

Michelle Diptych

<https://etherscan.io/address/0xce24a5f1d148dee824a28d715ee81bcb15952cb5>

Process Summary Freestyle

05/22/23

I always wanted to make something in the style of Andy Warhol. I was looking for something that wasn't a physical medium. I had some other attempts.

I was on ChatGPT and I realized that it could write up various Python scripts to create the variations I needed in some parts of the images. So I was like: can use this to create some of the 10,000 collection variations in addition to other elements. Not sure how at this point.

I was also nostalgic for the Obama times. What stuff felt like back then.

Warhol used Marilyn Monroe. I couldn't get myself to watch that Netflix Marilyn movie for some reason so I was like alright: who is an updated icon. Who reaches that level.

Initially, I was going to do a mix of famous women in history but that felt divergent from the whole Warhol single icon aesthetic.

https://www.youtube.com/watch?v=bu9Bm8aw_ll

<https://www.tate.org.uk/art/artworks/warhol-marilyn-diptych-t03093>

So just Michelle Obama.

Then I had to find the Michelle Obama photo to use. In the style of Warhol using the publicity picture of Marilyn, I used an official White House portrait of Michelle Obama.

[https://en.wikipedia.org/wiki/Marilyn_Diptych#/media/File:Monroe_in_Niagara_\(1953_publicity_photo\).jpg](https://en.wikipedia.org/wiki/Marilyn_Diptych#/media/File:Monroe_in_Niagara_(1953_publicity_photo).jpg)

<https://obamawhitehouse.archives.gov/administration/first-lady-michelle-obama>

I cropped the original photo to 640 by 640 px and removed the background. So now I had the base image to use.



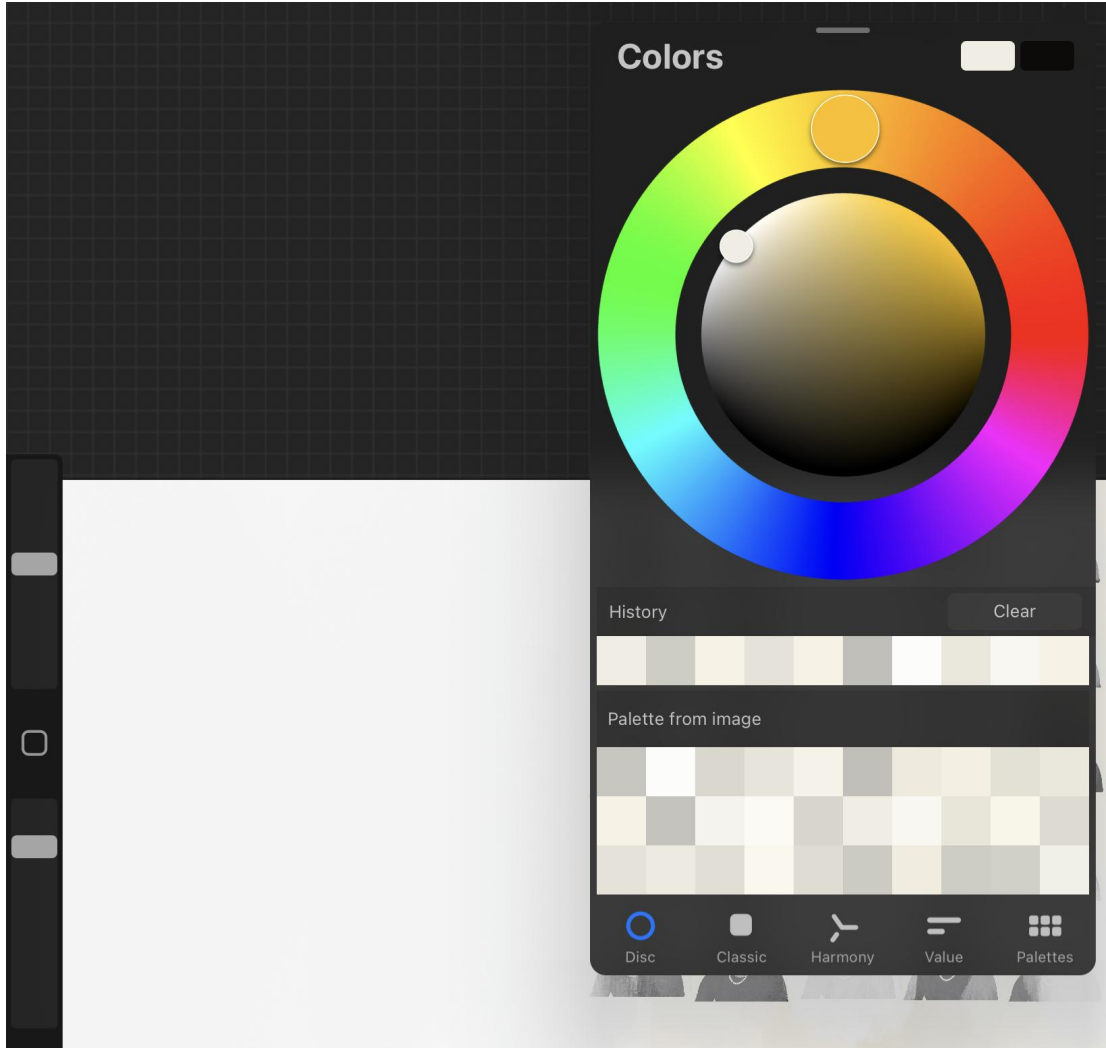
So now what? Alright the right side needed to have that faded paint type effect so I switched to Procreate on the iPad. Oh before this, I decided that the image count would be the same as what Warhol used in Marilyn Diptych so that set the total count of images for each side of the diptych.

