



# Halftone Dissonance

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**Halftone Dissonance**

By

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Done in Collaboration with Zhen Yu Yang (MDes 22')

Bachelor of Architecture, Southern California Institute of Architecture, 2018

Submitted in partial fulfillment of the requirements for the degree of

**Master in Design Studies**  
**Art, Design and the Public Domain**

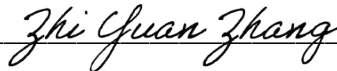
At the Harvard University Graduate School of Design

May, 2022

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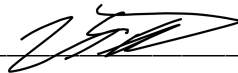
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Certified by \_\_\_\_\_



Zach Seibold  
Lecturer in Architecture  
Harvard University Graduate School of Design

## Halftone Dissonance

### Abstract

This thesis aims to induce a public conversation in the public sphere. The COVID-19 pandemic public health policies and social isolation altered the way people interact, while consumer culture has increased and shifted. We are continuously exposed to massive amounts of information that can be easily manipulated.

Our thesis installation presents critical figures that can transform our day-to-day life; however, it is up to the viewer on which portrait they align with. As designers, we want to expose two opposing points of view on a controversial topic and bring it to the public sphere following Chantal Mouffe's writings in *Art as an Agnostic Intervention in Public Space*<sup>1</sup>, in which public spaces are always plural.

Our installation is an intervention in a pluralistic public space. Rather than an agnostic approach, our project translates controversial topics into complex geometry. The goal is to identify a problem and situate our specific intervention to address that issue. The medium is an installation that was created with rigorous amounts of digital manipulation through the 3D plane and CNCing production methods.

The two sides of the board juxtapose Governor Kochul and the real estate mogul Stephen M. Ross and their stances on the 421A Tax Abatement law about the post-pandemic world, where the socioeconomic disparity also refers to the post-pandemic world is accelerated at an unprecedented pace (source: IMF). Our intervention aims to enact a public conversation and inform the public about the 421A policy. We let the viewers of our project decide which side they are supporting through the daytime and nighttime readings. During the day, the installation will reveal itself as an obscured image of Governor Kochul, while the nighttime reading will reveal an obscured image of Stephen M. Ross. An informative and interactive website accompanies the installation.

### Advisors:

**Zach Seibold**

**Malkit Shoshan**

### Collaborators:

**Zhen Yu Yang: MDes Tech 22'**

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<sup>1</sup> Mouffe, Chantal. *Art as an agonistic intervention in public space*. in: *Art as a public issue: how art and its institutions reinvent the public dimension* Rotterdam; 2008. Amsterdam NAI Publishers.

## Introduction

This thesis aims to induce public conversation in the public sphere, following Chantal Mouffe's writings in *Art as an Agnostic Intervention in Public Space*. Public places are always plural. Our installation is an intervention in a pluralistic public space. Our project translates controversial topics into complex geometry and the installation presents key figures that can transform our day-to-day life; however, it is up to the viewer on which portrait they align with. As designers, we want to expose two opposing points of view on a controversial topic: The images portrayed convey two different viewpoints that inhabit the same space simultaneously. The goal is to identify a problem and situate our specific intervention to address that issue.

This project explored multiple design-led techniques for accommodating conflict in modern contexts connected to physical and metaphorical interpretations of space using theoretical notions about 'agonistic space.' It recognizes the distinction between Agonism and Antagonism. Exploring the facilitation of agonism through design, through case study analysis, and by connecting these ideas to design methodologies through experimental processes has assisted us in better understanding, illustrating, and articulating a role for design and designers that goes beyond 'problem-solving.' A position concerned with constructing items and settings that allow social actors to coexist and empathize with one another.

Our interest and specific intervention juxtapose Governor Hochul and the real estate mogul Stephen M. Ross and their stances on the 421A Tax Abatement law, which expires this June 15th. This specific issue brings up the problem of mass media and issues that are often portrayed in a biased way. Once elected, Governor Hochul vowed to change the long-standing 421-A policy, a tax abatement law<sup>2</sup> that allows the biggest real estate developers in Manhattan to lower their tax bill for 10-25 years in exchange for 20% of their proposed project used for affordable housing. The controversial policy has recently resurfaced as a trending topic due to Hochul's commitment to rewrite the wrongs of the 421-A in her version named 485W<sup>3</sup> – which essentially reworks a lot of the loopholes developers are using – such as allocating the 20% of the affordable housing units into other boroughs rather than building it inside Manhattan. This issue isn't new, and however, after the pandemic with the rapid rise of inflation and inequality, the 421-A policy is adding extraordinary amounts of imbalance in one of the already most unaffordable cities in the world.

In order to change the 421-A, there are many hurdles to jump through, and many figures for the policy are ones that the public usually won't see on the news. This is the case for Stephen M. Ross, one of the richest, if not THE most affluent and most influential man in New York City in terms of real estate development<sup>4</sup>. It is only because of the current COVID- 19 pandemic,

<sup>2</sup> New York City, Department of Finance. *421a Exemption*, NYC Government, 2022. Accessed Feb 9, 2022 <https://www1.nyc.gov/site/finance/benefits/benefits-421a.page>

<sup>3</sup> Power, James P. *Why Hochul's Proposed 485w Is a Solid Successor to 421a*. Commercial Observer, 2022. Accessed Feb 9, 2022 <https://commercialobserver.com/2022/03/why-hochuls-proposed-485w-is-a-solid-successor-to-421a/>

<sup>4</sup> TRD Staff, *Ready to Rumble: Ross, Speyer Nearly Comes to Blows over 421a*, The Real Deal Magazine, 2016. Accessed Feb, 12, 2022 <https://therealdeal.com/2016/03/21/speyer-ross-nearly-threw-down-over-421a-report/>

that more light has been brought to the issue due to the rising inequality in the Manhattan, and only now Ross name has been brought up in the news, where decades ago, Ross was often in the back, hidden from the public spotlight puppeteering everything behind a curtain. Furthermore, as the paper has brought up, developers are allocating 20% of the allocated affordable housing to other districts in the city: case and point is 111 West 57 th street apartment which holds an almost shocking 1:2 ratio of units per floor, at 60 units for 90 stories.<sup>5</sup> This creates a disparity in the amount of housing allocated inside Manhattan and exacerbates the inequality issue in lower-income neighborhoods even more.

## Background

Consumer culture has increased and shifted. Mass media manipulation is just one of today's many "wicked" societal challenges, so how can design make a difference? To paraphrase Chantal Mouffe, the public setting in which disagreement happens is known as "agonistic space." That is a "space" in which opposing ideas and powers contend with the prevailing wisdom<sup>6</sup>. This project, as well as us, the designer, agree with Mouffe and see society and the public realm as "agonistic space" and use our project as the medium for ideas to prevail. To give a little bit of background, the image on the right shows the majority of mainstream media to either be right-wing biased or left-wing biased. This leads to which channel a person engages in that determines what kind of information they will receive, which leads us to the Stephen M. Ross story. Whilst doing our research on the controversial topic, we realized the articles that mention Ross's involvement in the policy are either subscription-based outlets or it is very ambiguous titled articles that mention Stephen's name amongst the clusters of text in hopes that readers will just graze through the paper. Articles that mention Stephen Ross donating to the re-election campaigns of Andrew Cuomo in the past and of recent before Cuomos scandal came out, in hopes of keeping him in office to renew the 421-A policy that expires June 15<sup>th</sup> of this month, but it isn't until you get to the very last two paragraphs of that article, where readers can actually see Ross name being mentioned. It is a similar with the articles from *The Real Deal*, readers hoping to get insight on who Stephen Ross may be are often "clickbaited" into the article before a pop-up telling the readers to subscribe shows up and blocks the readers from reading any further. The amount of encryption these news outlet holds are astonishing, especially if these figures want to keep it that way, hence why we decided to only reveal Ross' portrait under certain lighting condition as a literal metaphor that there are certain figures that we don't see in the public spotlight that controls majority of the power in certain circumstances.

However, that isn't to say everyone opposes the 421-A policy, as the quote on exemplifies, "*Mr. Leisy was flabbergasted when he stepped into his 421-A affordable housing-built apartment.*"

<sup>5</sup> Gannon, Devin. *Despite Legal Troubles, The First Units at 111 West 57<sup>th</sup> Street Go Into Contract*, 6sqft, 2017. Accessed Feb 12, 2022 <https://www.6sqft.com/despite-legal-troubles-the-first-units-at-111-west-57th-street-go-into-contract/>

<sup>6</sup> Mouffe, Chantal. *Art as an agonistic intervention in public space*. in: *Art as a public issue: how art and its institutions reinvent the public dimension* Rotterdam; 2008. Amsterdam NAI Publishers.

<sup>7</sup>By comparison, under similar tax abatement laws, we can see from the chart before the pandemic that the 421-a was far exceeding every other policy in terms of units being built, albeit after the pandemic started, construction was almost at an all-time-low. There are certainly opponents for the policy. 76% of the affordable housing built under 421-A has 30 units or less. Another issue is due to the ambiguity of the policy, and many developers are getting away with developing the 1/5 affordable housing outside of Manhattan, often built-in lower-income neighborhoods. E.g., 111 West 57th St - the developers allocated the affordable housing component in the Bronx, while the 90-story building only houses 60 units. This ultimately causes more inequality inside Manhattan, one of the most expensive cities to live in. The high cost of living and transportation leads to many homeless encampments around the city, which is illegal and as shown on the aad.nyc (Art Against Displacement). The movement depicts the same individuals getting arrested multiple times for the same offense for having tents set up inside the city sidewalks.

Jumping into our first precedent, and what caught our eye was a student project done at MAID<sup>8</sup>, named News Clash. At the time, 91% of UK media was associating Muslims as something that was negative, with channels like BBC online and other major news network painting a certain demographic a certain way, wouldn't the citizens of said place be influenced to feel the same way? Humans after all, are influenced by mainstream behavior. This project switched the word "Muslim" and "Londoners" around to let people of different ethnicity to view articles about the other demographic from their perspective.

### Design & Process

Our project represents a computing-based manufacturing process that subdivides the superposition patterns of any two images by digital image halftoning and generating cut variations through depth and width using CNC processes. This process ultimately forms a rich and wide-ranged tessellation that forms the basis of how we create our piece. Halftone processing transforms the grayscale information of images into different plane effects and cutting paths controlled by two variables: width and depth.

The 2D image of what we wanted to represent was always going to be engaged in a constant back and forth with the 3D (contours of the model), but how does one benefit the other? The Japanese Mon (traditional clan symbols of the Japanese edo era)<sup>9</sup> are a great graphic illustration of obscuring two images into one and represents the 2D side of our research. As demonstrated in our precedent studies, by obscuring specific segments of the Mon, new shapes/ imagery can begin to take place. We wanted to build on the idea of combining two images to create a new product, however, we also wanted the combined imagery to be read depending on the time a viewer visits the object (e.g day time vs. nighttime reading).

