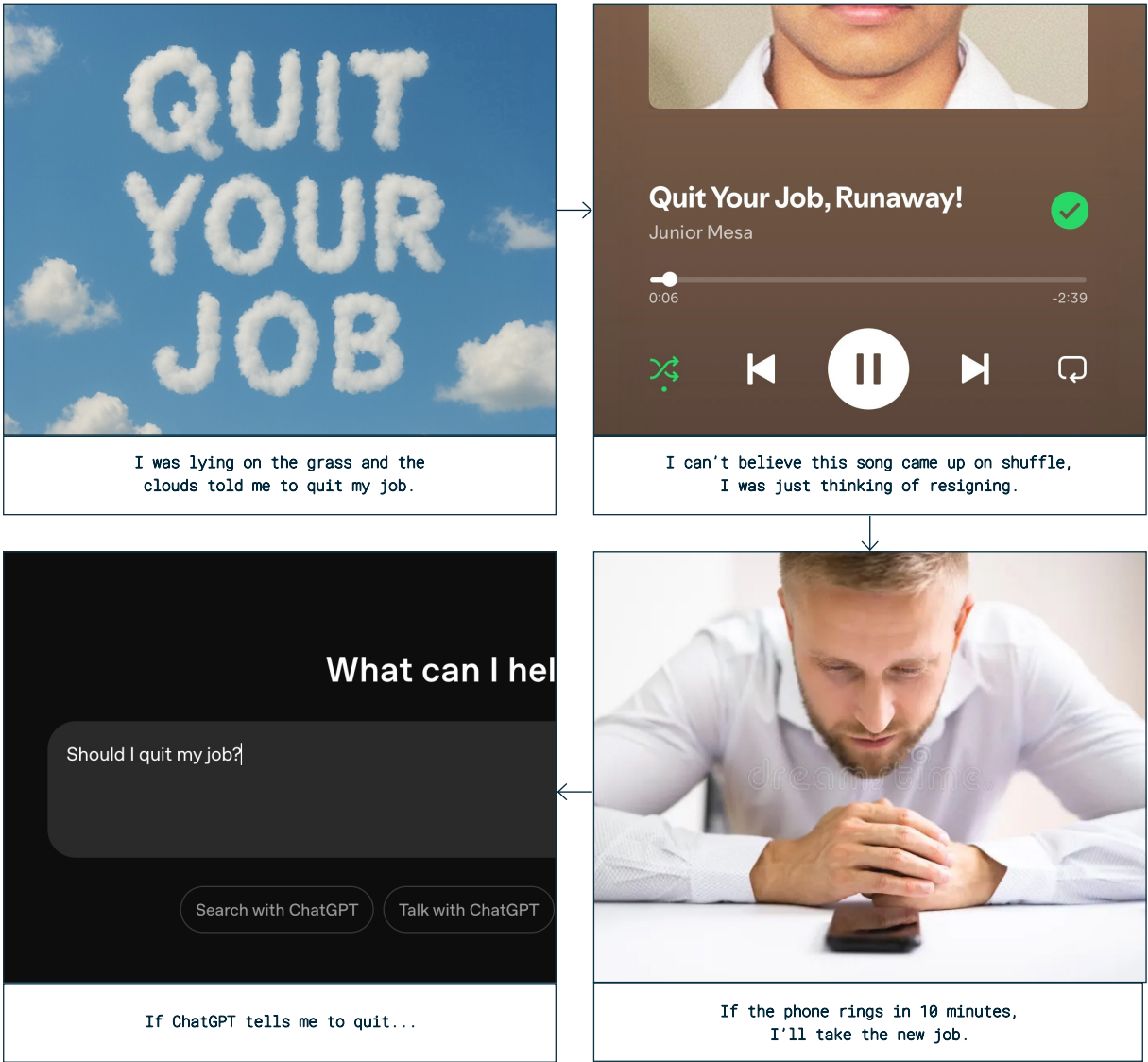
Post-Internet
Divination

If the post-internet¹ generation has been raised in a world where the internet is a “natural element of daily existence” (Waugh), the internet then takes on the role of the “natural world²”, where divination³ continues to be developed and practised.



The introduction of the internet and AI has greatly sped up the way information travels. Thus, the vastness of the internet primes itself as a boundless site for divination, propagating endless signs from which to draw meaning from (Pasulka). The devices from which we access these technologies from then become sacred objects, vessels from which we access sacred spaces from.

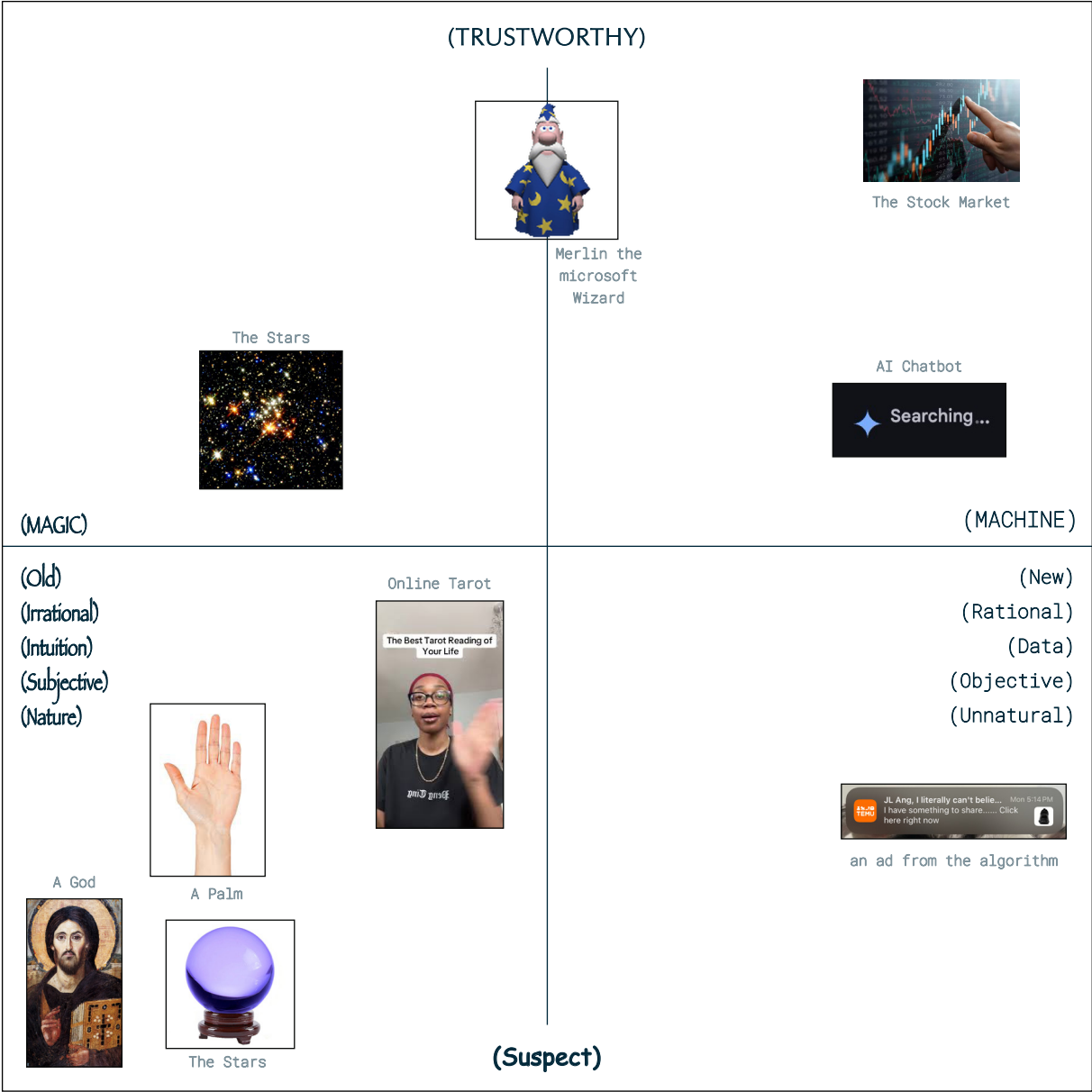
¹ Post-Internet here refers “not to a time ‘after’ the Internet, but rather to an Internet state of mind – to think in the fashion of the network”. (Archey and Peckham 8)
² See Thorley et al. 237–258 for elaboration on divination and nature.
³ To put into context the way divination will be discussed in this research, I refer to Thorley et al.’s definition of encultured divination, which he juxtaposes with those of practitioner divination and essential divination. Encultured divination is practised by cultures in which divinatory frameworks extend across the natural world. In this, a practitioner may or may not be required, but it is in the nature of the culture for ordinary people to find meaning through the natural world (254–257).



