Master of Fine Arts Thesis

Iterative
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Submitted in partial satisfaction of the requirement for the degree of
Master of Fine Arts, School of Art and Design
Division of Ceramic Art
New York State College of Ceramics at Alfred University
Alfred, New York

2021

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Abstract

As the physical and digital worlds increasingly intertwine, through clay and other mediums, I explore the transformations that occur between the two. Technologies such as scanning and 3D printing find their way into my work. The moments where the physical is translated to digital and vice versa are of importance. While translating the digital into clay, the physical realities of the material become more apparent; gravity, cracks, and slumping are all embraced as part of this transformation.

Our current digital technologies and their shortcomings are of particular interest as well. This includes but is not limited to artificial intelligence, 3D rendering, printing and scanning. In the moment where a 3D scan fails to capture accurately or a printer generates support in order to create an object, these deficits and discrepancies of our current capabilities become generative of new form. It is within the unknown space, the lost information, the in-between, that a void is created and this void offers the space and opportunity for new relationships to form. This is where I find my current work, navigating the edges of destruction and construction, ideas that morph through translation and iteration. My most recent work is the result of an exploration of these translations. I embrace and utilize these digital shortcomings as a marking of time within culture and my own art practice.

List of Illustrations

The double doors of my parent's house open up to a long hardwood staircase and a tall brick wall leading up to the second floor. They renovated this historic brownstone row house throughout most of my childhood, installing all the plumbing, electrical and walls. My brother and I ran wild in this environment, as did our imaginations. This staircase in particular had a carved triangular wood panel near the base. It was about 3 feet in height and was removable, revealing a cramped crawl space under the stairs. It took a few seconds of flickering before a buzzing, circular fixture lit up the tiny space. This was my laboratory. Inside, a drywall soffit covered in crayon was a work table where a "My First Chemistry Set" lived. It was a vacuum-formed plastic shell, with mostly empty vials, and slots for miscellaneous missing chemistry equipment. This didn't deter me from my important work. Starting at the table, I'd shave bits of crayon and pastels into a dixie cup, then sprinkle some deteriorating drywall edge in. Never forget to crumble in the Styrofoam. Next, I'd turn around to face the cracking plaster wall where I'd carefully insert a stick into every disintegrating hole that was left by a nail. I'd burrow the stick into those holes daily, slowly gouging them bigger and bigger, knocking the grit into my cup with the rest of the material. Where the plaster had completely cracked off the walls to expose the underlying brick, that's where the good stuff was, mortar bits, little pebbles, and pulverized red brick dust. Now the concoction was ready... for tap water. I'd place these cups all over the house, outside to evaporate or in the freezer. Eagerly, I'd check the results from the previous day, and repeat the process. I wasn't trying to solve some

problem here; I was just working really, really hard, iteration upon iteration,
searching for a discovery.

Let's discover.

Human Transmorphography

Take a moment, carefully run your tongue along the backside of your
teeth. Now move your tongue back a centimeter and begin to feel the roof of your
mouth. Continue this scanning motion until you have felt the entirety of the roof of
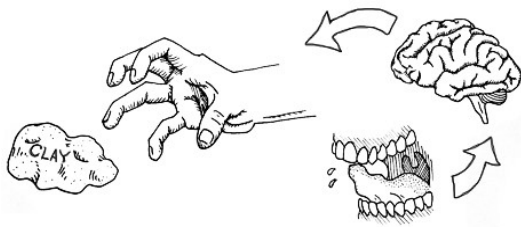
Figure 1. Tongue scan illustration

your mouth. You'll encounter folds,
creases and bumps. Now, with just your
tongue, your hands, and a lump of clay,
sculpt what you feel.

A collaboration is formed between this
massive mouth muscle, neurons firing, the brain processing, and the hands
sculpting. In this collaboration, each system works together as one to complete
the given task. We don't navigate the world with our tongues, consequently, our
bodies are not prepared to process information in this way. The result is a
translation of the information and the form. What is sculpted will never be a
perfect representation. This is what I will refer to as a transmorphic action. It
could be construed as artistic interpretation, or a failure to replicate accurately.
Either way, a new form emerges, and those discrepancies are representative of
something. This space is of interest, both being a loss of fidelity and a
simultaneous spawn of form. They exist at the limen of loss and creation.
Discrepancies become a generative force.