I also wanted to have the frame at the bottom so adding up all the 640px images plus a 320px bottom gave the final image size of 6480 by 3540 px with some additional spacing.

Oh, the drawing. So I was using the iPad with Procreate and the Apple pencil and the first step was to get a palette and brush that worked. The best brush seemed to be Wet Acrylic with just the base settings.

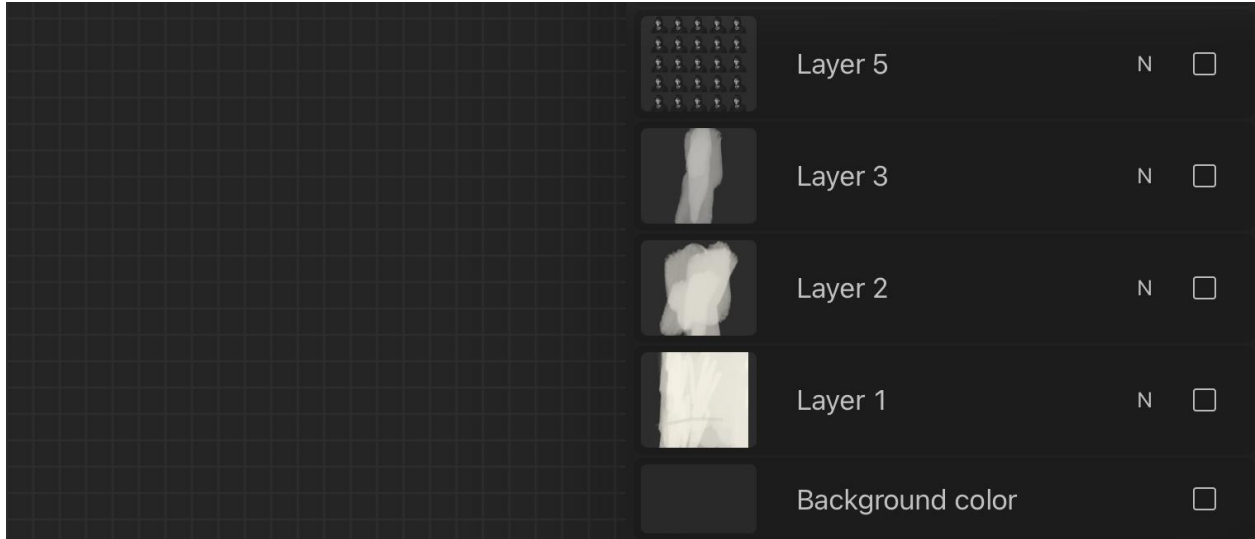
Then I needed to get that screen printing effect. How? At first I was just trying to layer it on but that wasn't creating the effect. Then I also realized that I needed to create enough variations on this side of things to have an effect on the 10,000 variations that I needed.

I finally got the palette that seemed to work:



That palette had enough dark and light shades to really create enough of the screen effect. Now I had to incorporate layering to it. So I took the right side of the diptych and did about three base layers BELOW the base Michelle Obama images. These were just randomized with colors that would just sit below the images with their transparent background.