Forms of practitioner divination have found their way into the internet – as Briggs observes, a rise in content on TikTok such as manifestation videos, astrology and tarot readings. Instances of essential divination – appearing online at the same time as a friend, an oddly situation-specific song that came up on shuffle, receiving an advertisement after talking about a product – serve as symbolic information to be read, albeit the last being more sinister than others. In other words, these behaviours are an articulation and rearticulation of our encounters with technologies through embodied spiritual knowledge. As Jurgenson observes, our online and offline behaviours are increasingly codetermining, almost in a ‘symbiotic’ relationship. Or as Briggs parallels through the lens of mysticism, the belief that, “As I imagine, so I become”.

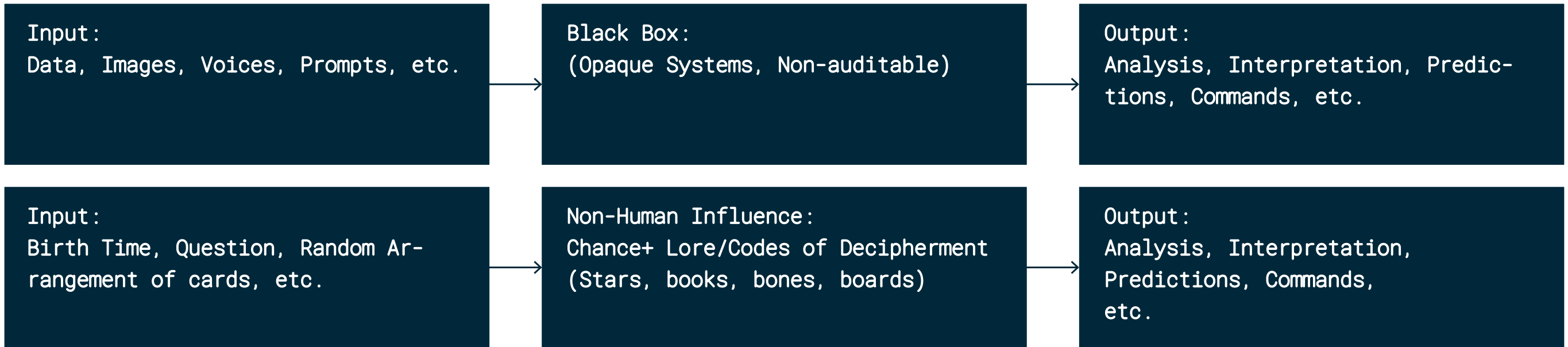
Mapping the Magic-Machine, Trust-Suspect Spectrum

The graph below looks different for everyone, of course. It is important to note that the labels are simply guides and do not necessary belong on each side of the scale. For example, astrology might be rooted in data collected from celestial bodies and natural phenomena, but the interpretation of said data has evolved through mythology, philosophy, cultural influences. Does this make it any less trust-worthy than an AI chatbot whose intentions are concealed from us?



Mapping Out Sources of Information

SEARCH ENGINE TO ORACLE



The Black Box as a Divinatory Authority

Pasulka, Briggs, and Davis caution readers against tech-driven divination on the internet, particularly the effects that it can have on the material world. In Master Algorithms, Domingos warns of the pitfalls of algorithms, where users are constantly put at risk of data biases, data security concerns, etc. Similarly, in The Black Box Society, Pasquale writes about the mediation of knowledge by complex algorithms, ones he calls the “black box”. The term refers to both the vessels for algorithms, our devices and those around us that collect and track our data, and the systems whose inner workings are hidden from those it is monitoring. As technology progresses, these systems not only become more accessible, but also more complex in their opacity (3-4). As technology progresses, users are also coerced into complacency with the promise of making our lives more convenient (17). This comes with the recognition that our access to knowledge lies in the hands of large corporations. Complex, multi-faceted problems become condensed into one-dimensional solutions that serve the benefit of such corporations (60-61). Search engines, for instance, despite claiming to be objective and neutral, inherently compile and curate results for users. In this way, the corporations that control such systems assume the same role that belonged to institutions of faith, those that spoke through the religious imagination. Those which “marked their notions and symbols in the world around them, using architecture, language, icons, costumes, and social ritual—and often whatever media they could get their hands on.”

AS THE INTERNET BECOMES INCREASINGLY ALGORITHMIC, ONE BEGINS TO WONDER IF THE ALGORITHM STARTS TO TAKE ON THE ROLE OF A “MORE-THAN-HUMAN” ENTITY, WITH KNOWLEDGE GREATER THAN US.

The Role of Belief

To bring in this perspective requires a discussion on notions of belief and trust. Morgan explores the role of systems, objects and non-human agency in divinatory practices, in which the primary goal for most techniques is to rule out human manipulation. A user of ChatGPT might be led to believe that the responses provided are objective and neutral due to its appearance as a “non-human” source, and for the fact that it possesses knowledge far greater than one person could. Users might even attempt to engineer their prompts to generate desired outputs as a means of optimising the process (not unlike providing personal information to produce personalised astrology readings). On top of its non-objectivity, unlike traditional mediums who speak in abstract imagery open to one’s interpretation, data-driven responses seek to provide a clear output. This further reinforces their role as a dictatorial medium rather than one who guides (Simanowski). Here is where Cornelius’ study of the “chicane” becomes relevant. He asserts that, to study a practice requires a complex understanding of the “diviner”, “client”, and the social structures around it. In this, closer analysis of both parties’ emotional, imaginative, and symbolic relationship with the process allow us to understand better the instances of doublethink in both parties. The learnings of this study serves as a metaphor to better understand the role of faith between corporations, designers, designs (diviner or medium) and user (client).

WIZCO'S EXPERIMENTS

1. Digital Simulation of the Jiaobei
2. Noise Divination/Pixel Oracle
3. Memesis of an AI Oracle

REPORTS

EXPERIMENT 1:
DIGITAL SIMULATION OF
THE JIAOBEI

- Objects/tools of Interest:
- 1. Jiaobei/Substitutes
 - 2. Language
 - 3. p5.js

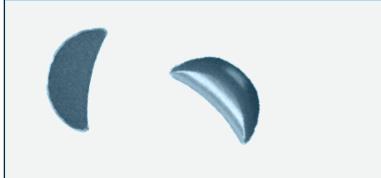


An experiment simulating the practice of jiaobei through algorithmic randomness, exploring how the digital representation of the practice affects its perception/authenticity.

- What does an algorithm need to do to simulate true impartiality? Can it even do that?
- What does the role of the image and semantics have to do with our belief in technology?