<sup>7</sup>Velsey, Kim. *A Taxing Matter: Looking Back on the History of 421-a*, The Observer Magazine, 2015. Accessed March 3, 2022 <https://observer.com/2015/05/a-taxing-matter-looking-back-on-the-history-of-421-a/>

<sup>8</sup> BBC News Online. *Muslims 'demonised' by UK media*, BBC Online, November 2007. Accessed April 9 2022 <http://news.bbc.co.uk/1/hi/england/london/7093390.stm>

<sup>9</sup>Encyclopedia Japan. *Kamon Symbols of Japan*, Encyclopedia Japan, 2022. Accessed Feb 18, 2022 <https://doyouknowjapan.com/symbols/>

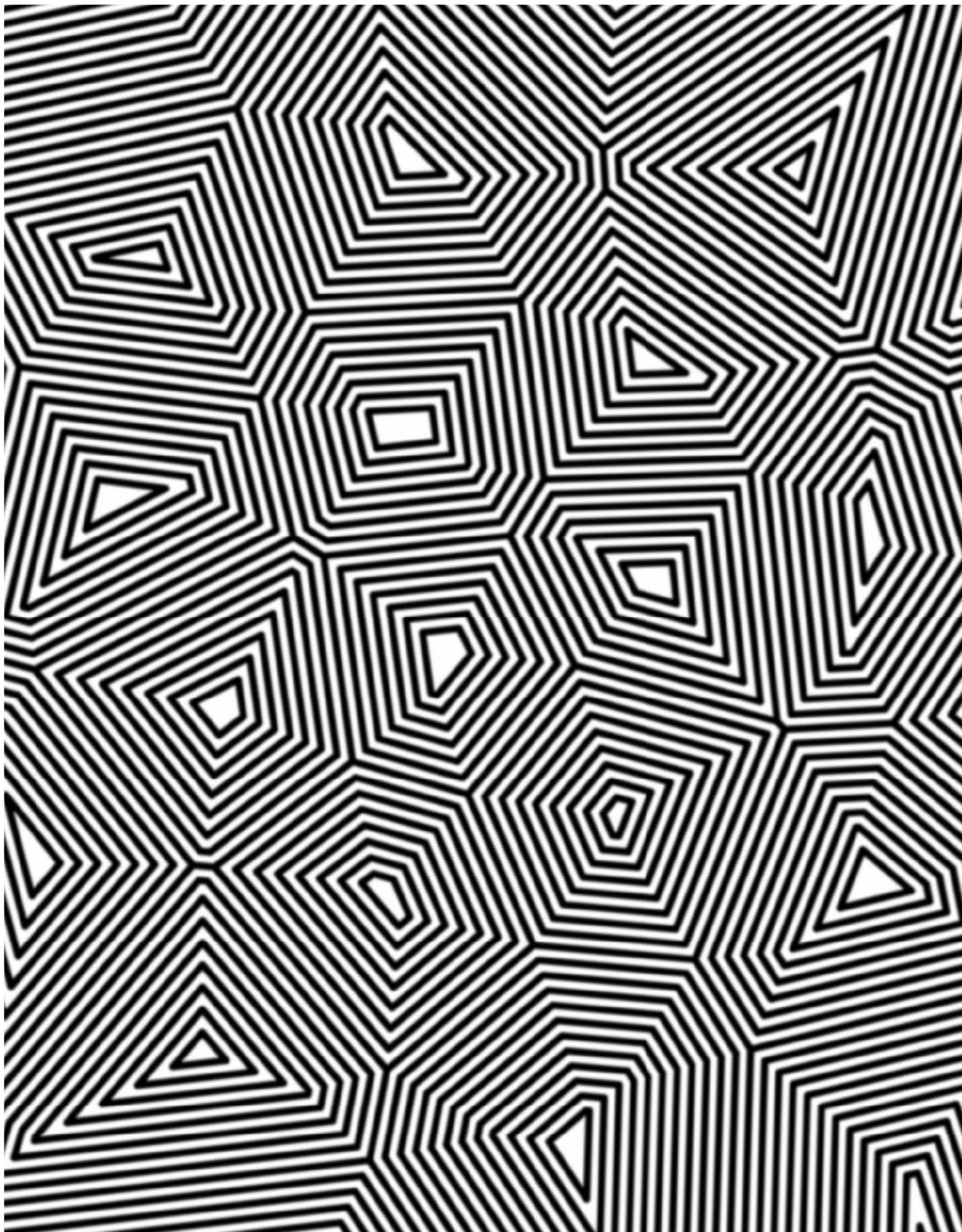
This project is also a starting point to think about how to encrypt portraits with image processing methodologies. Jason Salavon's<sup>10</sup> work uses the line width of an image to frequency and ordering/position to saturation. This has the effect of capturing the overall similarities within the set while blurring out the individual differences. In this case, while similarities of images are highlighted, differences are hidden inside these visual spaces. The depth of these images is created based on both differences and similarities as metaphors, emotions, impressions, etc. In this thesis, we would like to introduce how to encrypt and decrypt multiple portraits with our methodologies. As Salavon averaged images based on positions of image pixels, the final result is only an illusion in a 2D way. If we take a step further by translating images in a 3D way, the depth of images would be more prominent and give a much more visceral visual effect. The project uses Governor Kochul as the daytime reading, the bottom image that is shown here hints at a second figure through the top layer of the installation. We want to reiterate that having a public figure be the daytime reading was a literal metaphor for representing the faces that the public sees and the figures the public doesn't see - e.g., night time reading of NYC's most prominent real estate mogul, also the leading proponent for the 421A tax abatement.

Ross layer was created through the width aspect of the CNC parameters alongside a tolerance of 0.05-inch depth. Meaning the only layers of information containing the Ross portrait happens at zero – negative 0.05 inches and the width of the top surface. Due to the elusive nature of Ross's portrait, once the pieces are finished being CNCed, we then roll a thin layer of retroreflective paint on the top surface, taping up the bottom cervices. On the other hand, Hochul's information is revealed from a depth of negative 0.05 inches to the deepest cut of our model, width does not apply to her portrait. Once the pieces are out of the CNC bed, we then choose to paint it matte white to obscure the retroreflective paint when it dries. This gives the installation a clean look during the day and hides the retroreflective paint. Only when the right lighting environment is achieved Stephen Ross's portrait will reveal itself.

As this thesis has touched on, the project can base itself on any topic it should find itself in. Previous tests have included Dr.Fauci & Majorie Greene Taylor on their stances on the anti-mask campaign, whilst another experiment the project has tested was the extermination of Minks in Norway due to its ability to transmit COVID whilst the Sea Turtles saw a population boom through the early months of the pandemic when tourism was at its all time low.

Our thesis aims to not only activate the public realm but also wants to activate underutilized urban plots, museums, and other methods of visual information. Our methodology allows us to transform our installation into different mediums. Billboards, building facades, etc., are all in the realm of possibility with our technique.

<sup>10</sup> Salavon, Jason. *Class of 1988 & 1967*, Jason Salavon Online, 1997. Accessed Feb 20, 2022 <http://salavon.com/work/Class/>



# 01

## Thesis Statement

This thesis aims to induce public conversation in a public sphere, to come together and converse. Since the COVID-19 pandemic started, various parts of the world have experienced some isolation at some point in the past three years. It has altered the way people interact with each other forever, and due to this, consumer culture has increased significantly. In today's society, where massive amounts of information flush in every single day, most of the data can be manipulated - e.g., such as the anti-vaccine campaign. Our thesis installation represents a striking and straightforward reading to emphasize the key figures that can push change/drive what our day-to-day life can become. As the designers, we want to represent both sides of a controversial topic with an unbiased view and not criticize the people in question.

As Chantal Mouffe has said in her book, *Art as an Agnostic Intervention in Public Space*, public places are always plural. We believe that to be metaphorical, and though the installation is an intervention, it is not an agnostic approach. Our project represents a visual representation of controversial topics translated into complex geometry.

The images portrayed represent two different viewpoints inhabiting the same space simultaneously. The goal is to identify a problem and situate our specific intervention to that issue - by using our installation as the medium. The visual representation of this installation is almost impossible to create without the rigorous amounts of digital manipulation through the 3D plane & CNCing production methods. The built installation represents an immediacy of the object is physical and cannot be faked through graphical renderings/ illustrations.

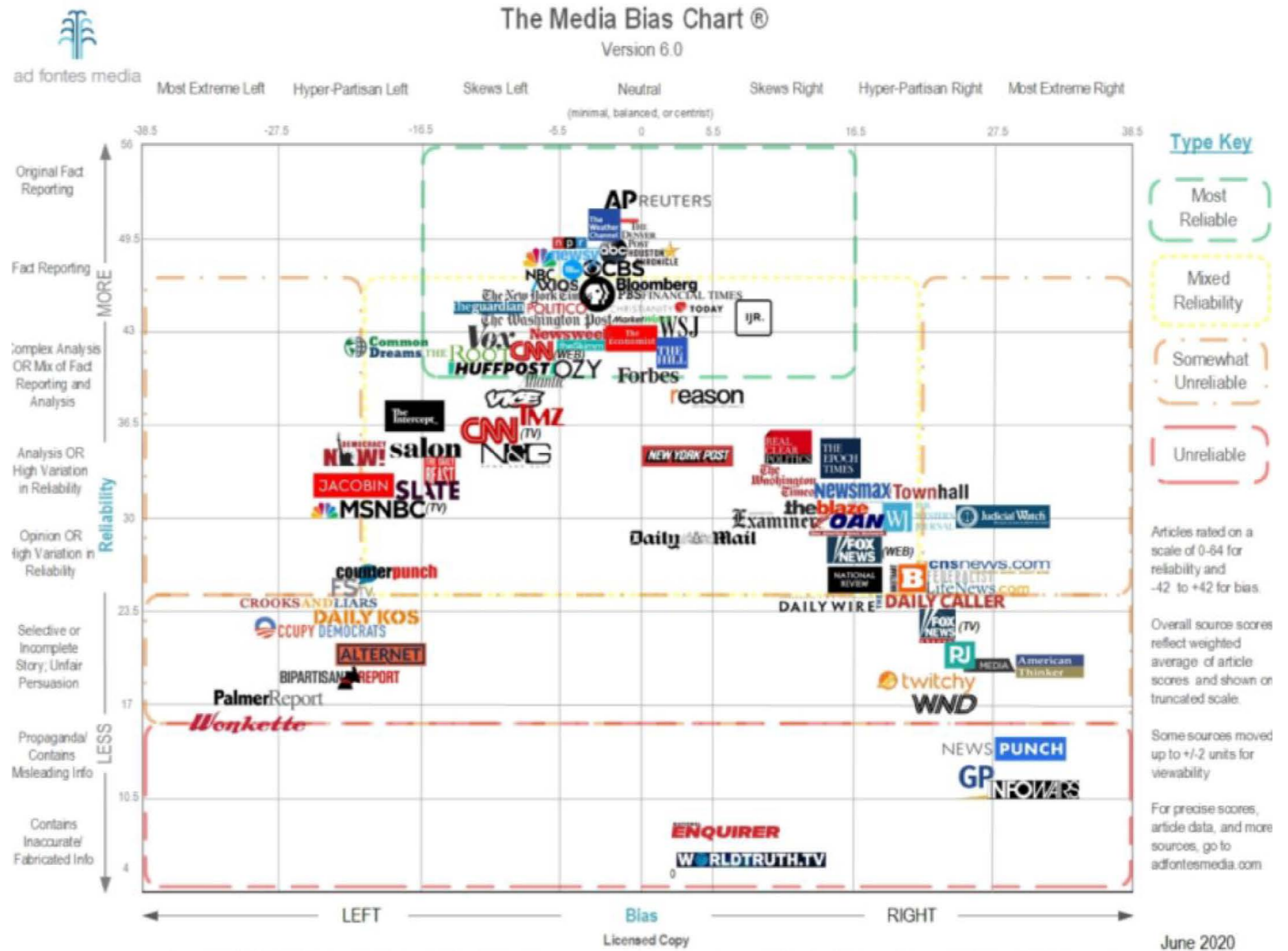
The portraits the project has chosen demonstrate a juxtaposition of two individuals, in this case, the juxtaposition of Governor Hochul & real estate mogul Stephen M. Ross through their stances on the 421A Tax Abatement law. The post-pandemic world has accelerated inequality for about 120 million individuals (source: IMF). Although arguments can be made for both sides of the 421A policy, we let the viewers of our project decide which side they are supporting through the daytime and nighttime readings. During the day, the installation will reveal itself as an obscured image of Governor Hochul, while the nighttime reading will reveal a hidden image of Stephen M. Ross.

Mass media manipulation is just one of today's many "wicked" societal challenges, so how can design make a difference? To paraphrase Chantal Mouffe, the public setting in which disagreement happens is known as "agonistic space." That is a "space" in which opposing ideas and powers contend with the prevailing wisdom. This project, as well as us, the designer, agree with Mouffe and see society and the public realm as "agonistic space" and use our project as the medium for ideas to prevail.

# 02

## Background

This project explored multiple design-led techniques for accommodating conflict in modern contexts connected to physical and metaphorical interpretations of space using theoretical notions about 'agonistic space.' It recognizes the distinction between Agonism and Antagonism. Exploring the facilitation of agonism through design, through case study analysis, and by connecting these ideas to design methodologies through experimental processes has assisted us in better understanding, illustrating, and articulating a role for design and designers that goes beyond 'problem solving,' a position concerned with the construction of items and settings that allow social actors to coexist and empathize with one another.



01 Media Bias Chart



Articles & information about Ross's involvement in the renewal of 421 A are often hidden beneath the surface: articles are usually only available to premium readers & the pieces themselves are often ambiguous about what the 421 A policy actually does & what Ross involvement is.

Deep-pocketed donors with ties to New York's real-estate industry are still putting their money behind embattled three-term Gov. Andrew Cuomo, campaign records reveal. Developers, landlords, building lenders and other industry associates pumped nearly \$500,000 into Cuomo's re-election coffers over the past six months. That's more than 20 percent of the \$2.3 million raised by Cuomo for the first half of 2021. Housing activists blasted the donations, noting that an important state law expires next June 15 that gives luxury developers' projects generous tax abatements for charging non-market or "affordable" rents for up to 20 percent of their new apartments.