Building from memory. Reconstruct something from the past. Again, we see similar flaws; eyes set too wide, a missing rung on the ladder, or the dog has too many spots. It is in the retrieving of this information where the transmorphation occurs. "Retrieval is subject to error because it can reflect a reconstruction of memory. This reconstruction becomes necessary when stored information is lost over time due to decayed retention."[1] Again, we see that these discrepancies caused by information decay are generative. We are filling in the information that we don't recall, the information we've lost. Today, I remember a certain amount of detail, tomorrow, it may be different. In a way, we are capturing a moment in cognitive time.

Figure 2. *Blind Spot Illustration*

Close your right eye. Look at the red circle with your left eye. Slowly move your head closer to the image. At some point the break in the line will disappear due to a blind spot in our eye. Our brain "fills in" the missing information based on

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1 https://bokcenter.harvard.edu/how-memory-works#:~:text=Memory%20also%20gives%20individuals%20a,and%20retrieval%20(or%20recall).

the surrounding information. Try it again closing the left eye while staring at the blue line, the red dot should disappear.

It is within this unknown space, the lost information, the in-between, that a void is created. This void offers the space and opportunity for new relationships to form. I argue that this new relationship is artistically generative. This is where I find my work, navigating the edges of destruction and construction, ideas that morph through translation. My work is the result of an exploration of these translations. It is in iteration after iteration where we begin to see new form, and with new forms come new ideas.

Digital Transmorphology

Figure 3. *Me & B, Eyes on the Wallpaper,* 2021 Faceapp Image

Now, enjoy this image of myself alongside a generated image of Joe Biden's head on my body. Much like our eye filling in missing information, artificial intelligence is filling in information here. Look carefully at the wallpaper in the background.

Figure 4. *Me & B, Eyes on the Wallpaper,* 2021 Faceapp image (zoomed)

This representation of the wallpaper is clearly imperfect. Through the process of generating the new image, there is both a loss and a creation of new information. It is the birth of a wonderful new wallpaper. Although not entirely the same as the discrepancies we see within human processing, it is nevertheless no surprise that the network used to create this image was inspired by biological neural networks.

As we freefall into a civilization increasingly dependent on digital technology, I find a particular interest in incorporating the virtual into this process of transmorphation. As a "3 dimensional" object exists on my computer, it is a series of points on a "3D" plane of XYZ. It is a representation and simulation of the world we know and understand. In translating these objects from one medium to the next, we begin to see digital traces. The simulated world leaves its mark. Legacy Russell states beautifully how revealing these limitations can leave openings for new interpretations when she wrote "most literally within a

technological arc, the presence of a glitch makes the "digital skin" visible, reminding us of the fallibility of the machine and a presence of its hardware, revealing its edges and seams. We rely on the error of glitches to show us the machinic limitations and, in turn, to get a sense of where we might hack further in pointed undoing."[2] These digital traces, glitches, become the void which offers space for new interpretations and elaborations.

Let's take a scanned image of a Galaxidi Bronze vessel from around 420BC-400BC. This particular vessel is in a collection at the British Museum. The initial 3D scan of this object resulted in a loss of certain information, material, color, finite detail, wall thickness, interior surface etc.. It is no longer the same object. In fact, it became a different object than from its inception once it was placed on display in the British Museum, but that is for another thesis. Somewhere in the translation from a bronze vessel, to artifact, to a series of triangulated data points, a material and content transformation occurred. The digital form and its signification is something altogether new. It exists and it does not exist. It has no up, down, left, right. It has no gravity. It is a capture in time, a scanned moment in the slow material degradation of the original. Now it holds a new life of digital degradation as technology inevitably improves. These digital traces act as timestamps, for it is only a matter of time before we will be able to accurately reproduce this object through scanning and printing, perhaps in its original material. However, at this moment, we work within our technological capabilities. This work becomes layered into a digital history, a digital archeology.