Preliminary Observation

As discussed before, the arrangement of signifying elements in divination lead to varying degrees of complexity, transparency, even imagination. To put this study of materiality into the context of computational algorithmic decision-making, this first experiment begins simply a digital simulation of the jiao bei, also known as moon blocks. It is a tool used commonly in Chinese traditional religions to seek divine guidance. Each block produces only 2 outcomes (up or down) when thrown. Depending on the direction of the blocks, they produce 4 possible outcomes. For simplicity's sake, I chose to work with the first 3 outcomes.

	1. Sheng jiao (聖筊, divine answer). It is read as the god's approval of the question, representing a 'yes' response.
	2. Nu jiao (怒筊, angry answer) also referred to as ku jiao (哭筊, crying answer) or mei jiao (沒筊, no answer), which represents a 'no' response, showing the god is upset or disapproving of the question.
	3. Xiao jiao (笑筊, laughing answer). The rounded sides cause the blocks to rock back and forth, which is interpreted symbolically as the god's laughter. This can be interpreted as a 'no' response, or that the answer is laughably obvious, or that the question was unclear.

Language

I began with an existing p5.js sketch that generated random positions for multiple images on the canvas. Then, two images are uploaded, one of the block facing up, and the other facing down. Given that the interpretation of the block's arrangements involved more than just "yes", "no", and "maybe", I included a short text that explains the response. Particularly with the nù jiao, and xiào jiao, the text displayed contributed an emotional response that lends itself to additional interpretation by the audience.

For instance, if one used the jiao bēi to communicate with an ancestor, their response might be further dependent on their prior understanding of the person. Further questions asked might be "why are they laughing at this question?", or "why does this make them upset?". The evocation of such emotional language gives the outcomes another layer of significance, bringing the inanimate objects to life.

Initial Reading	Lore	Interpretation
Yes	Divine Answer	It was meant to be this way.
No	Angry/Crying/ No Answer	Why is my question making them sad/angry etc...
Maybe	Laughing Answer	Why are they laughing at me?

Image

Another factor of note is the imagery of the jiao bēi. Anecdotally, the replacement of the blocks with coins is a common practice for the sake of convenience. The function of the divination would remain the same. However, this rearticulation of the practice would only be recognised and understood by those who are familiar with this act of replacing the object of signification. For instance, if this were to be done in a culture where coins are not used, the gap between the association of ji o bēi to coin would increase significantly. Additionally, the shaking motion which is associated with xiào jiao (laughing answer) would be absent, which removes association to the emotional significance of the response.

If I were to abstract the image further, into black and white squares or the numbers “1” and “0” for example, the functionality would still remain. However, the imagery would be so far removed from the original symbolism that the cultural significance and interpretation of this divinatory practice is unrecognisable.

AT THE END OF THE DAY, THIS MECHANISM MIRRORS THE WAY A COMPUTER MAKES DECISIONS THROUGH A BINARY SYSTEM – ONE WE UNDERSTAND AS 1S AND 0S. IF THE BINARY SYSTEM IS TRULY LEFT TO CHANCE, OR INSTRUCTED SO, THE COMPUTER THEN BECOMES AN OBJECT WHERE DIVINATION OCCURS INFINITELY.

This task has allowed me to further understand that there really are endless possibilities of chance that are created through technology, it is just the re-articulation of signifiers and contexts around the mechanism that allows it to bear meaning. Understanding this allows me to then re-articulate, or reimagine a possible iteration of this practice.

INCREASE IN ABSTRACTION



0
1

Statistical Manipulation

The last observation of this experiment is the simulation of statistical probability. The random positioning of the objects across the canvas seeks to replicate the appearance of the blocks when thrown. Throwing the blocks simulates the appearance of randomness, specifically one removed from human manipulation. However, if we account for the outcome of a coin toss, researchers suggest that the probability of heads or tails is not a 50-50 chance (Lawler). Through this digital recreation, it is possible to adjust the likelihood of each image being generated simply with the introduction of probabilities in the code – a code necessary even if the probability was 50-50. The concealment of which from the participant would be an example of real secrecy in a black box algorithm (Pasquale 6).

The gods are displeased...



Play God (%)

Image Abstraction

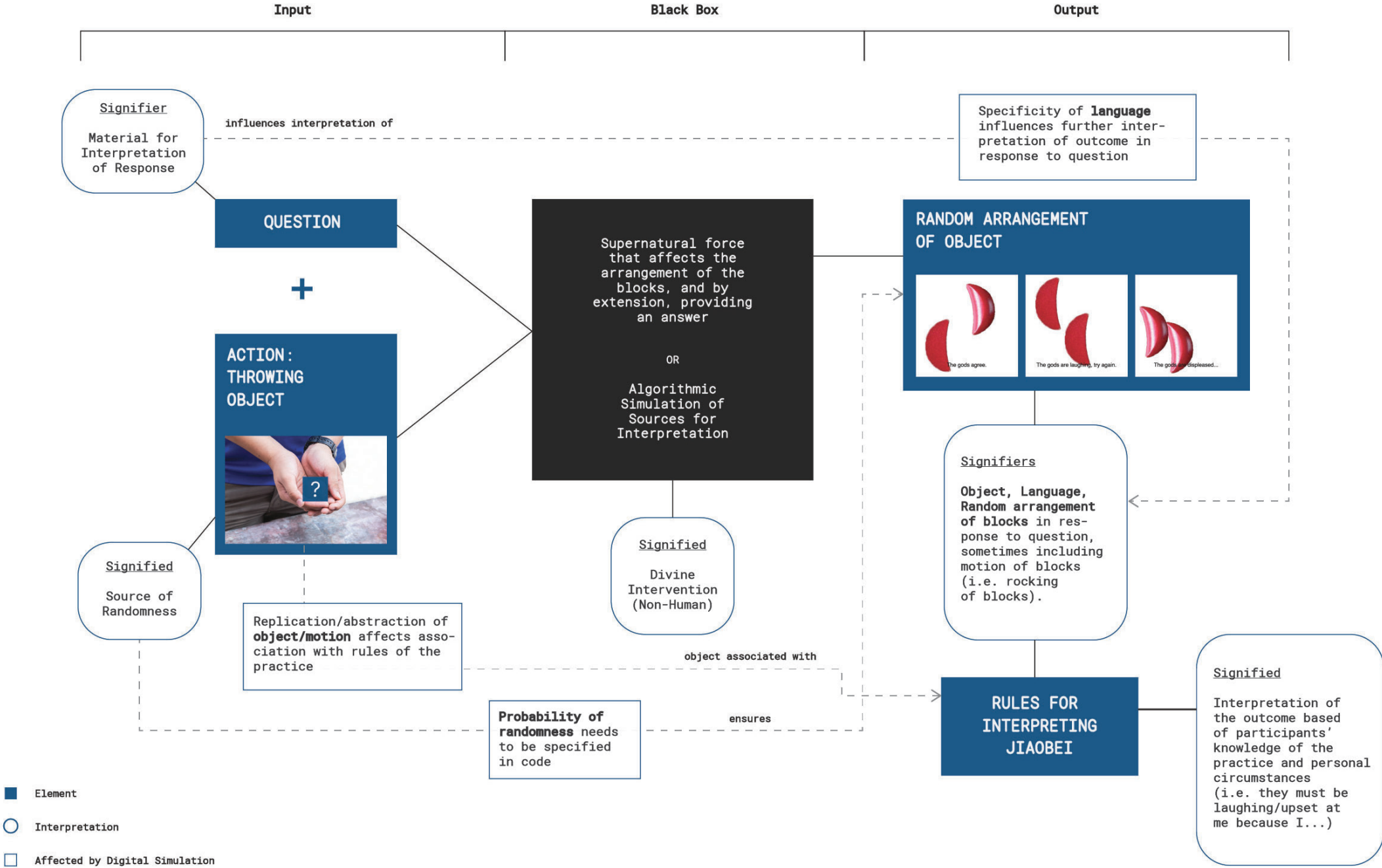
To convey the learnings of the experiment, the p5.js sketch was updated with sliders to allow users to manipulate the probability of each image being generated. A **probability slider** was introduced, of which values are mapped from 0 to 1, with increments of 0.01.