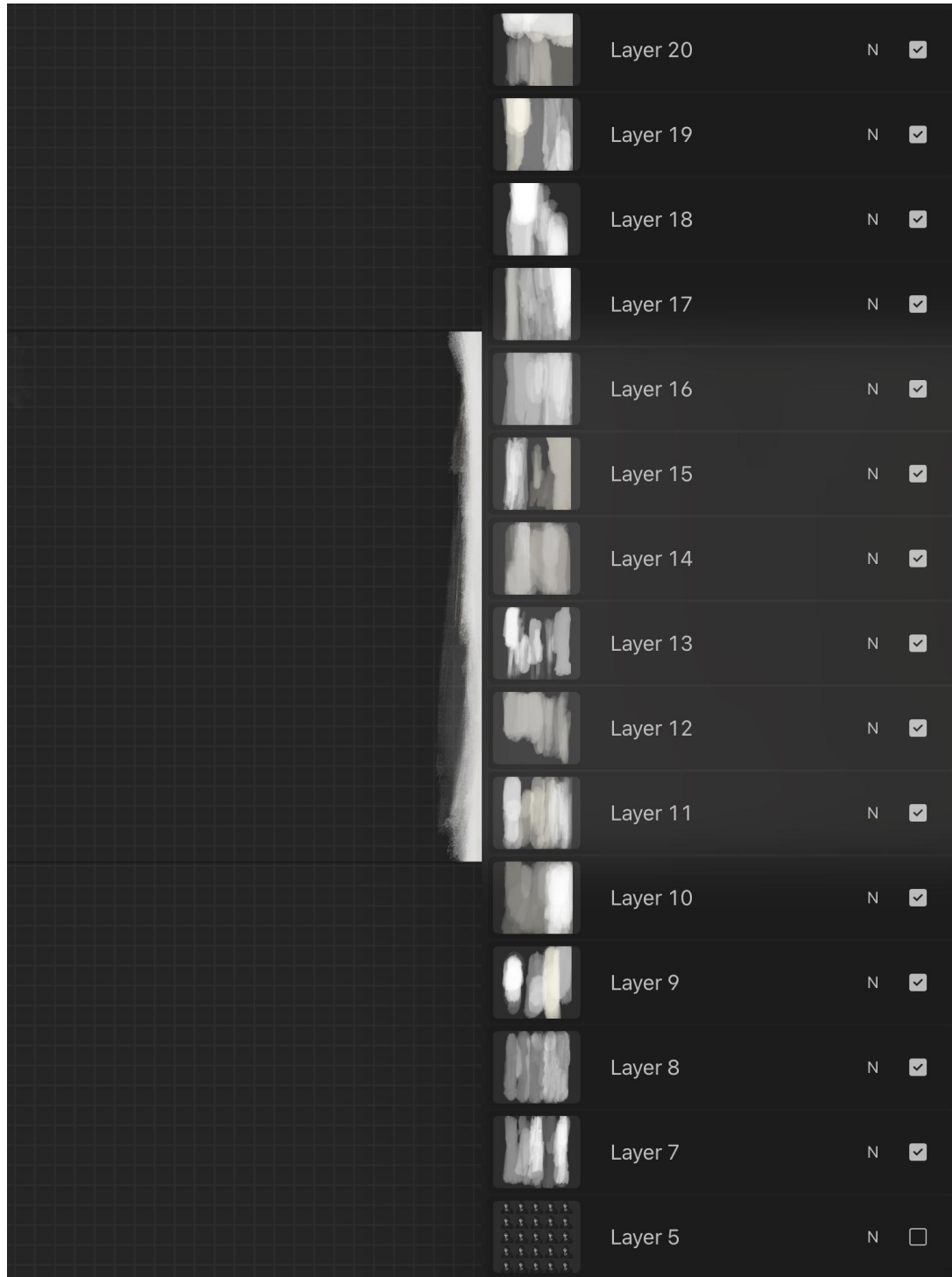
So it's like this:



I ended up with about four different versions of those three base layers. And then you can see the base layer above that of the repeated diptych images.

Now above this on each of the four base layers groups which were separate I do individual paint over layers that each count one variation in the final image. So it's the three base layers plus a variation of the repeated image plus a randomly selected top layer.