*-Carl Campanile, New York Post, August 1, 2021*

Articles & information about Ross's involvement in the renewal of 421A are often hidden beneath the surface: articles are usually only available to premium readers & the pieces themselves are often ambiguous about what the 421A policy actually does & what Ross involvement is. Furthermore, what we can see here is the previous governor of NY was in the pockets of NY's biggest real estate moguls, and Hochul is more or less the same, but with a dedication to rework the policy to revert the inequality it has caused. 485 W was a policy recently passed under Hochul's guidance that was basically a revised 421A, ultimately giving the developers less tax incentives

"As New York continues on the path to economic recovery, competent and experienced government leadership will play a pivotal role in guiding the State forward at this critical time," REBNY President James Whelan said in a statement.



Miami Dolphin's owner Stephen Ross gave \$25,000 to Cuomo's re-election.  
AP Photo/Brynn Anderson, File

02

- 01 Restricted Access to Ross Article
- 02 Article about Ross & Cuomos Reelection
- 03 Ross fights over 421A

## Ready to rumble: Ross, Speyer nearly come to blows over 421a

*Developers eventually settled their differences*

**New York** / TRD Staff

Two of New York real estate's toughest players recently almost got into a fist fight — or at least a shoving match — over the future of 421a.

Rob Speyer, head of Tishman Speyer, and **Stephen Ross, chairman of the Related Cos.**, had to be physically separated when their argument at a Real Estate Board of New York meeting looked it might escalate, Crain's reported, citing several unnamed witnesses.

01

02

### Background: 421-A

Mass media manipulation is just one of today's many "wicked" societal challenges, so how can design make a difference? To paraphrase Chantal Mouffe, the public setting in which disagreement happens is known as "agonistic space." That is a "space" in which opposing ideas and powers contend with the prevailing wisdom. This project, as well as us, the designer, agree with Mouffe and see society and the public realm as "agonistic space" and use our project as the medium for ideas to prevail.

## Real-estate honchos dump big bucks into Gov. Cuomo's re-election bid

By **Carl Campanile**

August 1, 2021 | 6:01pm | Updated



Donors from NY's real-estate industry are putting money into Gov. Andrew Cuomo's re-election.  
MARY ALTAFFER/POOL/AFP via Getty Images

03

# 02

## Background: 421A Policy Proponents

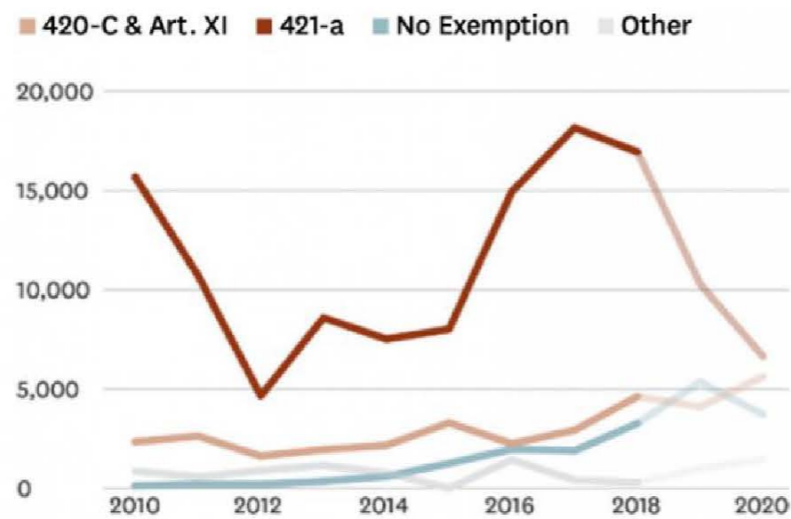
The 421-A policy is a controversial development incentive that offers generous tax abatements to developers for up to 25 years on the condition—in Manhattan, at least—that they make 20 percent of the allocated construction size for affordable housing.

Although the policy itself is shrouded in controversy, there certainly are proponents for the policy. In Figure 01, the chart shows 421-A as a policy is the most effective in getting affordable housing built & although loopholes are taken by developers to relocate the housing outside of Manhattan, that isn't to say the quality of the housing is bad, as represented in the quote below by Mr. Leisy.

However in figure 3 only 26% of the completed housing contained 30 or more units.

- 01 Units Built by Property Tax Benefit 2010-2020
- 02 111 W 57th St Legal Troubles
- 03 Completion of 421-A Affordable Housing

### Affordable Housing Built Under 421-A V.S. Other Similar Policies



01

*“When I walked in for the first time I kissed the floor,” said Mr. Leisy said Mr. Leisy who lives Organization built 75 West End Avenue in 1994 as part of the 421-a program*

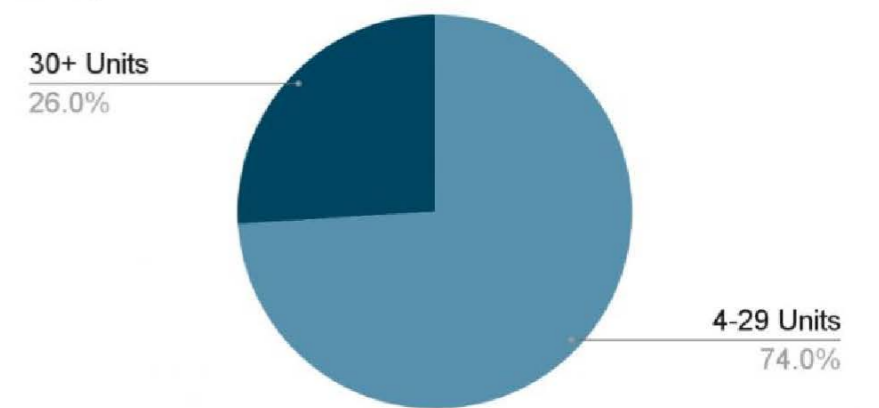
## Despite legal troubles, the first units at 111 West 57th Street go into contract

POSTED ON THU, AUGUST 3, 2017 BY DEVIN GANNON



02

Chart 1: Completed Properties Benefitting from 421-a (2010-2020)



03

# 02

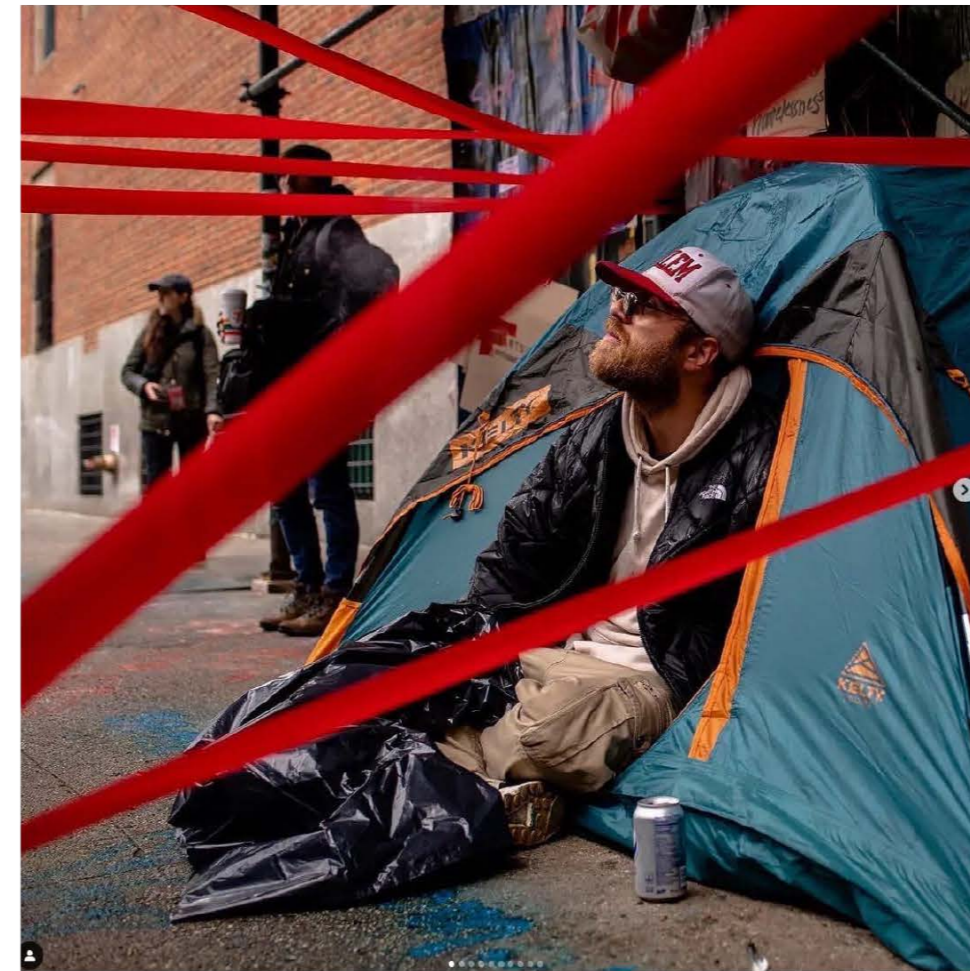
## Background: 421 A Policy Opponents

However, due to the ambiguity of the policy, many developers are getting away with developing the 1/5 affordable housing outside of Manhattan, often built in lower income neighborhoods. E.g., 111 West 57th St - the developers allocated the affordable housing component in the bronx, whilst the 90 story building only houses 60 units.

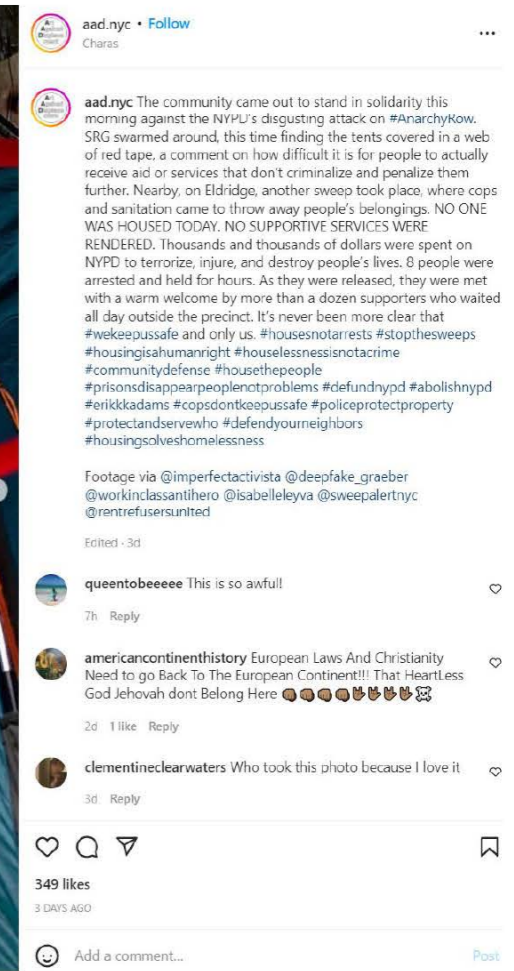
This ultimately causes more inequality inside Manhattan, one of the most expensive cities in the world to live in. The high cost of living and transportation leads to many homeless encampments around the city which is illegal and as shown on the right by aad.nyc (Art Against Displacement) shows the same individuals getting arrested over and over again for having these tents inside the city sidewalks.



01



02



03

- 01 Signs @ a Homeless Encampment in NYC
- 02 AAD.NYC Shows NYPD Arrests of Displaced Individuals
- 03 Message On a Tent @ a Homeless Encampment in NYC

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### Muslims 'demonised' by UK media

Muslims are being "demonised" by the British media, with 91% of reports being negative, research commissioned by London's mayor has found.



Ken Livingstone said the survey, by consultancy firm Insted, studied a week's news reports and found Islam was portrayed as a "threat to the West".

Ken Livingstone said community relations were being damaged

Another poll published on Tuesday found that at least 35% of Londoners held Islam responsible for the 7/7 attacks.

The YouGov poll, commissioned by the Evening Standard, spoke to 701 people.

#### 'Creates alarm'

Mr Livingstone said the research by Insted - a consultancy firm which deals with issues of diversity and equality - found the national media had a "hostile and scaremongering attitude" towards the community.

Mr Livingstone said: "The overall picture presented by the media is that Islam is profoundly different from and a threat to the West.

"I think there is a demonisation of Islam going on which damages community relations and creates alarm among Muslims," he said.



Many want groups promoting fundamentalist ideas banned

Mr Livingstone urged editors to be balanced in their coverage saying out of 352 articles studied by researchers last year just 4% were positive.

The Evening Standard poll asked 701 people about issues and attitudes towards Islam, wearing the veil and faith schools.