Additionally, a **"image abstraction" slider** was created to allow the user to experience the mechanics of the jiao bēi with different images, each one distancing itself further from the original significance of the practice.

This experiment has provided a study of what Jean-Pierre Vernant describes as “divinatory intelligence”, which highlights the specific intellectual processes that occur within the participants. Often, divinatory practices aim to reach a resolution through such hermeneutic processes, for “truth-as-unconcealment”. (Cornelius 120). A true simulation of the jiao běi would require the designer to account for all source

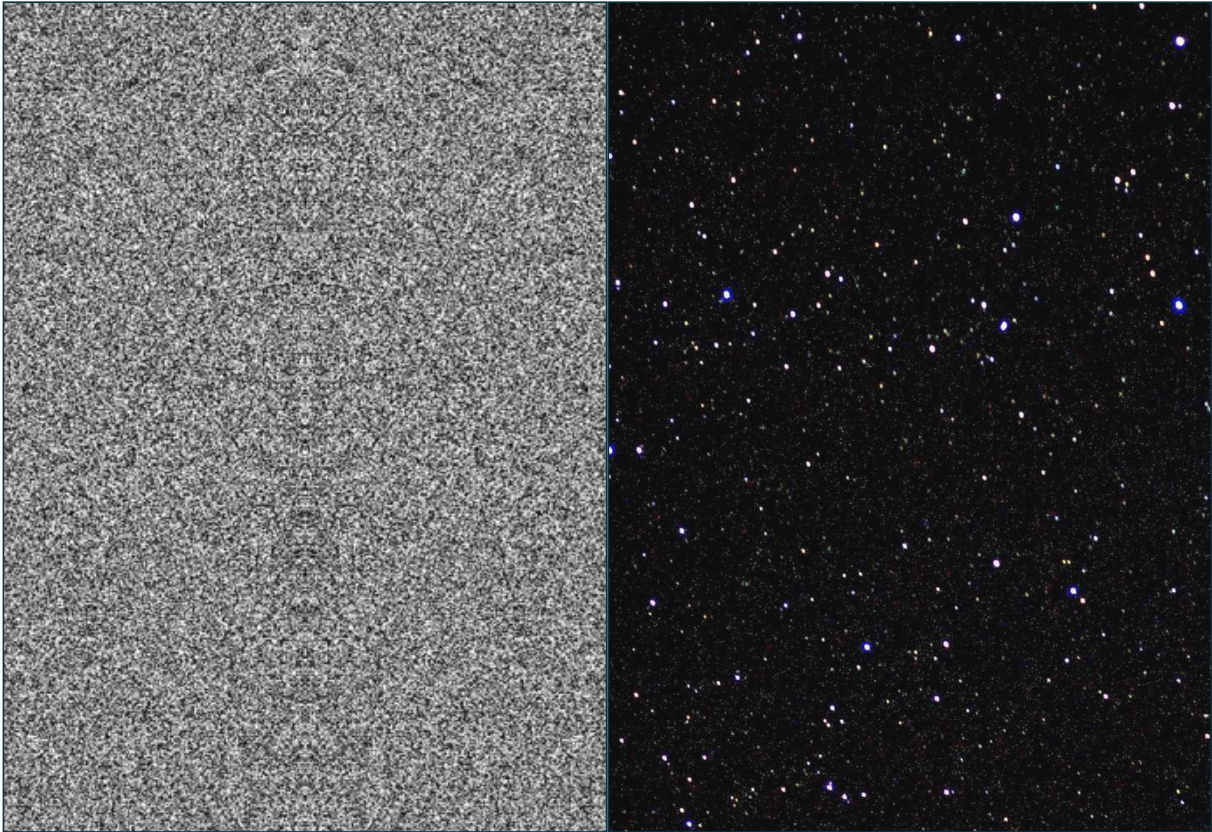
elements for interpretation embodied in the divinatory objects present. This requires both the designer and the participant to engage in double-thinking: the designer must rationalise the irrational, while the participants – whether consciously or not – suspend their awareness of human manipulation to achieve resolution and meaning-making (Cornelius 131). The functions that make these possible are examples of a

subjective objective function, in which an objective judgement is made in an otherwise subjective situation (Blackwell 195-196). The success of the simulation is thus not only dependent on the ability of the designer to replicate the interpretative elements, but also limited by the participants willingness to accommodate the subjectivity of the objective functions inevitably present in the simulation.



EXPERIMENT 2:
NOISE DIVINATION/
PIXEL ORACLE

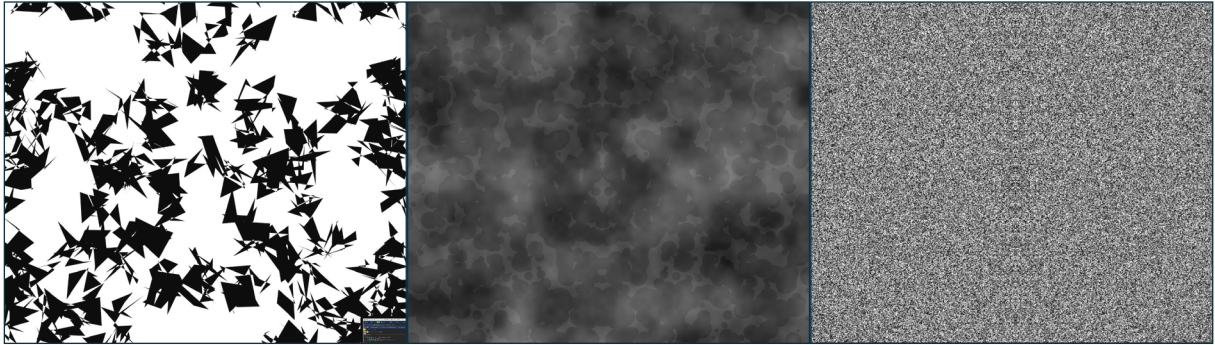
- Objects/tools of Interest:
- 1. p5.js - Image Generation
 - 2. TeachableMachine - Image Learning Model