Here are some top layer examples:



So in the end I have how many top layer examples like this? The group base layers are:

Full-right-01-base -> This has 35 separate individual layers above

Full-right-02-base -> This has 37 separate individual layers above

Full-right-03-base -> This has 37 separate individual layers above

Full-right-04-base -> This has 11 separate individual layers above

The 10,000 final versions are randomly selecting from those individual layers to combine them with the base layer in addition to the ChatGPT stuff I'll go into.

So at this point I'm manually messing with the combinations and the layering effect is working to give it that human paint over effect since the other side is going to be a more machine generated style.

I start to work on the ChatGPT Python variations for the right side of the diptych. The goal is to have the machine create at least 1000 variations of the 5 by 5 Michelle Obama images. I experiment with scripts and spacing until I have something that effectively does this:

Randomly shift each image by up to 30 pixels and leave that space of the image to be transparent so that the background layer (the three layer base background) is visible and make sure not two variations are the same. So in a way it's cutting out that part of each 640px image.

Since the Keccak 256 hash is pretty standard, let's use that. So the script is hashing each variation as it is being created to find its Keccak-256 hash and ensure its distinctiveness.

https://emn178.github.io/online-tools/keccak_256.html

Good. Now you have these varied baseline images which are going to be distinct. I set the process to run and it takes quite a few hours to generate 8.57 GB of base plain right images. But when you use them with the background and a top layer with the transparent line spaces, it works.

Alright. This gets the painted on aesthetic that I wanted but in the original Marilyn Diptych and also with the machine generated images that were to come there's this distinction between each 640 by 640 square. How can I achieve that? With the Andy Warhol screen printing style each square was done separately and one of the things I liked was the distinction in the darkness that you get in that specific part of the diptych.

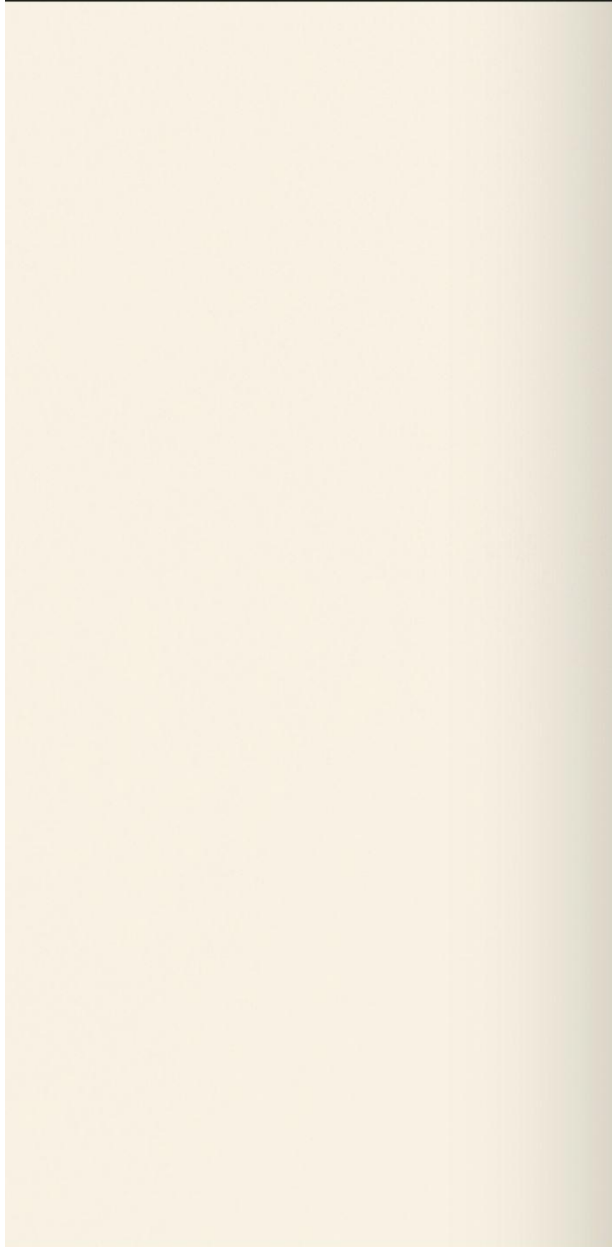
So at first I'm trying just each 640px column as a separate brush layer but that isn't getting the effect. Then I say: why not set each column as a specific color vertically but iterate each individually painted 640px by 640 px square within that color as a randomly placed item.