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01

01 "News Clash" MAID Project

02 "Hijab" MAID Project

# 03

## Precedent Studies: News Clash

'News Clash' is a art project which addressed the problem of media portrayal of particular demographics/identities, image 1 is a screen capture of how UK media portrays muslims, with 91% of the media being negative. The project done by a student at MAID aimed to provide people of one identity, race, or religion the opportunity to see the news through the eyes of someone else. News platforms such as BBC News Online now include a 'find' and 'replace' option. This tool allows the user to look for a term that represents an element of a person's identity, such as a religious belief, and

replace it with a word that they believe represents their own identity. As an example, If a non-Muslim wished to see the news through the eyes of a Muslim, they would enter a term that matched their own identity, such as 'Londoner,' and then instructed the program to 'find' the phrase 'Muslim' in all news reports and replace it with the word 'Londoner.' Reading the news on the site would then provide the user insight into what it would be like to read the news from the perspective of someone who identifies with the term 'Muslim.'



02

# Design & Process

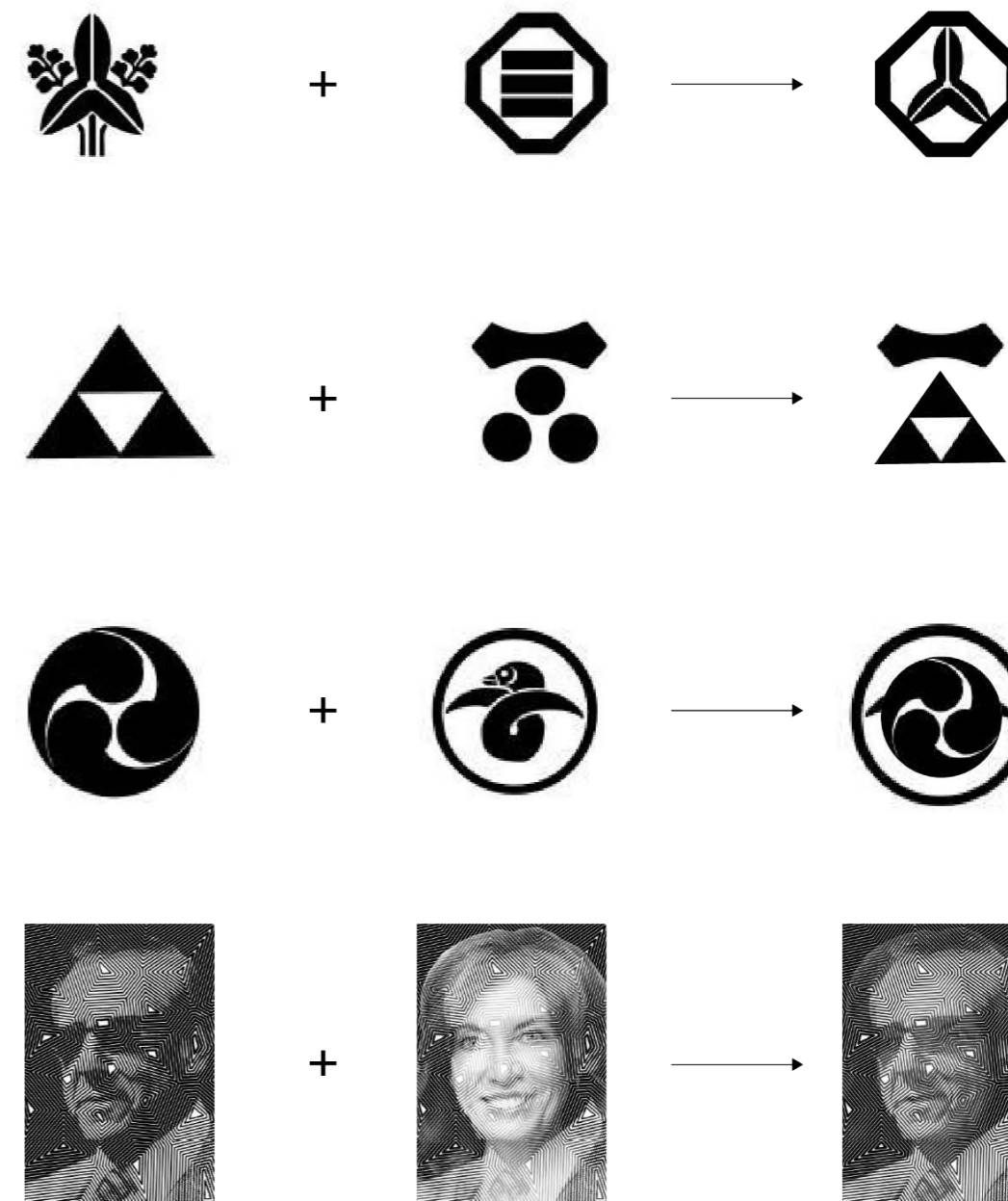
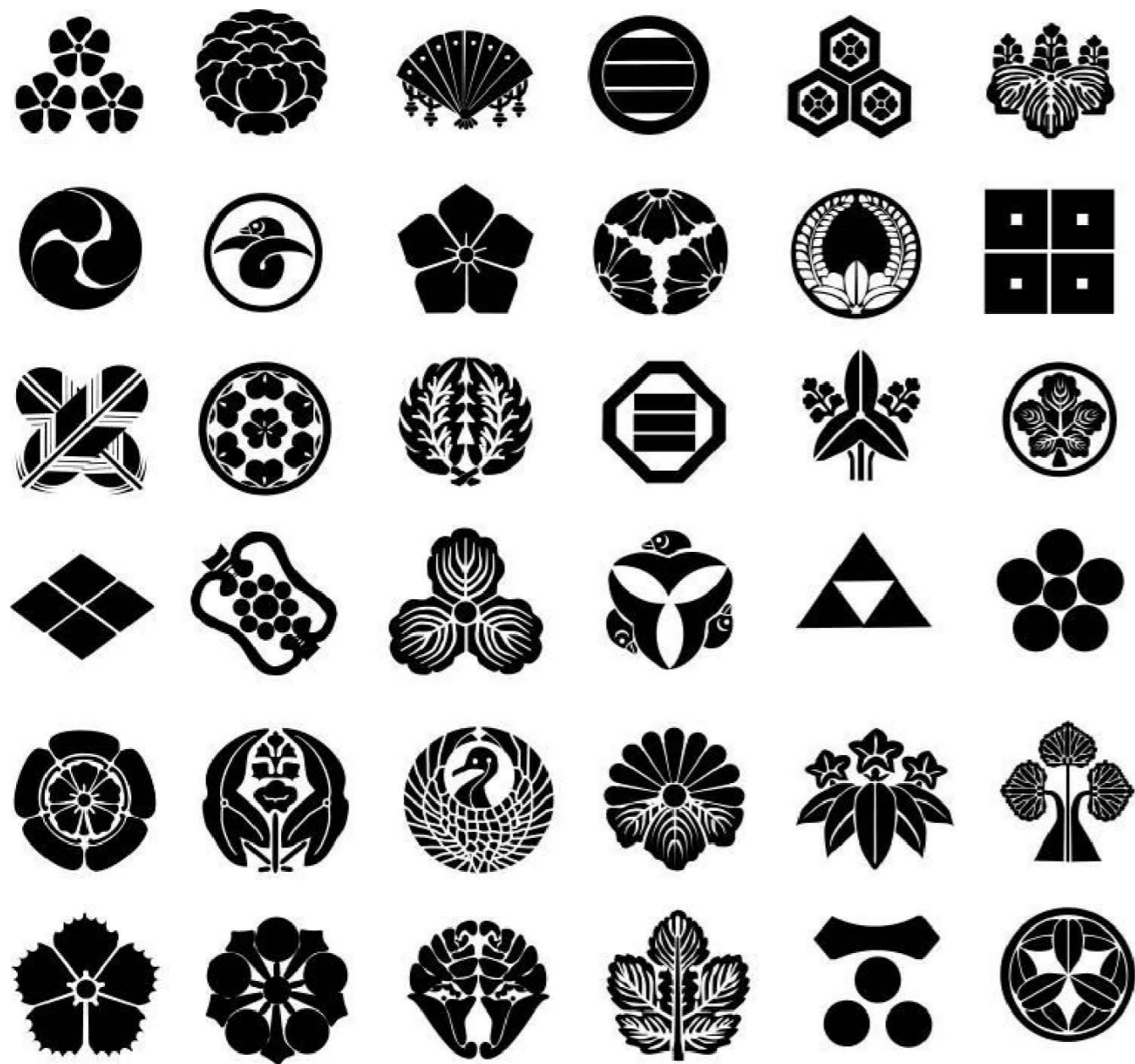
## Technique & Methodolgy

Our project represents a computing-based manufacturing process that subdivides the superposition patterns of any two images by digital image halftoning and generating cut variations through depth and width using CNC processes. This ultimately forms a rich and wide-ranged tessellation which then forms the basis of how we create our piece.

Halftone processing transforms the grayscale information of images into different plane

effects and cutting paths controlled by two variables: width and depth. The effect then varies depending on how deep the CNC drill goes, after testing multiple depth and width variations using MDF, the project uses a cut angle of 15 degrees and a cut depth of 0.35 inches to demonstrate the tessellation effect at its fullest.





### 03 Precedent Studies: Japanese Mons

The 2D image of what we wanted to represent was always going to be engaged in a constant back and forth with the 3D (contours of the model), but how does one benefit the other? The Japanese Mon represents the 2D side of our research, the traditional clan symbols of the edo era is a great graphic illustration of obscuring two images into one

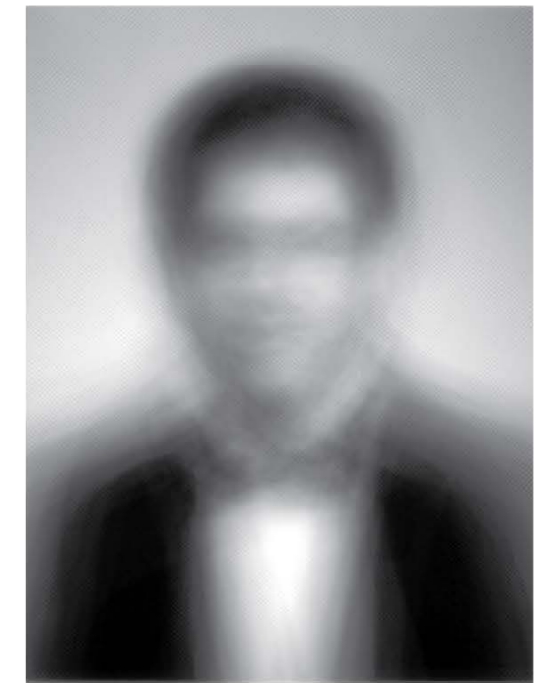
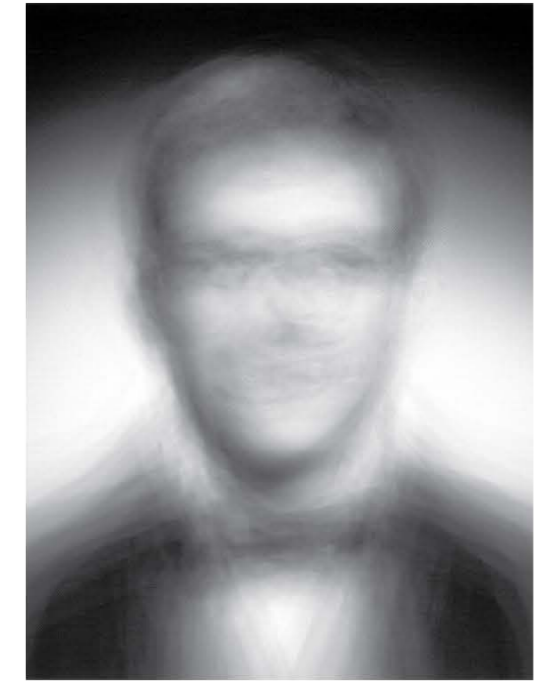
As demonstrated here, by obscuring certain segments of the Mon, new shapes/ imagery can begin to take place. We wanted to build on the idea of combining two images to create a new product, however we wanted to the combined imagery to be read depending on the time a viewer visits the object (e.g day time vs night time reading)



# 03

## Portrait (Hals)

This project is a starting point to think about how to encrypt portraits with image processing methodologies. In brief, Jason Salavon's work uses the line width of an image to frequency and ordering/position to saturation. This has the effect of capturing the overall similarities within the set while blurring out the individual differences. In this case, while similarities of images are highlighted, differences are hidden inside these visual spaces. The depth of these images are created based on both differences and similarities as metaphors, emotions, impressions, and so on.