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2 Legacy Russell, "Glitch Feminism," (Brooklyn, NY: Verso, 2020),102.

In a digital era, this democratization of the digitized images "have become travelers in a digital no-man's land, constantly shifting their resolution and format, speed and media, sometimes even losing names and credits along the way."[3]

The scanned artifact has entered the digital age, placing itself in a chronology of digital decay (Figure 5). It can now be categorized as a

> poor image [which] is no longer about the real thing – the originary original. Instead, it is about its own real conditions of existence: about swarm circulation, digital dispersion, fractured and flexible temporalities. It is about defiance and appropriation just as it is about conformism and exploitation. In short: it is about reality. (Steyerl, 2009)[4]

As I convert this same vessel back into the physical world, I hold it in mid-rotation, exemplifying the orientationlessness of its virtual existence (figure 6). In order to 3D print this object in mid-rotation, a scaffold is generated, a support material. The support is intended to be discarded, however I see it as a vehicle to translate the digital back into the physical. It ushers the object into its new physical form and so becomes part of the new form. These transformations are a result of the technology and methods used and are in

Figure 5. *Galaxidi Bronze Vessel Scan,* Scan the World, MyMiniFactory.com

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[3] Hito Steyerl, In Defense of the Poor Image (e-flux journal #10, November 2009).
[4] Hito Steyerl, In Defense of the Poor Image (e-flux journal #10, November 2009).

themselves artifacts of the process; they are artifacts of the artifact. Supports which make the invisible now visible. We can now touch the void.

Figure 6. Galaxidi Remix 1, 2021, slip cast porcelain, cone 6, 5" x 5" x 6"

Figure 7. *Big Pockets,* 2021, stone, PETG, cone 10 colored porcelain, 10" x 5" x 6"

The limitations of translating this virtual object into a physical object require generating this addition. I admire this addition. Further iterations invite me to invert it, so to become the focal point. I transform this support material into porcelain, allowing gravity to take hold of it as it enters the physical in this new form. Slump, melt and crack; physical world, do what you do (Figure 7).

Physical & Digital Transmorphology: a collaboration

In Sondra Perry's 2018 exhibition *Typhoon Coming On*, the artist reinterprets an 1840 painting of a slave ship by J.M.W. Turner. In her installation, this painting is projected into the gallery with an animated ocean filter using

Blender, an open-source graphics program. What is seen in the gallery is an undulating animation of this painting which occasionally flickers to an entirely purple rendition of the waves. The purple, within Blender, "signifies … that there is a missing texture or material... This colour is supposed to be … a warning to a maker … saying 'hey stop this, something is missing'"[5]. The artist has embraced and owned this glitch within the program, this indication that something is missing. This embrace of the glitch now signifies the artists hand within the artwork. It transforms meaning from a loss of information to being the actual art and the presence of Perry within the piece. In essence she is collaborating with the program.

I work collaboratively as well, offering cues and taking cues from the programs. Interpreting and re-interpreting, noting the changes along the way. When I work in this way, I put into practice the idea of filling the void. A scaffolded object, or a gridded fill on my computer screen has the potential to become something else, and I am here to explore that potential.

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[5] Serpentine Galleries, London, *Sondra Perry*: Typhoon coming on, 2018, serpentinegalleries.org.

A Generative Adversarial Network (GAN) is a system which generates new data through dynamic learning. Much like the wallpaper shown earlier, the GAN creates images (here, generated from a pool of images of my past work). These images are then run through a discriminative network, which deciphers whether the created image is similar enough to the source. It works in this manner to continually produce more convincing images. Working with GAN, I too am a discriminator in this process, I decide.

Figure 8. GAN output & *Collaborative Solo, 2020, red earthenware and porcelain, cone 1, 12" x 12" x16"*

"Yes, I like this image."

"No, it doesn't look like anything I've made before."

"Yes, I will take that image and turn it into something that I would like to make."