This gives five layers of columns with squares to be selected from like this:

Layers



	Layer 13	N	<input checked="" type="checkbox"/>
	Layer 12	N	<input checked="" type="checkbox"/>
	Layer 11	N	<input checked="" type="checkbox"/>
	Layer 10	N	<input checked="" type="checkbox"/>
	Layer 9	N	<input checked="" type="checkbox"/>
	Layer 8	N	<input checked="" type="checkbox"/>
	Layer 7	N	<input checked="" type="checkbox"/>
	Layer 6	N	<input checked="" type="checkbox"/>
	Layer 5	N	<input checked="" type="checkbox"/>
	Layer 4	N	<input checked="" type="checkbox"/>
	Layer 3	N	<input checked="" type="checkbox"/>
	Layer 2	N	<input checked="" type="checkbox"/>
	Layer 1	N	<input checked="" type="checkbox"/>
	Layer 26	N	<input type="checkbox"/>
	Background color		<input type="checkbox"/>



Each one of those is a brushed 640px by 640px square using a color palette that is set for each of the five columns on the right side. I then experiment with how to set each color so that they stack in a way that creates a shift in gradient that works.

Now I work on a ChatGPT script that can switch between each of the randomly created square layers and put them into the 5 by 5 columns.

Again, ChatGPT is using Keccak-256 comparison to make sure each of these is a distinct layer and in the square-overlay-center you get 2501 items for a total of 41.03GB. That takes a while to generate and I'm leaving the laptop by an industrial style fan to keep cool.

Then I'm experimenting with shifting the square layers over so that there's a bit of an overlap between them and the machine images that are to come. So I create another set that is shifted by a number of pixels over the machine generated left part of the diptych. So that's a total of 751 items for a total of 12.31 GB.

Alright. So with all that for the right side of the diptych, there's enough depth and variation to create something comprehensive. Oh, and underneath these layers there is either a base white or black layer plus the white and black borders for the lower frame.

At one point, I wanted to have some of the base painted layers go all the way over the frame base but then that would detract from the clean aesthetic that Warhol's Marilyn Diptych had.

Okay, now I've gotta figure out how to create the left side of the diptych. How? Initially, I tried all the basic stuff. Was I just going to create something literal that was like the original Marilyn image? That didn't feel like it incorporated where we were at. So how? Alright, what if I take every available image editing API or tool out there. I find a way to interact with it, and then I either do a basic machine randomization of the output or something else.

The something else ending up being the variation of human timing. So I add my random human timing of when to start and stop the image tool variation process so that you get these randomized outputs which are heavily created through this mix of machine and human. Like the output is because I pressed the button at a certain time and if someone else made it with the same tools you don't necessarily get the same outputs.

It's that fusion of human variation and machine output that I was really going for. So you start to get these images which have these mechanistic moment in time feelings to them.

So that's how you get everything on that side of the diptych. Going through pretty much every available image editor, tool, api available and finding ways to get these randomized machine human type outputs from them. These started to kind of fall into distinct categories: white background, black background, color background and transparent background.

Here's how many base 640px by 640px images I was starting with for each type:

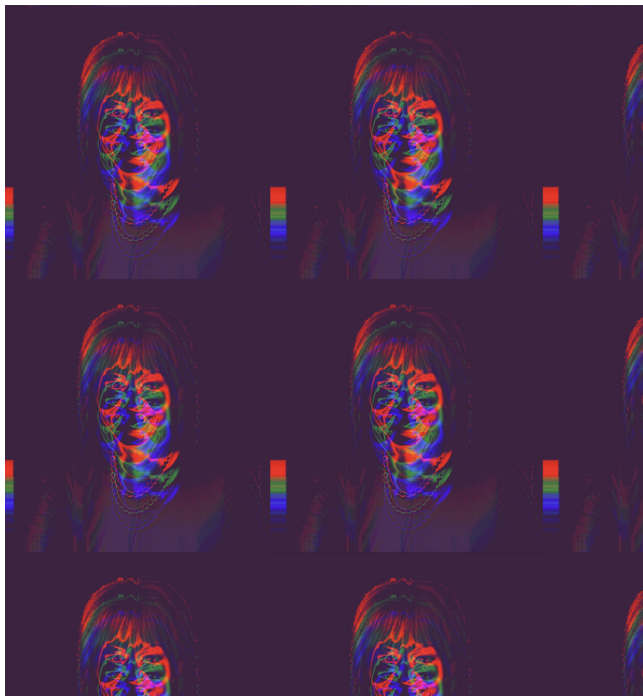
Black background: 371
Color Background: 643
Transparent background: 205
White background: 189

I also found that with the transparent backgrounds, it was cool if you created duplicates where you place them in a layer over each other and shift them by say 10 to 30 pixels.