**01** The Class of 1988 & The Class of 1967 1998  
Jason Salavon  
Silver Gelatin Prints

# 03

## Decryption & Encryption

In this thesis I would like to introduce how to encrypt and decrypt multiple portraits with my own methodologies. As Salavon averaged images based on positions of image pixels, the final result is only in a illusion in a 2D way. If we take a step further by translating images in a 3D way, depth of images would be more prominent and give a much more visceral visual effect



**01** Person (2014)  
Drew L. Brown  
Movie



01



02

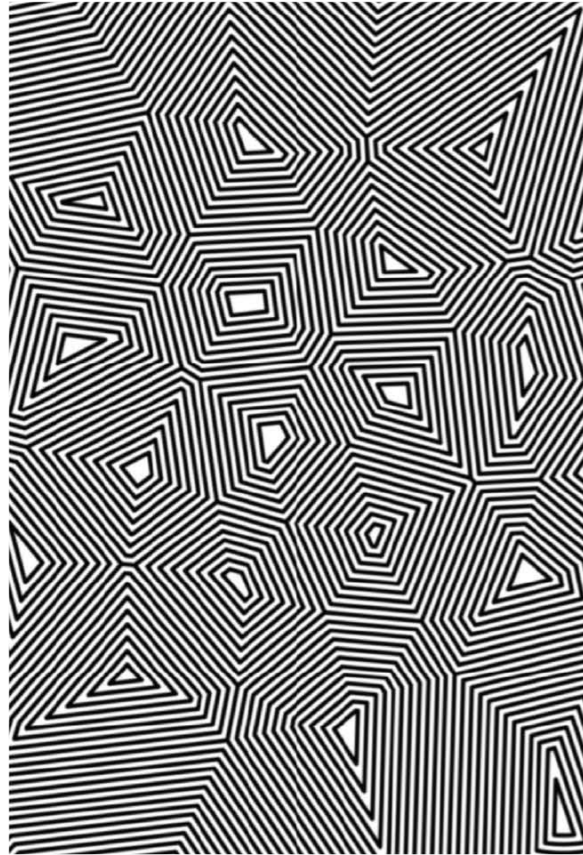
## 04

### Design & Process

The project uses Governor Kochul as the daytime reading, the bottom image that is shown here hints at a second figure through the top layer of the installation. Having a public figure be the day time reading was a literal metaphor in representing the faces that the public sees and the figures the public don't see - e.g. night time reading of NYC's biggest real estate mogul, also the biggest proponent for the 421A tax abatement

01 Base Imagery

02 Daytime Reading



01 Base Voronoi Pattern

Through different seed population & width changes, the project landed on this specific one due to the effect preserved in the end.



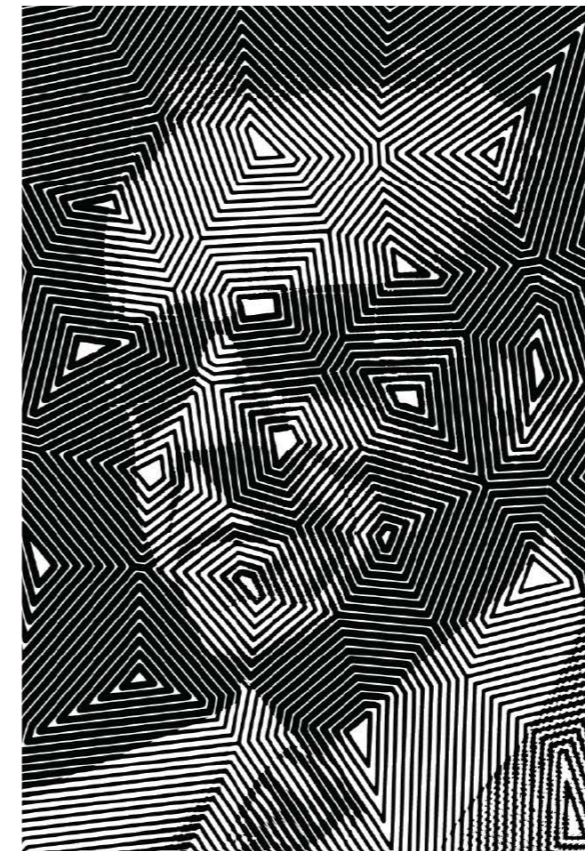
02 Image Halftoning

The superimposed image is selected to represent the shadow information in the voronoi pattern



03 Image Halftoning

Through Image halftoning, the background is lost, and to get the contrast we wanted from layer to layer, the original photo is used to recreate the background



04 Nighttime Imagery

By painting the top 0.5 inches of the project with retroreflective paint, Ross's face will begin to show at night under certain lighting conditions

Base Layer

2nd Layer

3rd Layer

Top Layer



01

02

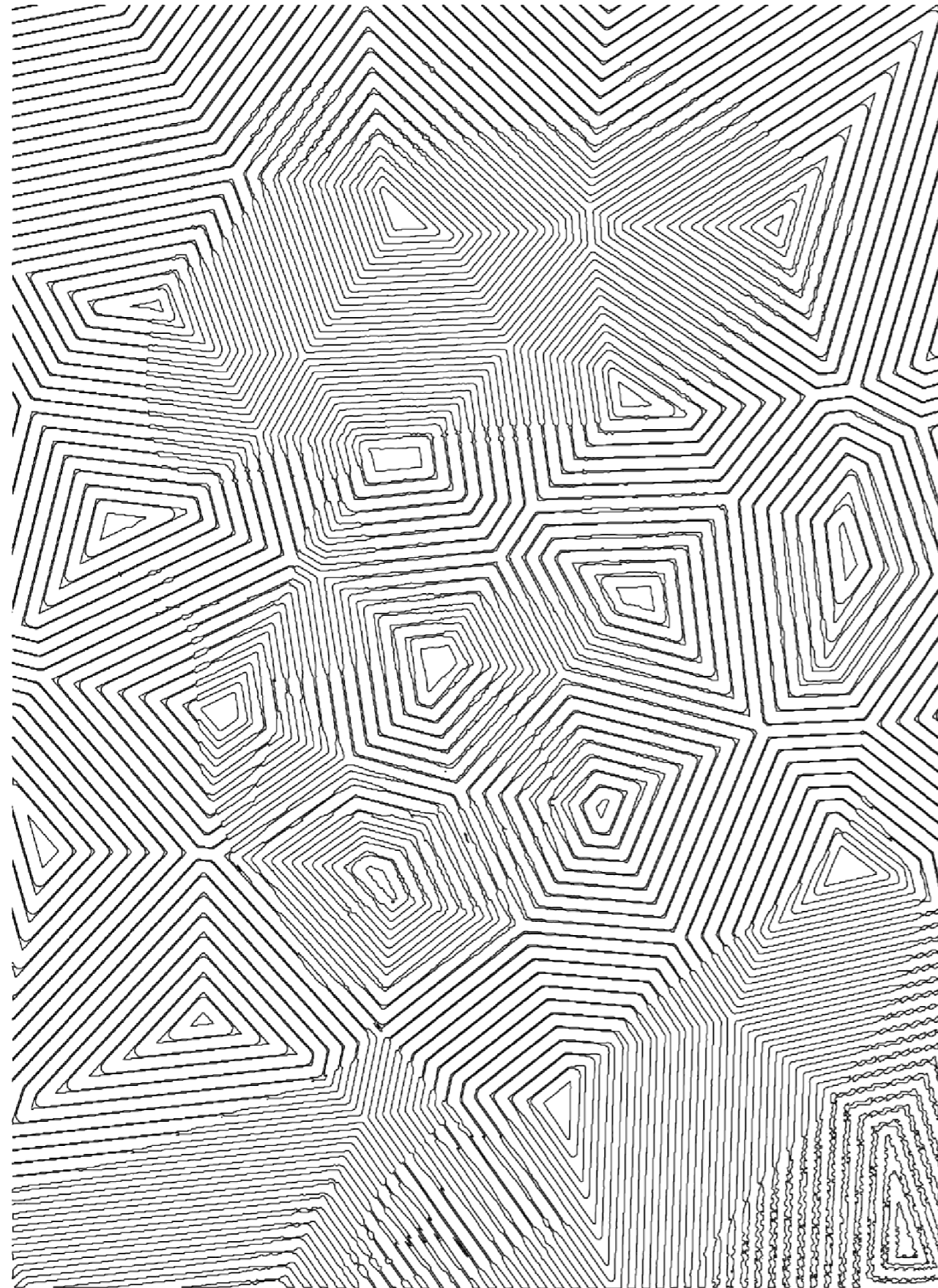
03

04

- 01 Daytime Reading Governor Hochul
- 02 Hochul W/ Light Layer of Stephen Ross
- 03 Ross Layer Reveal
- 04 Full Nighttime Reading of Stephen Ross

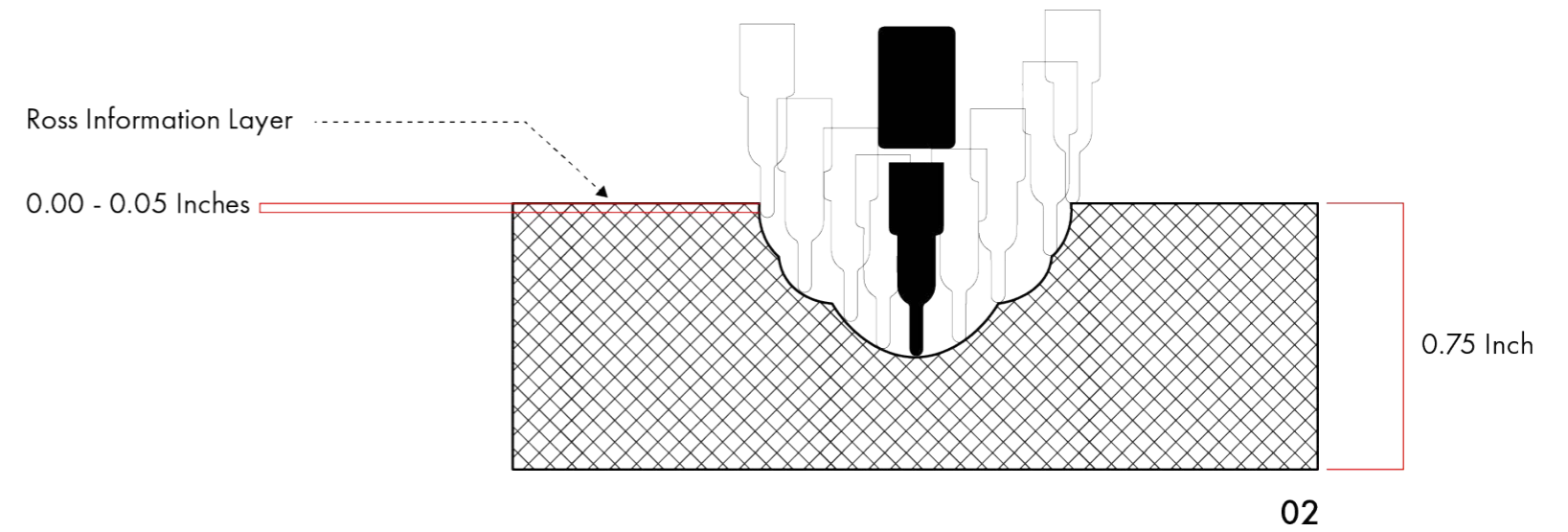
## 04 Design Process

We wanted Governor Hochul to be the daytime reading while at night, it will reflect her counterpart, real estate mogul Stephen M. Ross. This can only be achieved by having certain threshold levels on each of the layers of the 3D model, the diagram shown above represents the model information at a 0.5 inch section, as the model progresses towards the top surface, the 3D information generates a different image