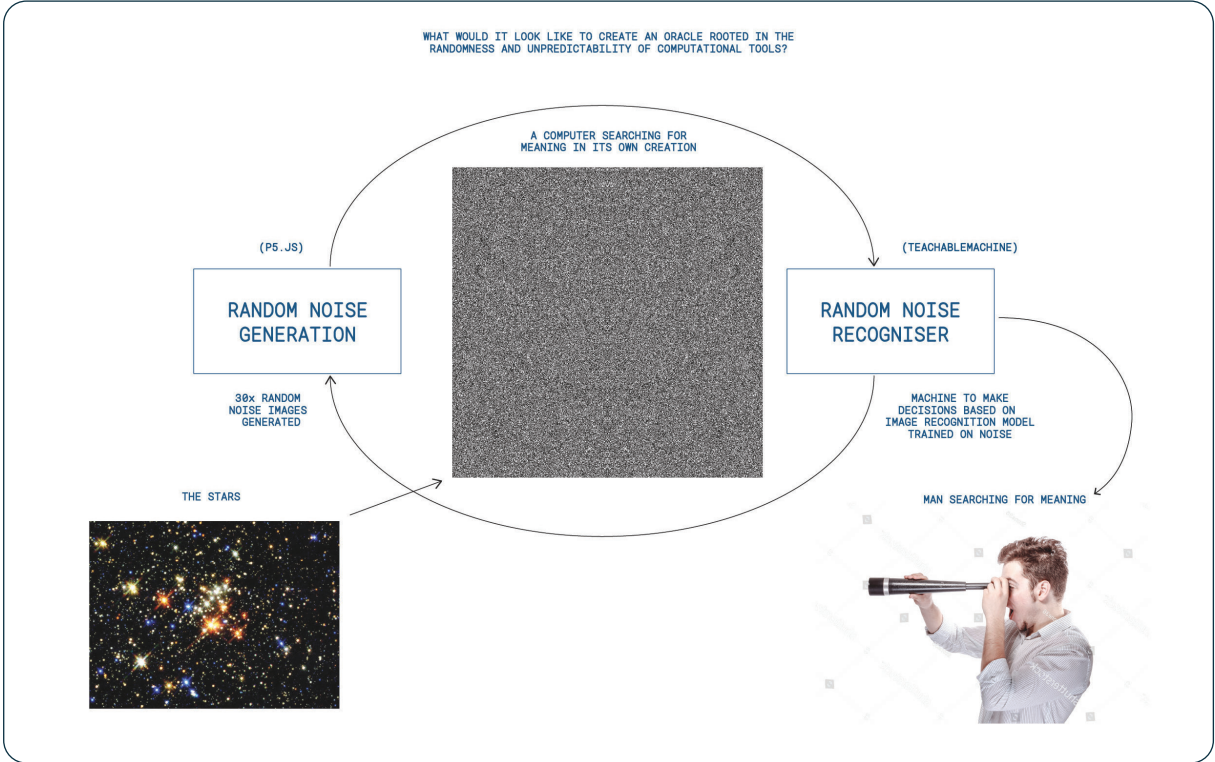
Following the first experiment aimed towards understanding the semiotic elements of a simulated divination, I next aimed to explore if it is possible to rearticulate said elements to create a divinatory oracle removed from existing cultural elements. Instead, the goal is to derive these elements purely from computational methods. This experiment therefore utilises computer-generated imagery and machine learning for their ability to generate randomness.

Creating the Image

I started with experiment different generations of abstract imagery using p5.js. I ultimately decided to go with just a 1000x1000px canvas (below), each assigned to a binary outcome, black or white. I felt like this embodied the true binary decision-making process of the computer.



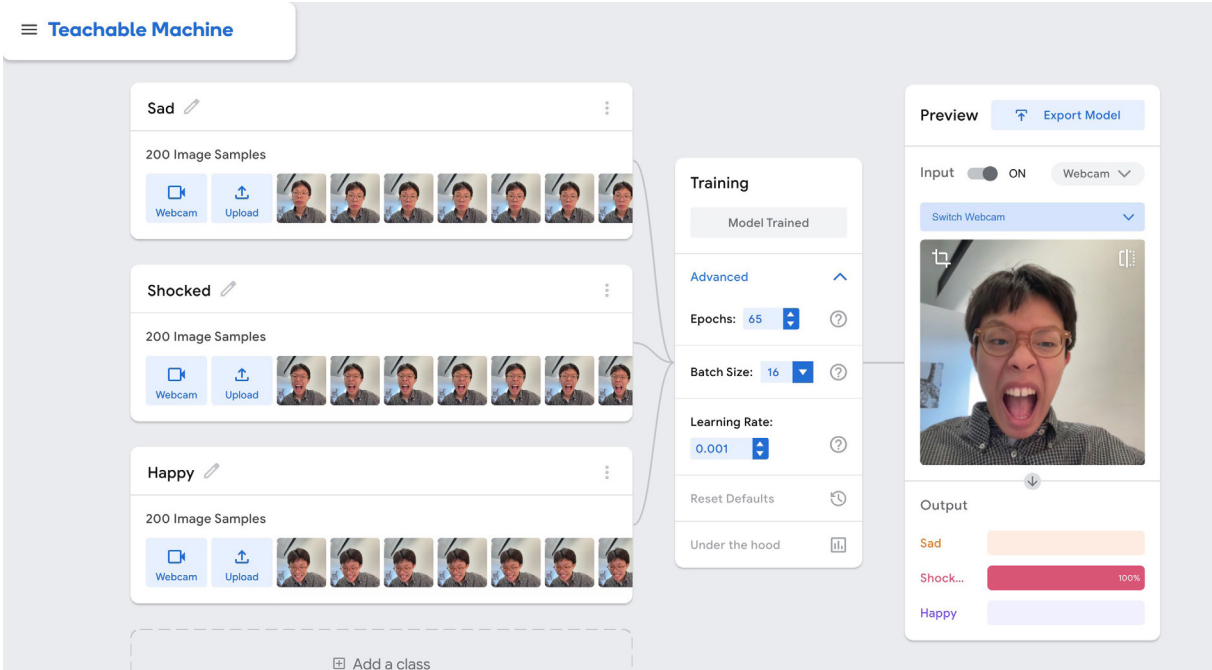
I LIKEN THIS 1000X1000PX CANVAS OF NOISE TO THE STARS BEFORE PEOPLE LEARNT HOW TO READ THE SKIES. PATTERNS INPERCEIVABLE TO THE HUMAN EYE, BUT LEGIBLE TO A MORE-THAN-HUMAN BEING, OR AT LEAST IT WAS AT FIRST.



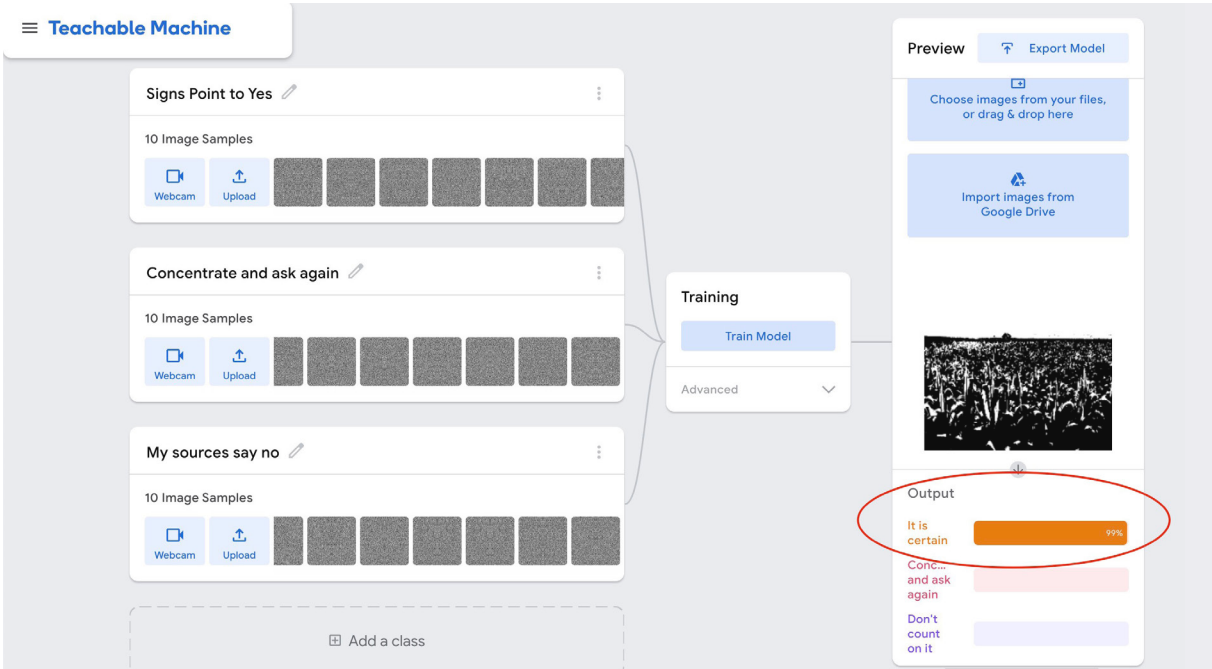
Creating the Oracle

30 of such images are generated and used to train Teachable Machines' image model. The images were then separated into 3 groups, and used to train the model to generate 3 outcomes: yes, no and try again.