So that's where ChatGPT comes back in heavy again since I now wanted to create the final combination layers that would fill the 5 x 5 side of the diptych. Again I'm using the Keccak-256 method to ensure that each distinct combination of images is distinct and then I'm also experimenting to determine what level of pixel spacing to create the variations is required.

Each image combination on this part of the diptych is going to be over either a plain white or a plain black background so that's what I have to determine what will work best for the spacing. So it turns out that the colors for example work best when there are just minimal 10px line spacings between them that are discreetly placed otherwise the background is jarring.

In some of them like this you don't even see it:

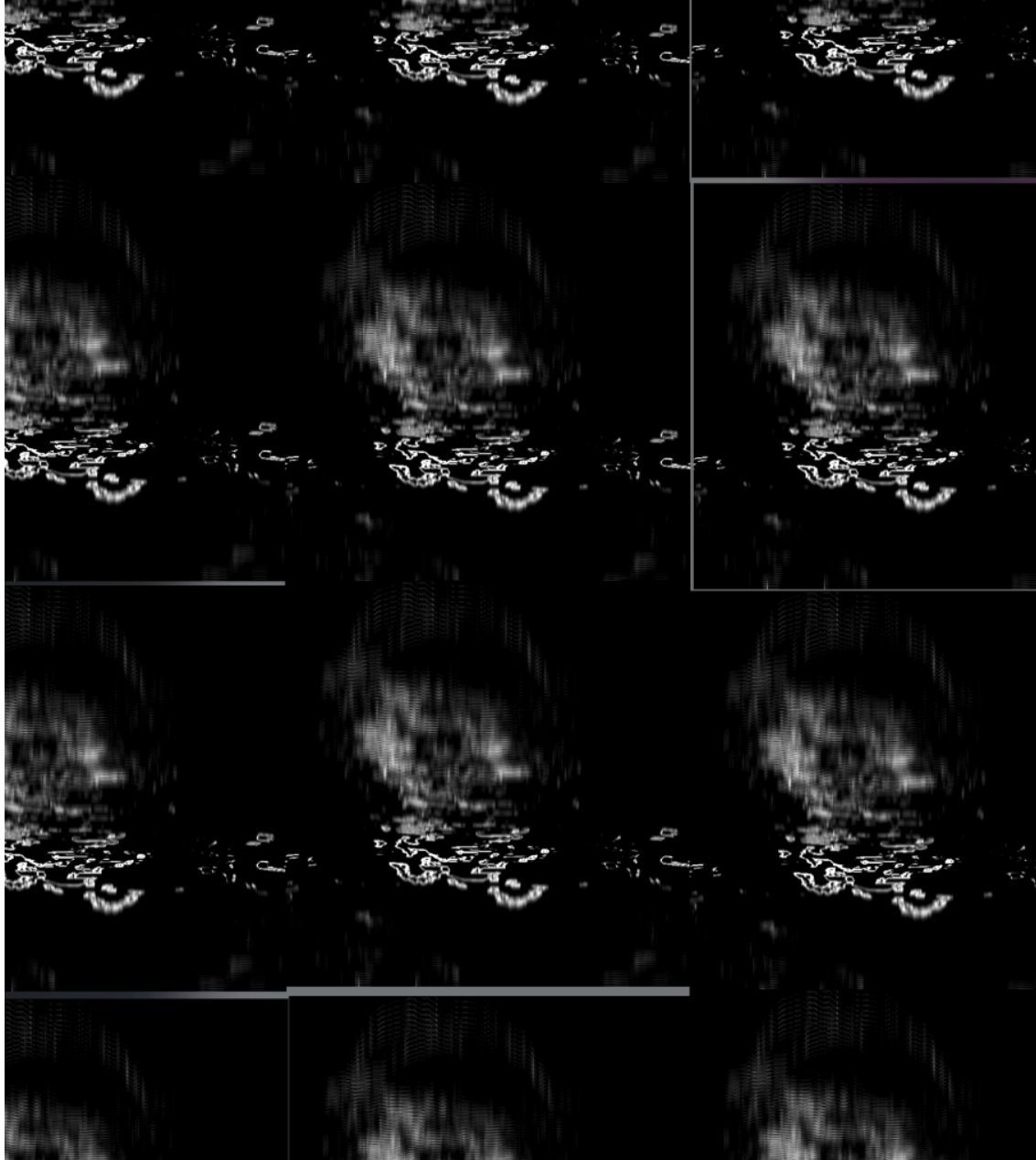


But in other you do:



So then I'm also experimenting with the white and figure that those can have more spacing when they're against white backgrounds. Then I'm working with with the different black background variations to get their spacing right.

Here's some randomized spacing in this black image for example:



So after all the experimentation and calibration, I let the ChatGPT scripts run on the laptop by the industrial fan again and this is what I end up with for all the color layers for the left side of the diptych:

Black-background: 1,851 items at 7.85GB

Color-background: 3,211 items at 6.78GB

Transparent-background: 2,221 items at 15.37GB

Transparent-background-double-shift: 921 items at 8.59GB

White-background: 3,761 items at 19.23GB

Once all this is done and generated, it's time to combine them all into the 10,000 final variations.

I only had a 512GB Macbook so in order to have space for all the generations, I had to wipe literally everything else off the device at this point.

And here's the chart I used to figure everything out. Remember the Full-right-04-base layers, those were used for the double transparent shift background where the transparent layers on the left side of the diptych are double over each other.

Lower Base Group	Color Variation -> Base Layer	Random Acrylic	Positioned Squares	Shifted Squares
Full-right-04-base	Transparent Shift -> White	250/250	95/345	5/350
Full-right-04-base	Transparent -> Black	250/600	95/695	5/700
Full-right-01-base	Black -> Black	520/1220	90/1310	10/1320
Full-right-01-base	Transparent -> Black	520/1840	90/1930	10/1940
Full-right-01-base	Transparent -> White	520/2460	90/2550	10/2560
Full-right-01-base	Color -> White	520/3080	90/3170	10/3180
Full-right-01-base	White -> White	520/3700	90/3790	10/3800
Full-right-02-base	Black -> Black	520/4320	90/4410	10/4420
Full-right-02-base	Transparent -> Black	520/4940	90/5030	10/5040
Full-right-02-base	Transparent -> White	520/5560	90/5650	10/5660
Full-right-02-base	Color -> White	520/6180	90/6270	10/6280

Full-right-02-bas e	White -> White	520/6800	90/6890	10/6900
Full-right-03-bas e	Black -> Black	520/7420	90/7510	10/7520
Full-right-03-bas e	Transparent -> Black	520/8040	90/8130	10/8140
Full-right-03-bas e	Transparent -> White	520/8660	90/8750	10/8760
Full-right-03-bas e	Color -> White	520/9280	90/9370	10/9380
Full-right-03-bas e	White -> White	520/9900	90/9990	10/10000

So once the Macbook is done running all these variations under the industrial fan, I have the 10,000 items at 195.54 GB and I have to find a way to get these all up on IPFS to have the URL for the mint contract.

None of the standard services work for this. I tried and tried all the variations. Direct upload, CLI, clients. Everything maxed out or would not create a CID for the folder of items itself but just for the items individually which is not what I needed. I needed a CID for the folder. So then I find out that I have to use IPFS desktop, create a folder that will by default have a CID, and then drop items in batches of 1000 into that. As I'm trying this something isn't working.

Shout out to a Reddit comment that to upload to IPFS your system needs to make a copy of all the items in the .ipfs folder in the home directory. So you need at least double the size of your items available in disk space.

Alright. So I need a new laptop. I get a 1TB Macbook Air to use just for this since I have to get this done at this point. The space issue is solved with this upgrade so now I start with the IPFS desktop transfer.

Get this: the 7000 - 8000 and the 9000 - 10000 uploads result in errors. So I have to manually delete each of the about 800 or so that are randomly uploaded each time from those counts and redo those batches again since it's the only way to guarantee that they are all uploaded.

Finally, everything is uploaded and I can pin the folder and update it in the metadata for the collection.

I launch the contract and we're good to go. I mint the first ten. 0 is my favourite so far. Thanks!