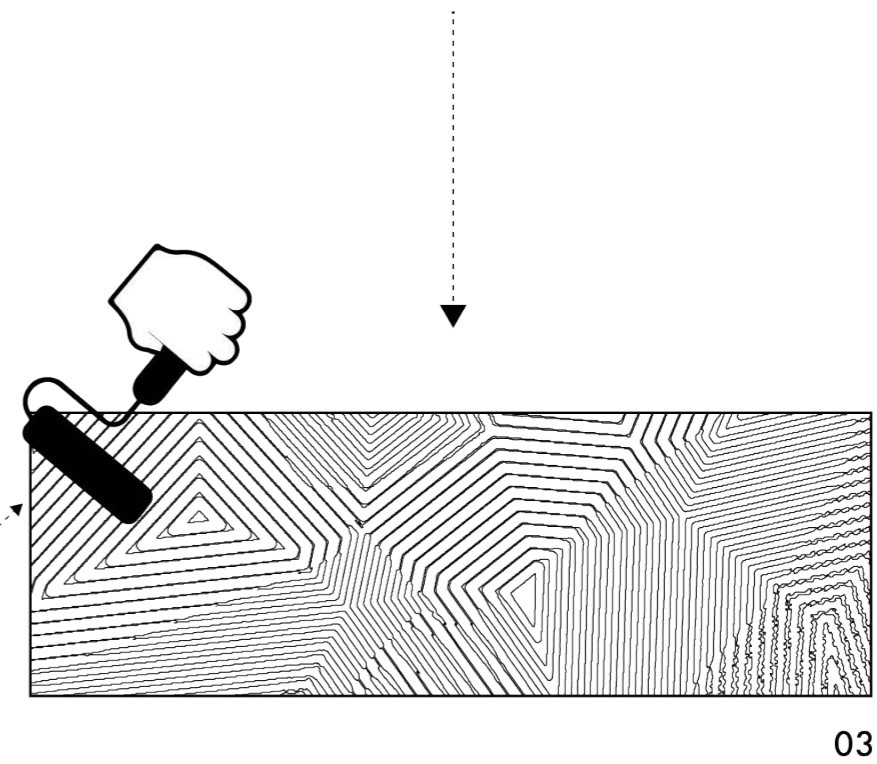
01

- 01 Ross Layer Section Cut
- 02 CNC Toolpath
- 03 Retroreflective Paint Rolling



Stephen Ross Level Creation

Retroreflective Paint



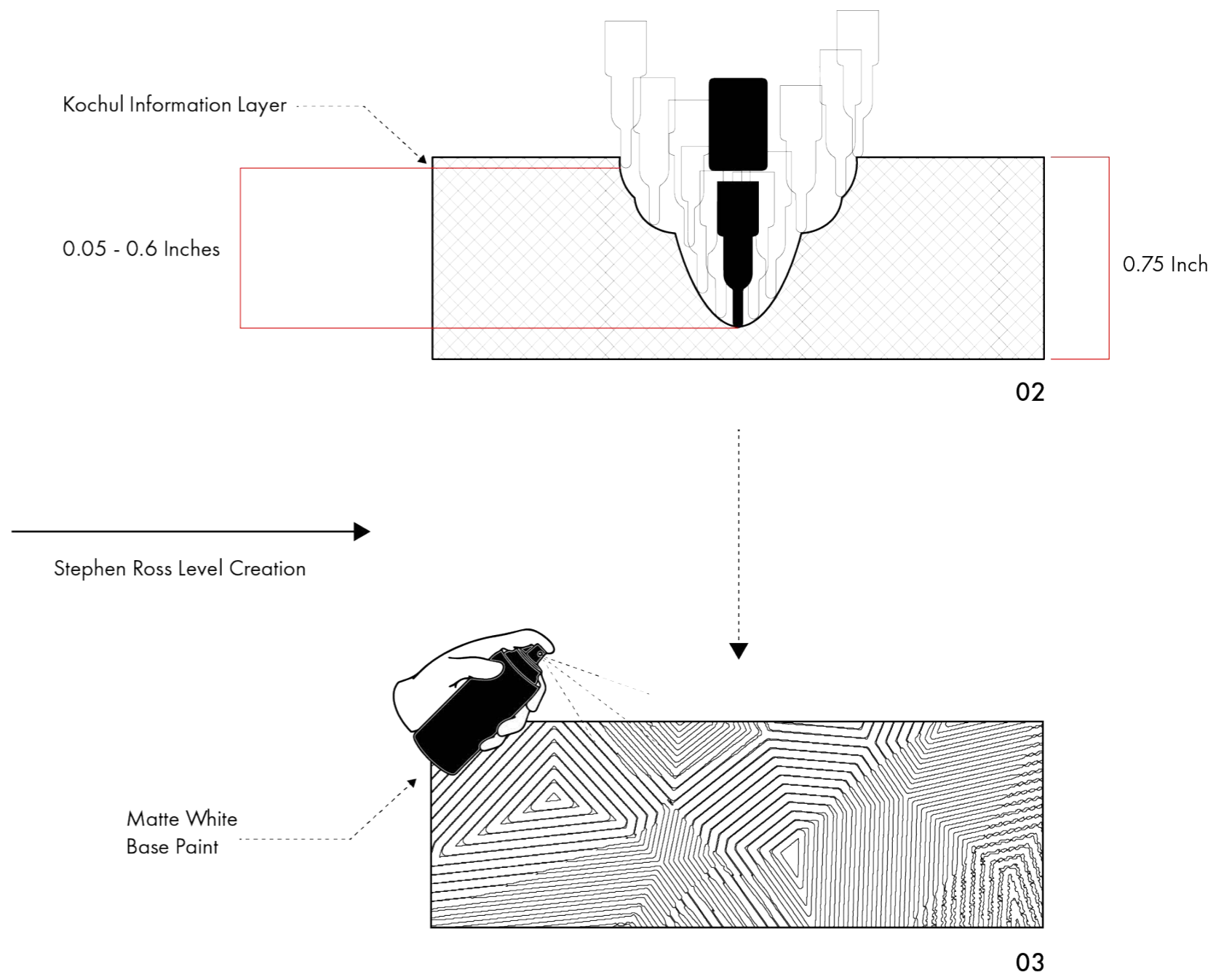
## 05 3D Information: Ross

The process to create Stephen M Ross' portrait begins at the depth of 0.00 - 0.05 inches of the MDF board. The width of the top layer is what holds the information for the portrait to reveal itself once the retroreflective paint is applied.



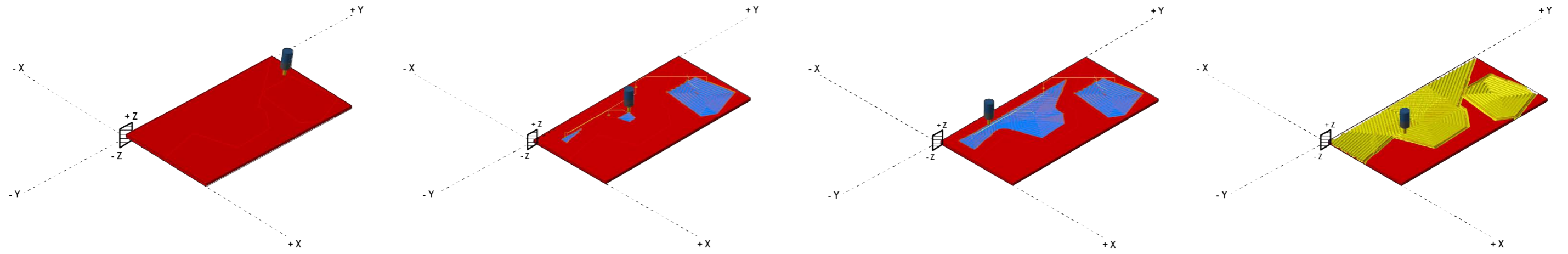
01

- 01 Hochul Layer Section Cut
- 02 CNC Toolpath
- 03 Flat White Spray Paint

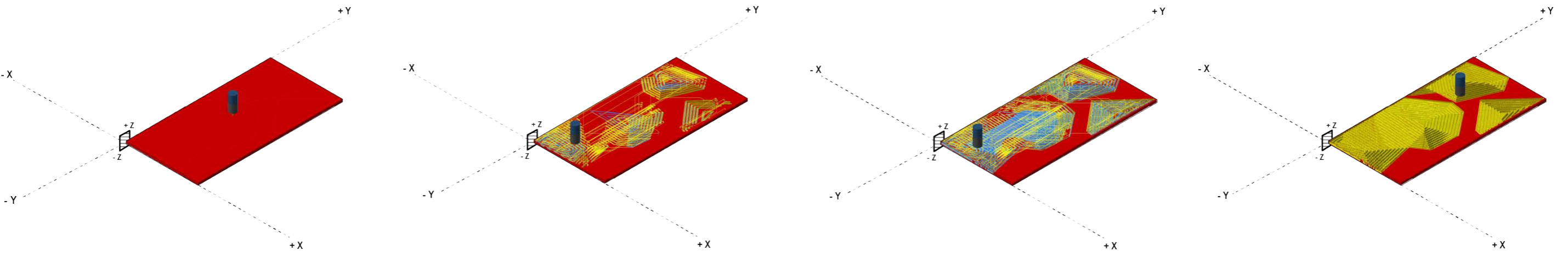


## 05 3D Information: Ross

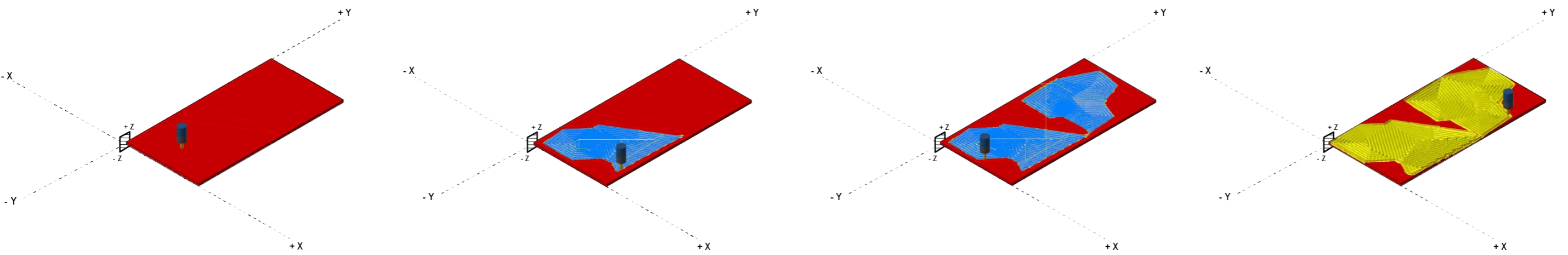
The effect is suppose to be non-revealing unless certain lighting conditions are met. Since the retroreflective paint dries white, we decide to paint the MDF in a matte white color to enhance the effect of the retroreflective at night & to hide it during the day for the Kochul portrait - Kochul's information is revealed from a depth of 0.05 inches to its maximum depth.