Testing with facial expressions



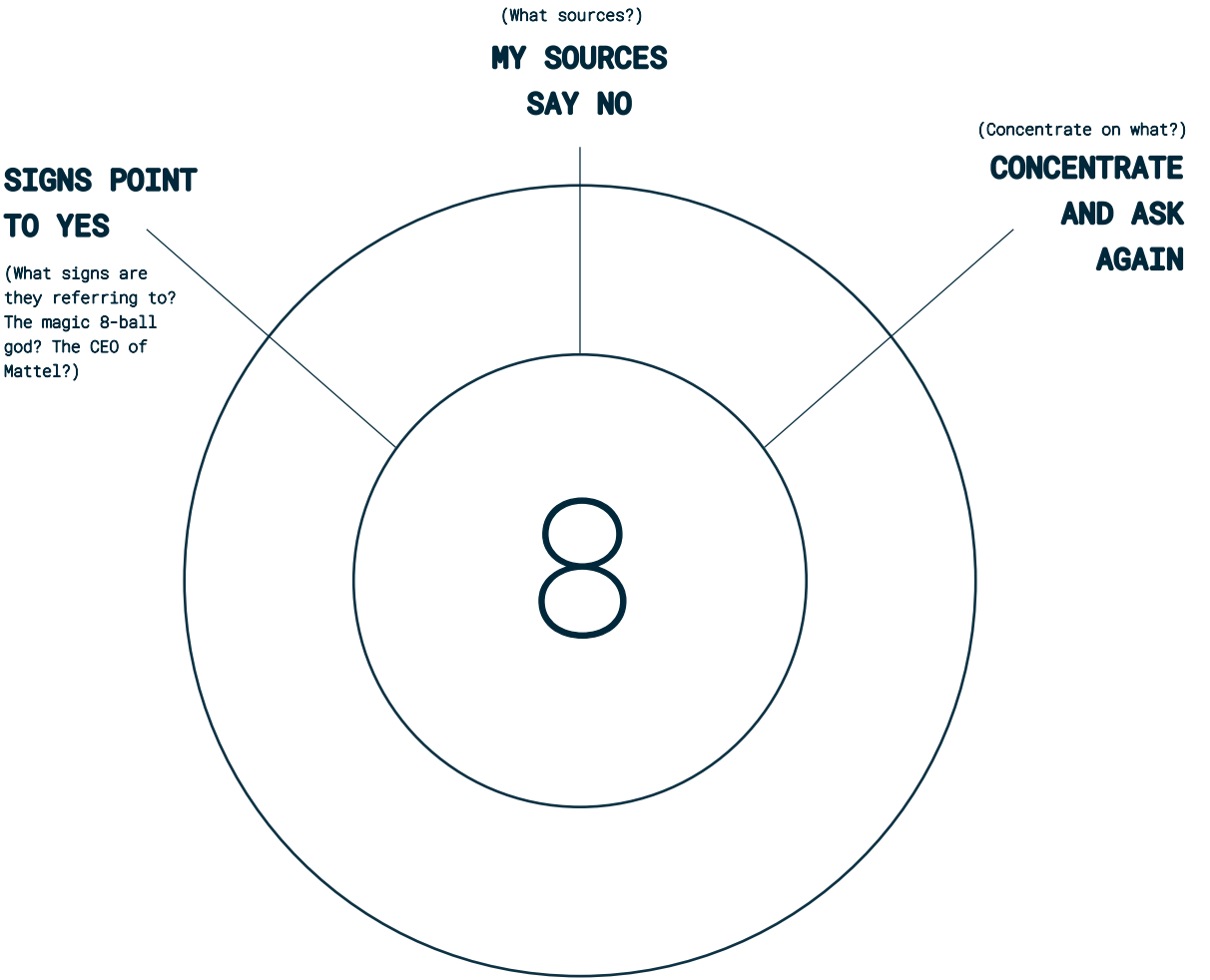
Training on Noise



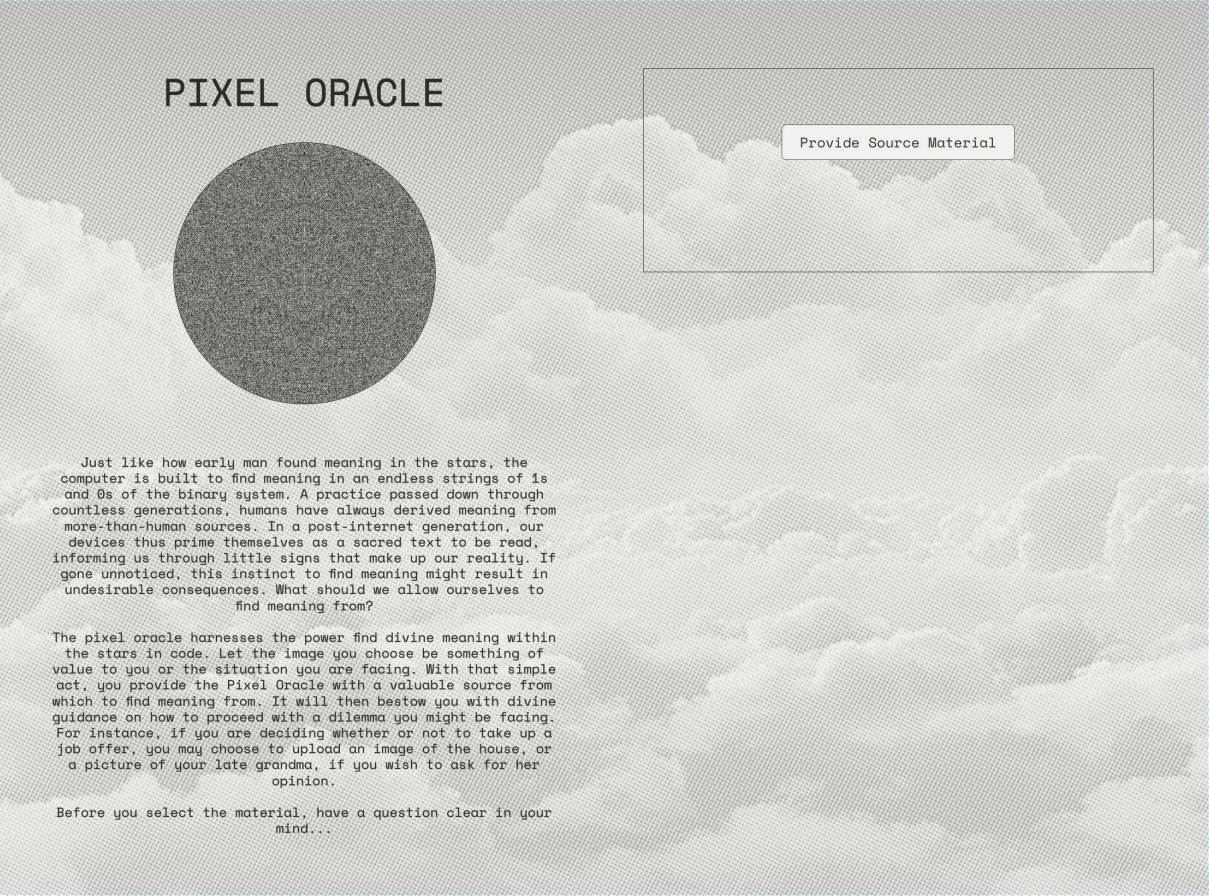
Language

The responses then needed to be delivered in a language that was suggestive of divine intervention, while remaining free of association to existing forms of divination. In looking for language that was idiosyncratically spiritual, I looked towards the **Magic 8-Ball**.