And like that, a computer-human relationship and collaboration is formed. Here, I

work with 2-dimensional digital files created by the GAN. I create my own

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version, or iteration, of the GAN's iteration. I have only one side of the form to work from, and so the idea of generating work originating from a loss of information arises again (i.e. myself interpreting the unknown by creating the backside of the sculpture).

Inspired by and in collaboration with the slicing programs is an interpreted large-scale support (Figure 9); the process includes observation and reinterpretation. A new iteration of the scaffold has emerged. I consider this a collaboration with the technology, as the sculpture simply would not have existed without the program generating the material in the first place. The computer generates, I see, I think, I render, I task a robot to generate, I see, and I assemble.

A rock is suspended in space (Figure 10), tilted at an angle that defies gravitational pull. A delicate trellis of transparent plastic enables the rock to hold its precarious position. The support material holds a thin veneer that hugs the rock, so form fitting in areas that the two materials

Figure 9. Emerald Support Tower, 2021, cone 6 earthenware, 5" x 5" x 18"

seemingly become one. I want to initiate a conversation between the digital element and the source of the digital element. I want to see the natural meet the unnatural and to see the new relationship that has been formed. In the virtual space, the rock no longer abides by the same laws. A rock normally connotes weight and earthly connections.

Figure 10. Rock 1 with support, 2020, stone, PETG, 12" x 8" x 3"

As the digital element pushes this rock into an unfamiliar orientation, there seems to be an embrace, or a meeting of the two states between digital and physical as well as synthetic plastics with natural elements. Here there is a hint of communication between the rock and the support material in this piece. In order for the support material to cradle the rock as it does, information must have been transferred in some way. Like our tongue scanning the roof of our mouth, gridded light bounced off the rock and transferred information to a computer where a 3-dimensional rendering of the rock came into existence. This moment in the process is of interest because it is the precise moment of conversion, when physical becomes digital. Light travels in space until it hits the detectable surface

of the object, and that surface is translated to the computer. The surface is the information we are working with, a shell of data points. In essence, we've created a digital skin.

Skin, funny stuff, it changes daily, yearly, lifely. My skin is 40 years and 256 days old as I write these words. To scan my skin is to capture it in the moment. That digital image knows no time, yet it is a time capsule. A rock is a time capsule, a sliver of earth, a capture of an epoch, a rock knows time. In essence, a scan of a rock is a scan

Figure 11. *3D Scan of Rock 1,*

of a time capsule. I use these materials that convey time, transferring them to a medium that freezes time, yet marks them at a certain chronology in the digital landscape.

In creating a digital skin, we've simultaneously created a digital void, the space surrounding the skin, inside and outside. As mentioned, this space becomes visible through support material, however we can also see that space with the removal of the digital skin. To print this object sans skin is to print the internal void. We can see the heart, lungs, organs to our digital rock which the computer has generated, usually in the form of a gridded or a gyroid fill pattern.

I become acutely aware of the space that my own skin, heart, lungs and organs do not occupy within a bodily scan, and am able to observe that space when printed. I can hang the negative space of my face on a wall and leave the

room, essentially leaving an impression behind. I become aware of the absence of skin on my work, I coat that absence with glaze. I obscure 3 dimensions with glaze, I project a 2 dimensional pattern on an object with glaze, I allude to the scan with glaze. Glaze can be skin, and it can cover and submerge these archeological finds.

Today, I find myself connected to baby Erin, toiling away in her laboratory. She was working with the materials at hand, some grit, crayons, styrofoam, iterations of the same formula, and no goal in sight. But I think this absence of goal is precisely what I'm talking about, the void, the invisible, the space for creation and exploration. I'm still working with graduated cylinders and mixtures of materials, but I have new tools and understandings, ideas that speak to me visually, thematically, conceptually. In keeping my processes open and varied, I'm prepared to follow the paths that intrigue, I stay nimble and adjust to change. I've set myself up for decades of cascades to follow, projects growing like limbs on a tree. Only in iterations do we begin to see the transformations that arise, and these iterations are the buddings of a new branch.