01



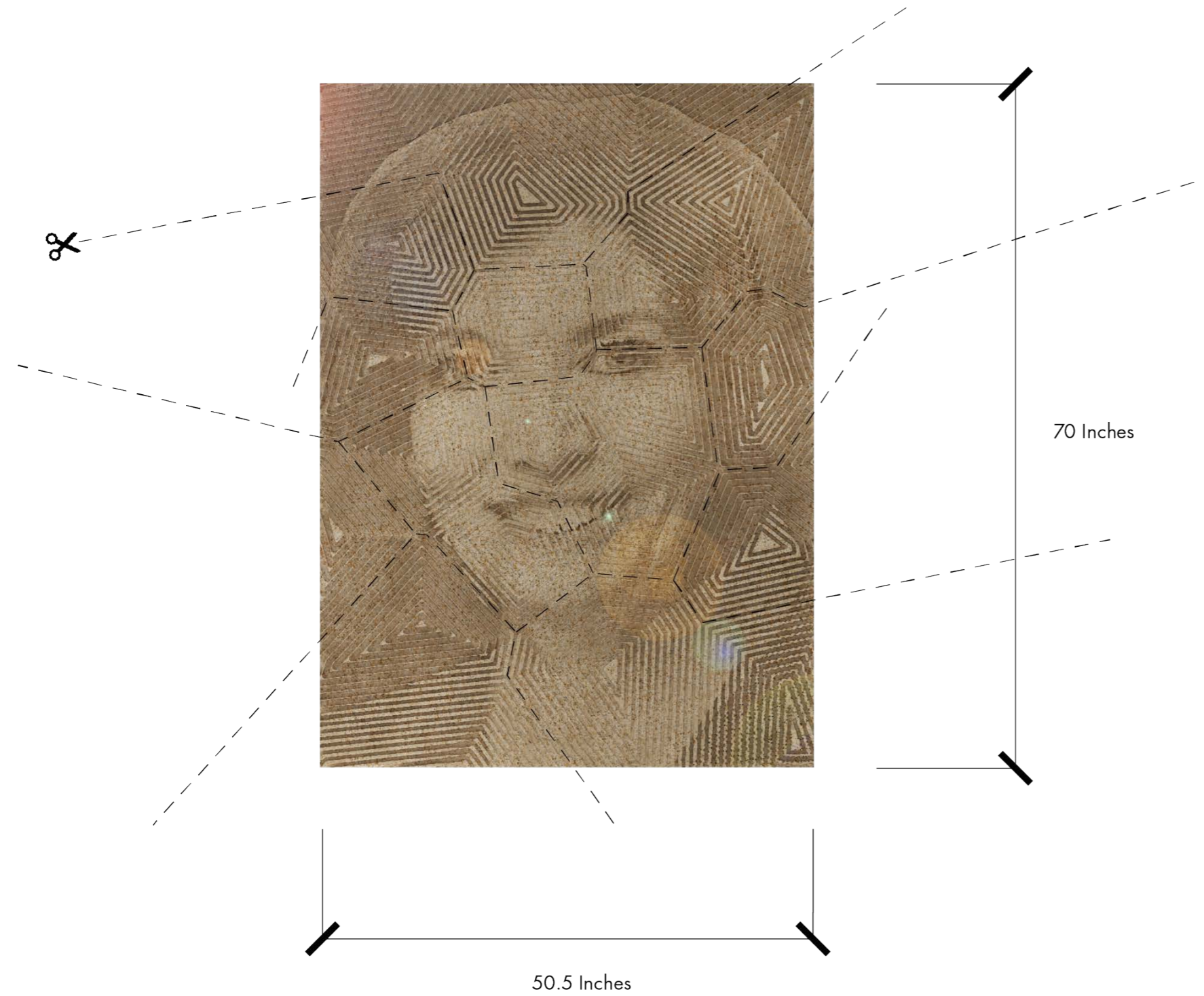
02



03

- 01 Module 1 CNC Toolpath
- 02 Module 2 CNC Toolpath
- 03 Module 3 CNC Toolpath





## 05

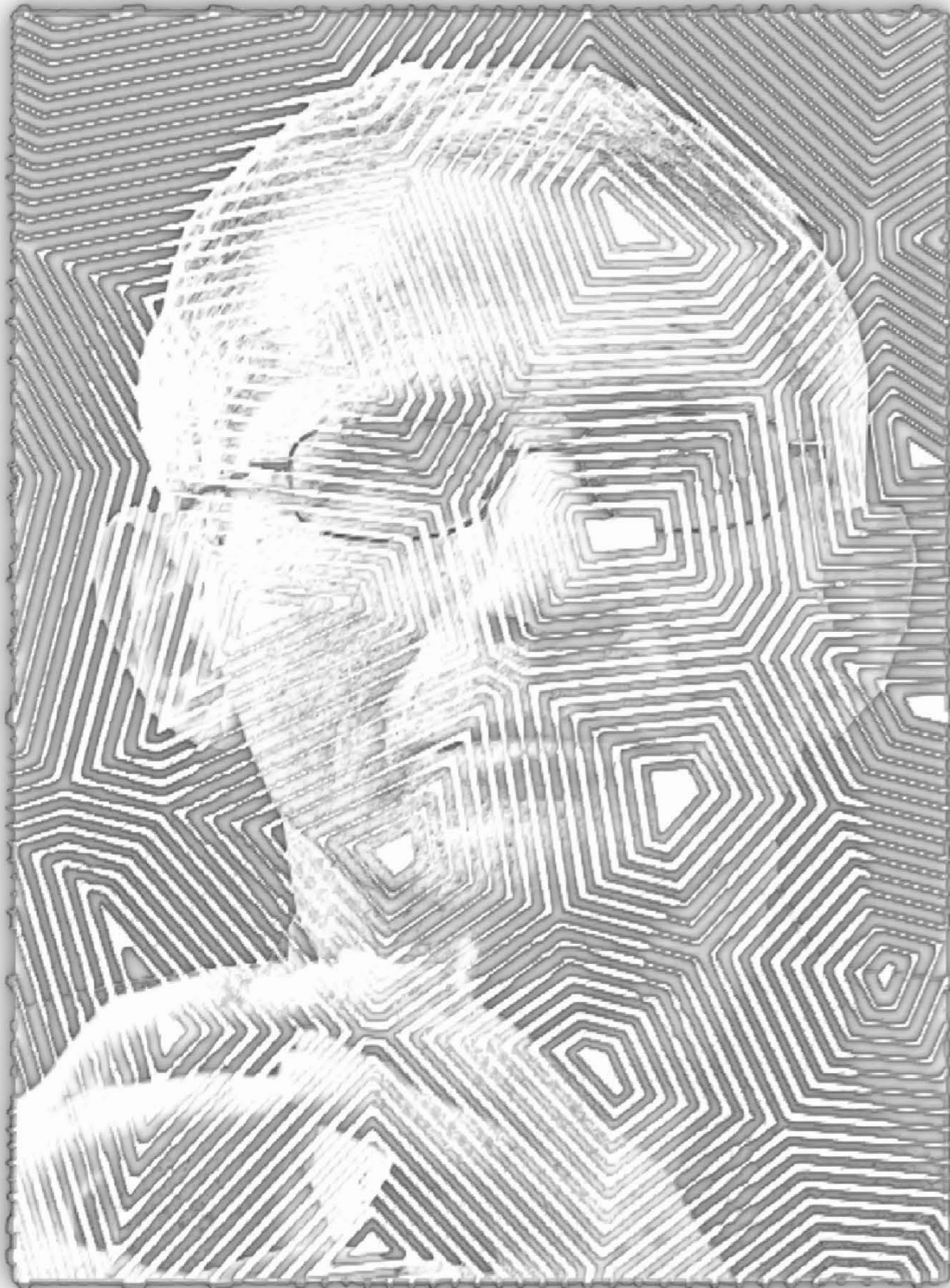
### Model Subdivision

The physical model is divided into 12 pieces to be assembled later on as the CNC bed is simply not big enough to fit the entire project

The project measures 70" x 50.5" x 0.75"

Material: MDF

01



02



## 06 Face Tests

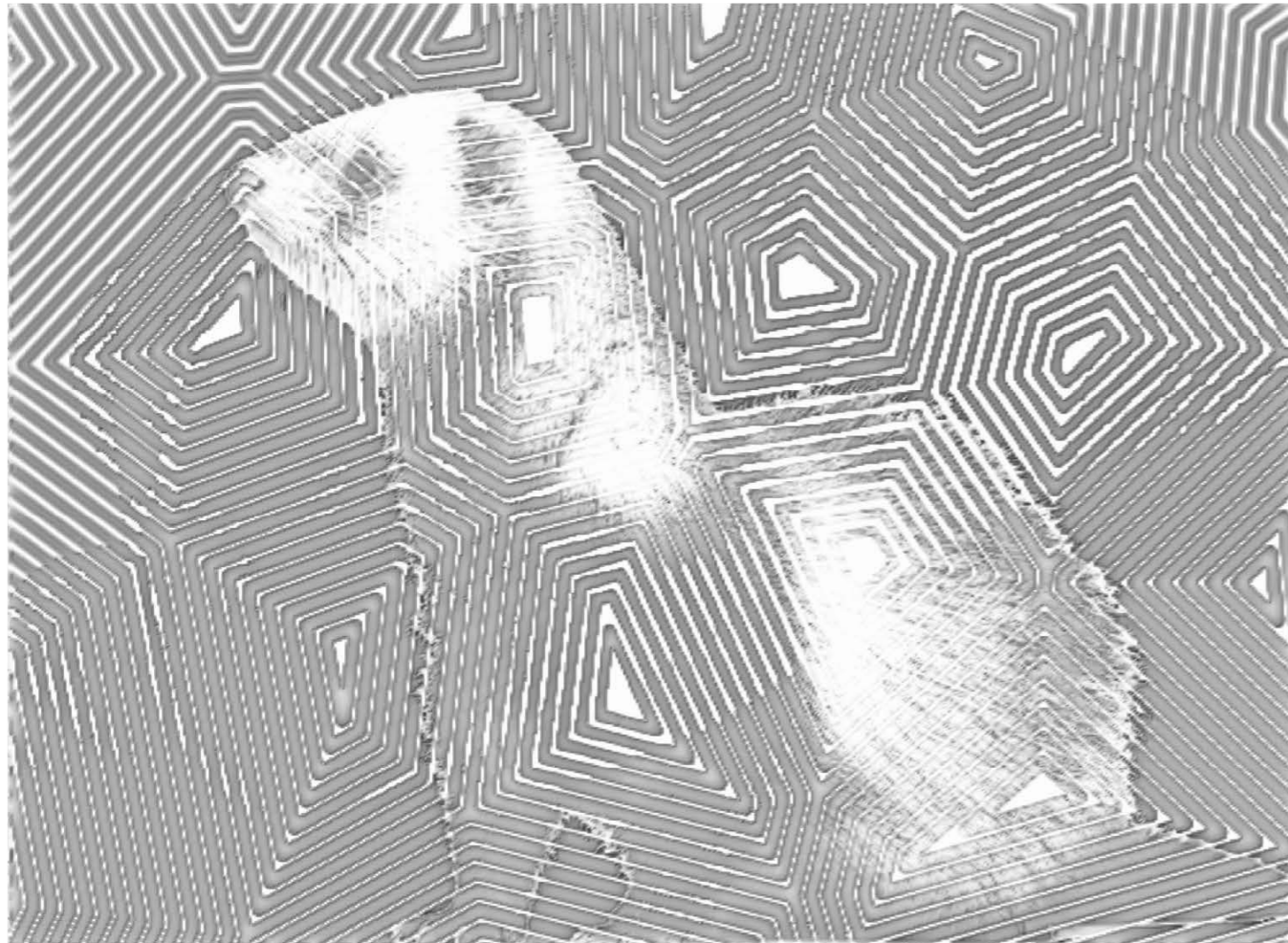
Some of the other options the project has tested. Dr. Fauci & Majorie Green Taylor. The project chooses it's imagery based on juxtaposition.

01 Dr. Fauci: Pro mask, vaccine mandates

02 Majorie Taylor Green: Opponent for mask & vaccine mandates

## 07 Multi Species

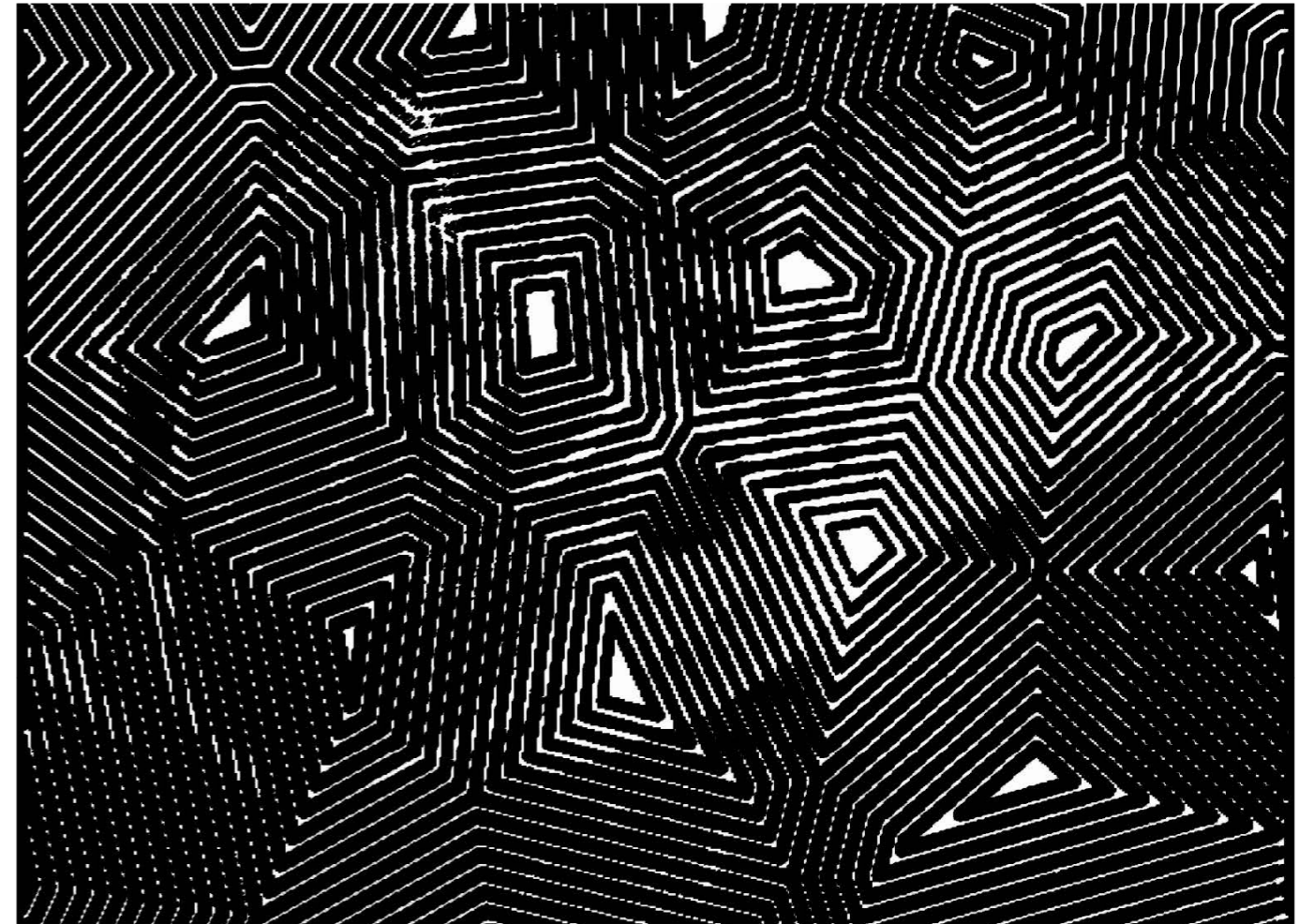
While we were testing facial features, we also tested different types of species to demonstrate the effect, however, due to the nature of the animals fur & patterning (minks & turtles) the effect was not as clear as human facial features.