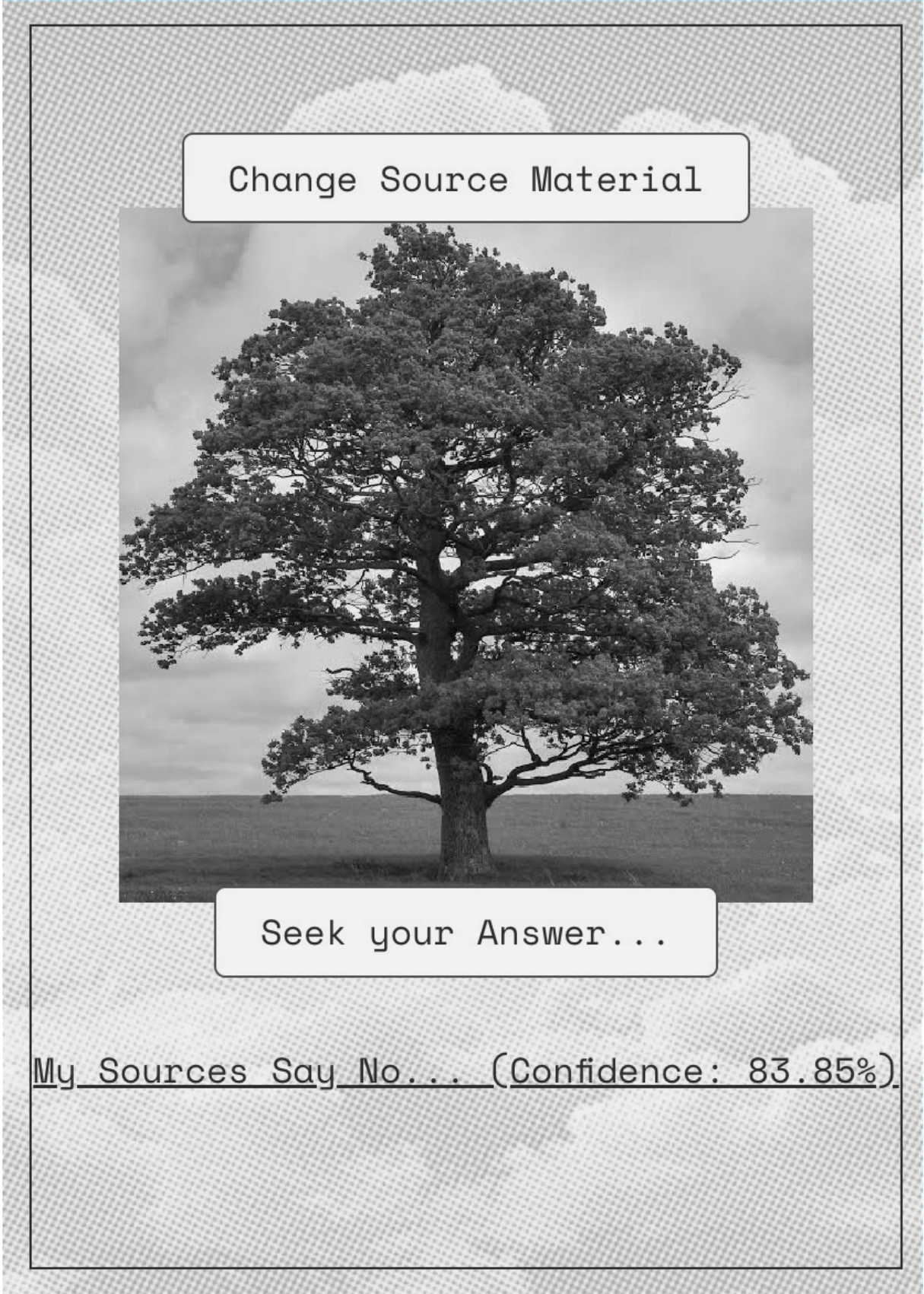
In 1950, the device was rebranded from the Syco-Seer – a device rooted in spiritualist techniques – to a toy that distanced itself from its existing belief systems. This saw a shift in its appearance, interactivity and language, **allowing a more spiritually ambiguous audience to trust in its authority, a move that catapulted it into pop culture iconography** (Hu). Upon reviewing the affirmative, non-committal and negative answers of the Magic 8-Ball, I selected one of each. Respectively, "Signs Point to Yes", "Concentrate and Ask Again", and "My Sources Say No". Each of these responses suggest the implication of a divine source from which the answer was retrieved from without being overly descriptive. This employs the Barnum Effect, in which specificity is mediated to achieve universal applicability of a statement.



THE HOPE IS FOR THE PARTICIPANT TO FILL IN THE GAPS WITH THEIR OWN CONTEXTUAL INFORMATION.



In addition to a question as the participant input, this system introduces another element of emotional significance of personal meaning. Inspired by Cornelius' example of Granny's Ring (124-126), this addition calls for the invocation of a personal artefact, an image will be fed into the machine learning model to determine a response to the question. The participant is to bring an image corresponding with the question they ask, or the individual which they request guidance from – for instance, a picture of a loved one or even a tree.