My work attempts to embrace these edges between the physical and the digital, worlds that are increasingly intertwined. As technology and our understanding of the digital evolves, so will my practice. I find myself working in and with technology which I know will be quickly surpassed by the next improvement, and I want to wholeheartedly appreciate the deficits and discrepancies of our current capabilities. (And with this statement, let's see what happens when we put it through its own digital journey of translation.)

(translated to Traditional Chinese)
我的工作試圖擁抱物理世界和數字世界之間日益交織的模糊邊緣。 隨著技術和對數字技術的理解的發展，我的實踐也將隨之發展。 我發現自己從事技術工作並使用技術，我知道該技術將很快被下一次改進所超越，並且我要衷心感謝我們現有能力的不足和差異。

(translated from Traditional Chinese to Russian)
Моя работа пытается охватить размытые грани, которые все больше переплетаются между физическим и цифровым мирами. По мере развития технологий и понимания цифровых технологий, моя практика также будет развиваться. Я оказался вовлеченным в техническую работу и использую технологии. Я знаю, что технология скоро будет превзойдена следующим усовершенствованием, и я хочу искренне поблагодарить за недостатки и различия в наших существующих возможностях.

(translated from Russian to Swahili)
Kazi yangu inajaribu kunasa laini ambazo zinaingiliana kati ya ulimwengu wa mwili na dijiti. Kadiri teknolojia inavyoendelea na uelewa wangu wa teknolojia ya dijiti unavyoendelea, mazoezi yangu pia yatabadilika. Nilijiingiza katika kazi ya kiufundi na kutumia teknolojia. Najua teknolojia hivi karibuni itapita na uboreshaji unaofuata, na ninataka kukushukuru kwa dhati kwa mapungufu na tofauti katika uwezo wetu uliopo.

(translated from Swahili to Latin)
Mihi opus conatur capere lubricum corpus, quod in mundo materiali et a digital inter Interacts. Digital technology progressus, sicut intellectus et technicae pergit, mea usu meus es convertere. EGO got in opere usi technica technology. Scio enim technology utantur praeterit proximo ad emendationem, et non vis ad sincere gratias ago tibi, quia et delicta nostra existentium differences tibi dat.

(translated from Latin to German)
Ich muss versuchen, Glätte zu fangen, wie in der physischen Welt und der digitalen Interaktion. Die Entwicklung der digitalen Technologie wird sich mit dem Verständnis der Technologie auch ändern. Ich habe die Technik benutzt, die in der Arbeit der Technologie verwendet wurde. Ich weiß, dass die Technologie sie zuletzt zur Verbesserung verwendet hat, und ich möchte Ihnen nicht aufrichtig für Ihre und unsere bestehenden Unterschiede danken.

(and finally, translated from German back to English)

"I have to try to catch smoothness, like in the physical world and digital interaction. The development of digital technology will change as the technology is understood. I used the technique that was used in the work of technology. I know technology was the last to use them to improve, and I don't want to sincerely thank you for your differences and ours."

However, I truly do want to thank you, technology, for our differences.

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  works#:~:text=Memory%20also%20gives%20individuals%20a,and%20retr

  ieval%20(or%20recall).%20%20\

Technical Statement

Printers:
Prusa MK3S plastic printer
- Generic PETG filament
- Generic PLA filament
Bryan Cera (custom altered) clay printer
- 539 clay mixed to cream cheese consistency

Programs:
Rhinoceros 3D, Solidworks, Maxon Cinema 4D, Tilt Brush, ScandyPro phone app, TRNIO phone app

Digital Tools:
Alienware desktop computer, Oculus Rift VR headset, Artec Eva scanner, Iphone 12

Katz Burke Matte ^6
EPK   29.23
Ferro Frit 3124 22.56
Neph Sy   20.37
Whiting   17.1
Silica   10.74

DM Casting Slip ^6-7
Grolleg   13.75 lb
Sillica 200   5.00 lb
Neph Sy   3.125 lb
Minspar   3.125 lb

Rogue Carrot:
        -Beet chips
        -Sea Salt Caramel Chocolates