01

01 Mink: Slaughtered in the Netherlands due to COVID

02 Sea Turtles: Repopulated on the beaches of Florida due to less tourism during early COVID



02

# Installation

## Potential Locations

This thesis aims to activate the public realm in dynamic cityscapes, underutilized urban plots, festival settings, museums, and etc. Our methodology allows us to transform the installation into different mediums.

Billboards, building facade, are all in the realm of possibility with our technique. As shown in the next couple of slides, we can see different applications of our project.

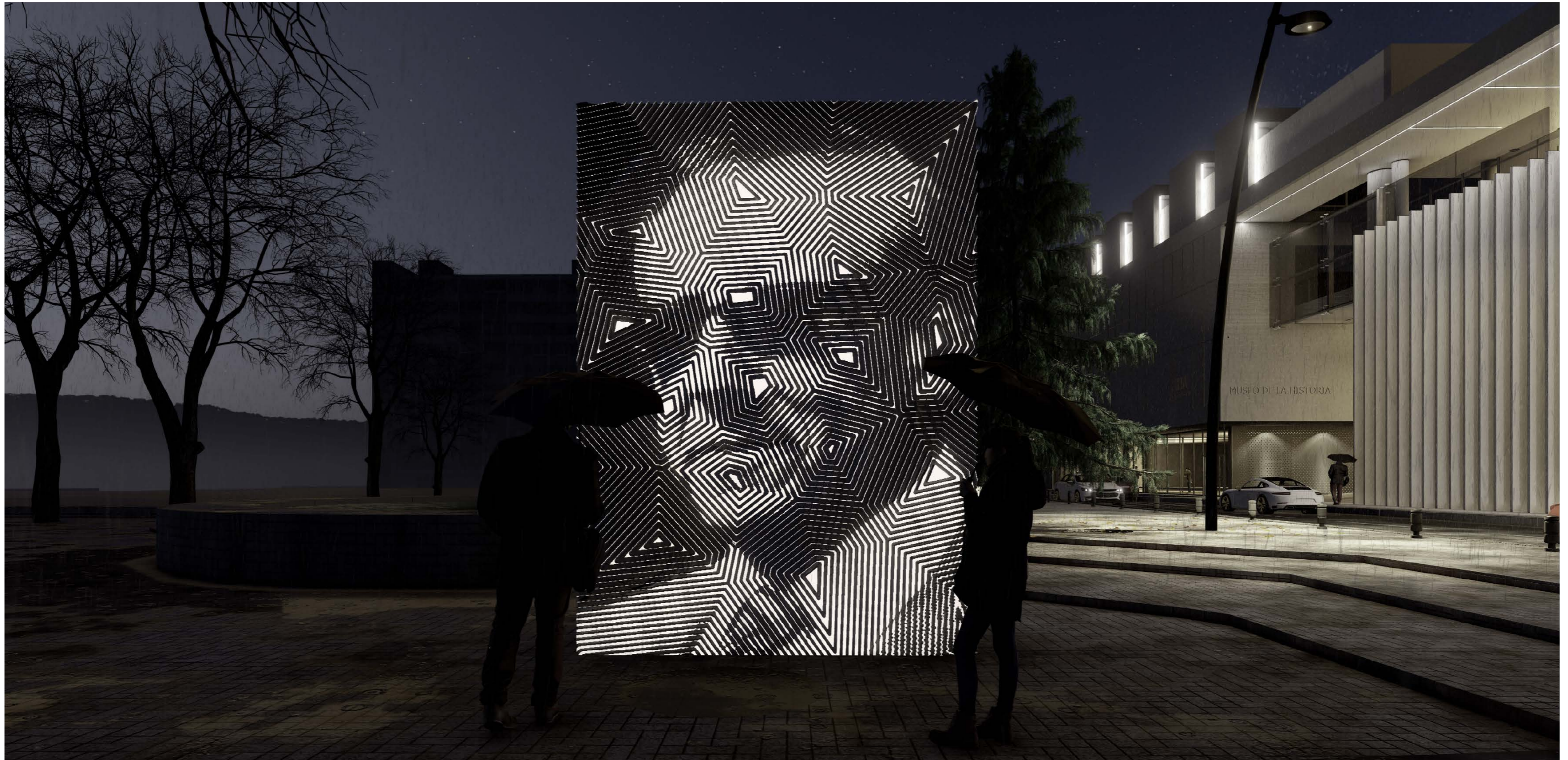




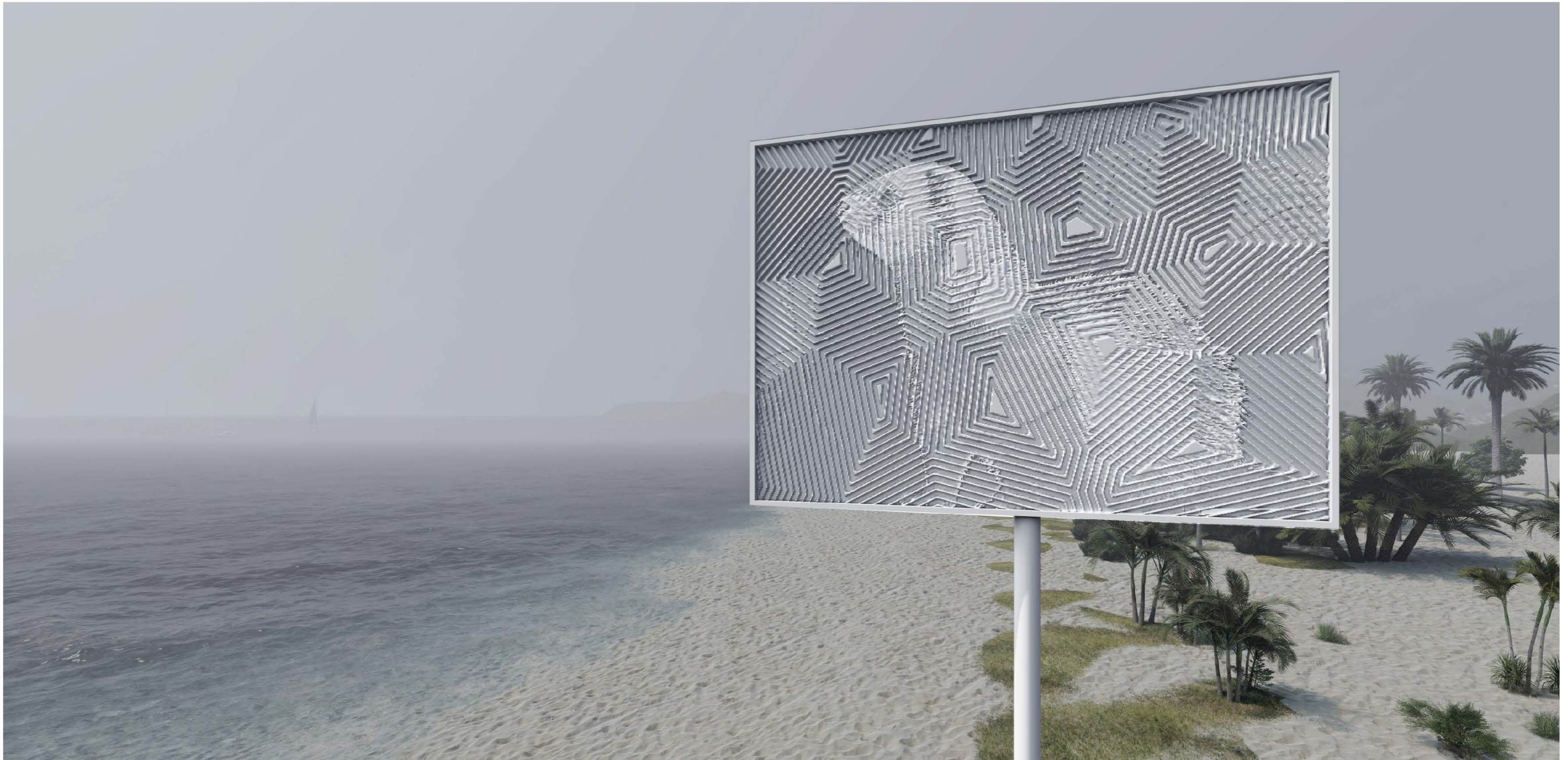
HALFTONE DISSONANCE



HALFTONE DISSONANCE

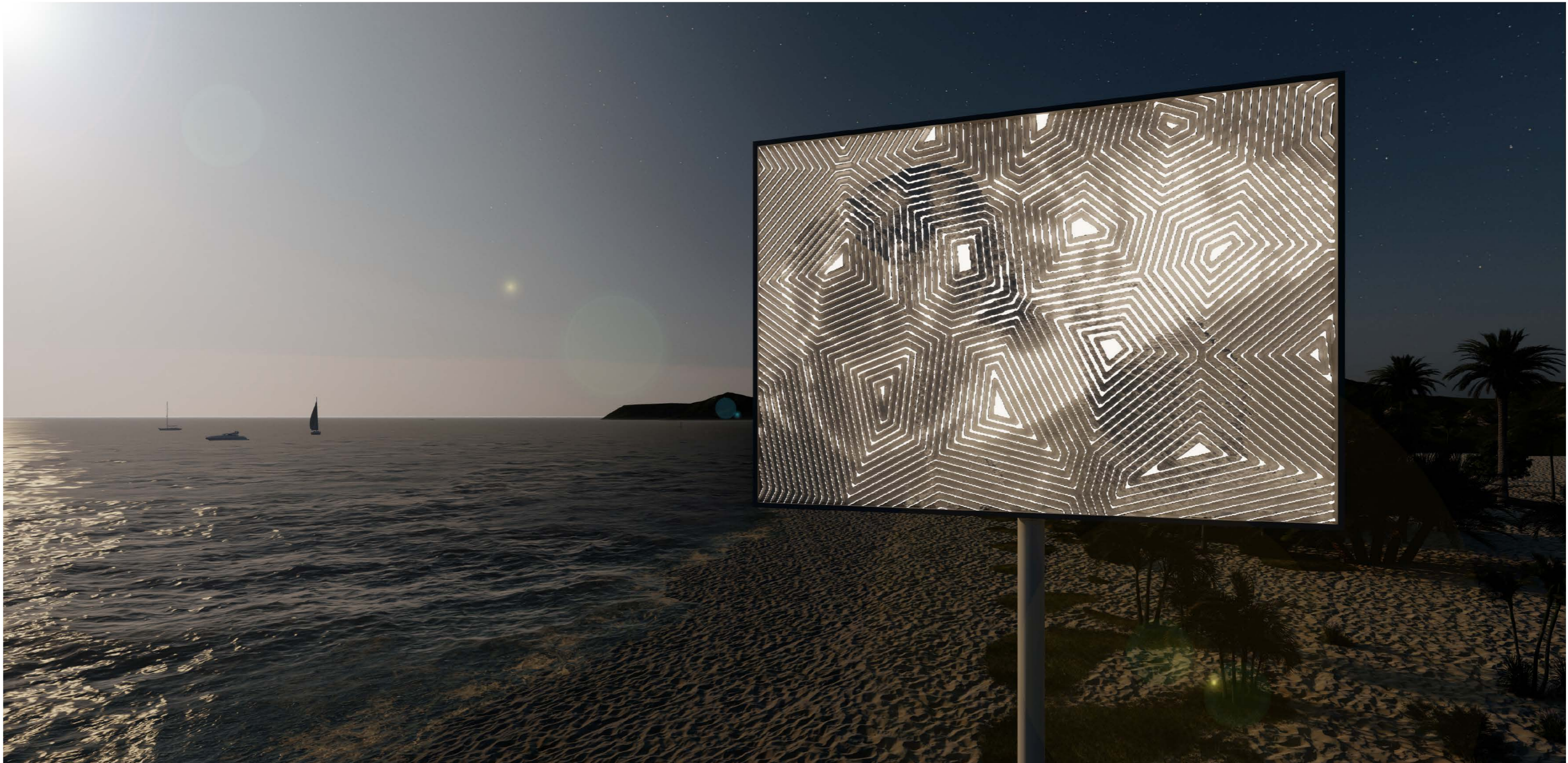


HALFTONE DISSONANCE



HALFTONE DISSONANCE





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