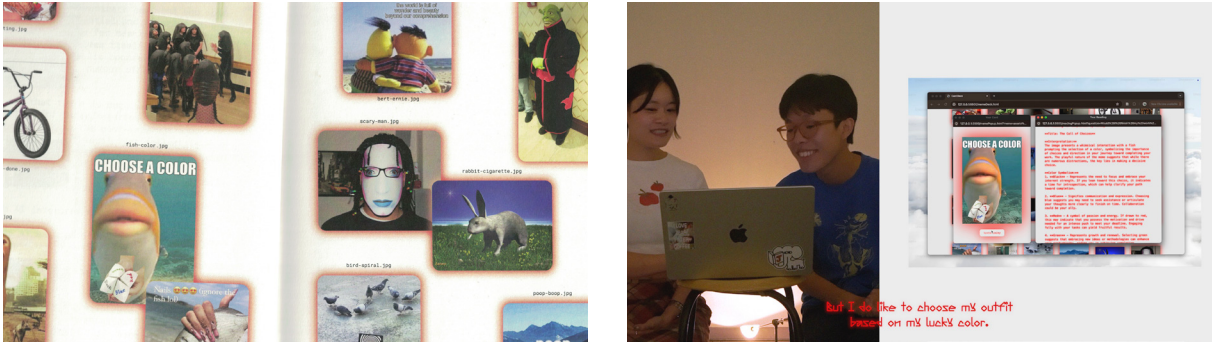
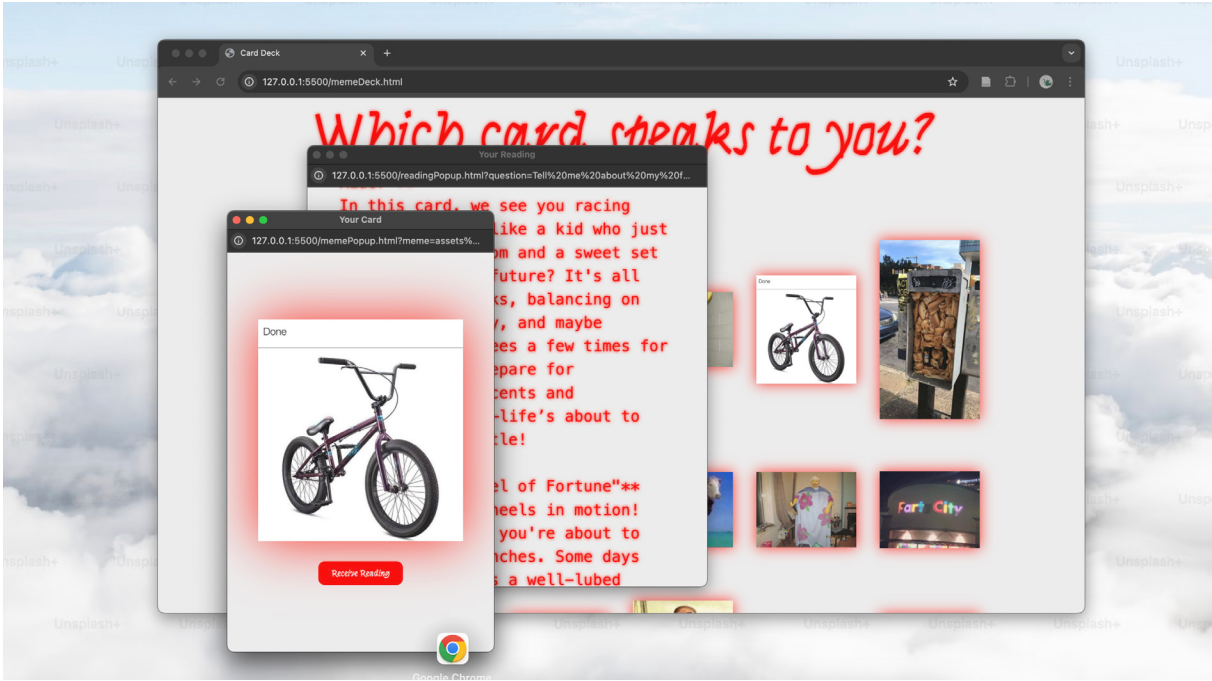


EXPERIMENT 3:
MEMESIS OF AN
AI ORACLE

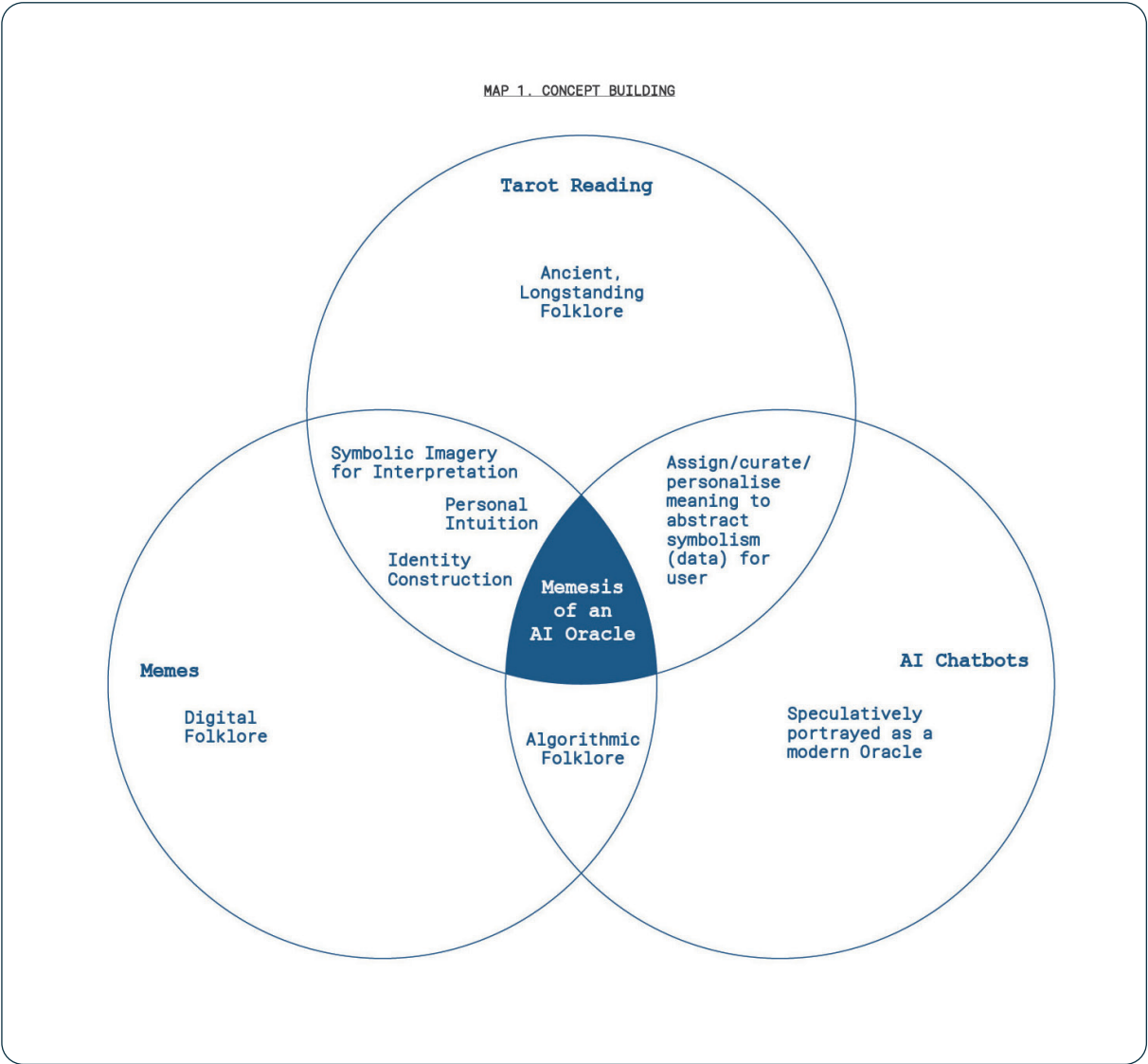
Objects/tools of Interest:

- 1. OpenAI API
- 2. Memes

(Please refer to the book Memesis of an AI Oracle for the time being...this book is a WIP...)



The third experiment aims to create an interactive reading that maintains an imaginative approach, while incorporating elements that are familiar to the participant. In recognising that it was likely impossible to create a divinatory process that people genuinely believed in, the goal for this activity would not be to conduct an actual divinatory reading, but to act as a catalyst for conversation about belief around algorithms and AI.



FINAL PROTOTYPE
— PERFORMANCE(?)

In recognising that this is a very long story to tell, I decided I needed a vehicle to take audiences for the ride — and that's Merlin! I will be documenting the research and experiments through a video shot through the perspective of Merlin, the burnt-out tech wizard. As a wizard trained to maintain the illusion of magic for complex computational processes, he explains his struggles with the increasingly unrealistic requests of clients, and pivots back to education, where he studies magic and technology to reconcile with his roots and culture.

Through Merlin, I hope to reflect some of the dilemmas faced by the people behind the algorithms, and create a more nuanced presentation of the problems faced by designers and engineers of such technology. After all, it is rarely just an individual responsibility when it comes to creating change. It is important to consider the systemic problems that are preserving the magic in the machine.



**A STORY ABOUT FAITH,
MAGIC, AND TECHNOLOGY**