

A Visual Study of the Evolution of Currency

by
Savanna Cucchiara

A thesis presented to the Honors College of Middle Tennessee State
University in partial fulfillment of the requirements for graduation from
the University Honors College

Spring 2023

Thesis Committee:

Dr. Ennio Piano, Thesis Director

Dr. Philip Phillips, Thesis Committee Chair

A Visual Study of the Evolution of Currency

by Savanna Cucchiara

APPROVED:

Dr. Ennio Piano, Thesis Director
Assistant Professor, Economics and Finance

Dr. Philip Phillips, Thesis Committee Chair
Associate Dean, University Honors College

Acknowledgments

I would like to acknowledge and give thanks to my advisor Dr. Ennio Piano who supported me throughout this project. Dr. Piano's guidance was indispensable, and I could not have completed this project without his mentorship. I also thank Dean Phillips and other members of the Honors College for coordinating my thesis defense and providing valuable feedback.

I thank Eli, Jack, and Michael for their engineering aid. You helped my vision come to life, and I am so grateful you were willing to join this journey with me. I appreciate the time you sacrificed to be a part of this project.

Finally, I would like to give thanks to my boyfriend, my family, and my friends. Every day, I am thankful for your love and encouragement. Your support carried me through this project and my academic career. Through all of my challenges, you have been there for me. And for that, I am grateful.

Abstract

The function, form, and utility of currency have changed drastically since its early usage as it has been passed between different governments and cultures. This exhibition, "A Visual Study of the Evolution of Currency," displays the related artwork used to analyze the critical changes that occurred to transform currency—tracking the progression from rudimentary currency and early coinage to the complex cryptocurrency ecosystems today. Each artwork highlights one of these junctures in the history of money and encourages discussion about the future of currency and how we assign value to it. Open for public viewing January 28th - February 8th, 2023, in Todd Hall's Glass Gallery, this exhibition displayed five pieces of artwork representing these tangential points in the evolution of currency.

Table of Contents

Acknowledgments	iii
Abstract.....	iv
Table of Figures.....	viii
I. Introduction	1
II. Works of Art.....	7
A. <i>The Pearl</i>	7
1. Meaning and Inspiration.....	7
2. Creation	9
3. Placard	11
4. Images.....	12
B. <i>Two Sides</i>	13
1. Meaning and Inspiration.....	13
2. Creation	16
3. Placard	18
4. Images.....	20
C. <i>The Federal Reserve</i>	22
1. Meaning and Inspiration.....	22

2.	Creation	25
3.	Placard	29
4.	Images.....	30
D.	<i>Hash</i>	32
1.	Meaning and Inspiration.....	32
2.	Creation	34
3.	Placard	38
4.	Images.....	39
E.	<i>Bored Ape Yacht Club</i>	41
1.	Meaning and Inspiration.....	41
2.	Creation	44
3.	Placard	47
4.	Images.....	48
III.	Exhibition	49
A.	Gallery Space	49
B.	Production Schedule.....	50
C.	Promotional Materials	53
D.	Set-Up.....	58
IV.	Evaluations	60

A.	Visitor Survey	60
B.	Questions	61
C.	Voluntary Feedback	63
V.	Conclusions	65
VI.	References	67

Table of Figures

Figure 1 - Rare Natural Purple Pearl.....	8
Figure 2 - Freshwater Pearls	8
Figure 3 - The Pearl Progress.....	10
Figure 4 - The Pearl Placard	11
Figure 5 - The Pearl	12
Figure 6 - The Pearl Closeup	12
Figure 7 - Edward III Gold Noble.....	14
Figure 8 - King Henry III Gold Penny.....	15
Figure 9 - Two Sides Progress	17
Figure 10 - Two Sides Placard.....	18
Figure 11 - Two Sides Touching Placard	19
Figure 12 - Two Sides.....	20
Figure 13 - Two Sides Angle	21
Figure 14 - Million Dollar Bill.....	23
Figure 15 - Hasbro Monopoly Money	23
Figure 16 - Five Euro Banknote.....	24
Figure 17 - Federal Reserve Stencil Layers.....	26
Figure 18 - Federal Reserve Design Sketch.....	26
Figure 19 - Federal Reserve Stencil.....	28
Figure 20 - Federal Reserve Placard.....	29

Figure 21 - Federal Reserve.....	30
Figure 22 - Federal Reserve Closeup.....	31
Figure 23 - Hash Digital Grid 1	34
Figure 24 - Hash Digital Grid 2	35
Figure 25 - Hash Progress 1	37
Figure 26 - Hash Progress 2.....	37
Figure 27 - Hash Placard.....	38
Figure 28 - Hash Base Painting	39
Figure 29 - Hash with Projection.....	40
Figure 30 - Bored Ape Yacht Club Inspiration.....	42
Figure 31 - Chimpanzee Portrait.....	42
Figure 32 - Baron Joseph-Pierre Vialetes de Mortarie	43
Figure 33 - Bored Ape Yacht Club Progress 1	45
Figure 34 - Bored Ape Yacht Club Progress 2	45
Figure 35 - Bored Ape Yacht Club Progress 3	46
Figure 36 - Bored Ape Yacht Club Placard.....	47
Figure 37 - Bored Ape Yacht Club	48
Figure 38 - Glass Gallery Blueprint.....	49
Figure 39 - Exhibition Flyer 1	53
Figure 40 - Exhibition Flyer 2	54
Figure 41 - Exhibition Flyer 3	55
Figure 42 - Exhibition Flyer 4	56

Figure 43 - Exhibition Overview Placard	57
Figure 44 - Visitor Survey Image 1	61
Figure 45 - Visitor Survey Image 2	62
Figure 46 - Feedback Question 1	63
Figure 47 - Feedback Question 2	63
Figure 48 - Feedback Question 3	64
Figure 49 - Feedback Question 4	64
Figure 50 - Feedback Question 5	64

I. Introduction

What is currency? While this appears to be a straightforward question with a straightforward response, the concept of currency has been stretched far past the images of dollar bills and pennies you initially think of. The discussion of Bitcoin, the validity of cryptocurrency, and the economic impact of "mining" have brought this discussion to the forefront of people's minds and the desks of monetary policymakers.

To answer the question "what is money?," one good place to start is the definition of it used by economists: "[Money] functions as a medium of exchange, a unit of account, and a store of value" (Yermack 2015, p. 32). The U.S. dollar is an excellent example of a currency that matches this definition. It is used in both domestic and foreign markets as a medium of exchange, provides a standardized unit to measure the market value of other goods or services, and holds its value at a relatively stable rate, making it a palatable store of wealth. However, some economists disagree with the validity of this test and argue that many currencies fail to hold their value or be used as a primary unit of account (Hazlett & Luther 2019, p. 2). One currency often emerges as dominant in a national market, but such a monopoly is unnecessary, and some markets use multiple currencies to conduct business (Hazlett & Luther 2019, p. 2). Because of these discrepancies, the definition of currency, and its utility, is often simplified to be a medium of exchange.

The functions that money serve in the economy can help us explain why certain commodities have tended to be used as currency while others have not. In his book *The Origins of Money*, the economist Carl Menger argues that all advanced civilizations

worldwide have independently converged to use precious metals and standardized coinage as a form of currency that maintains its value at a stable rate:

The fixing of a coinage so as to include all grades of value, and the establishment and maintenance of coined pieces so as to win public confidence and, as far as possible, to forestall risk concerning their genuineness, weight, and fineness, and above all the ensuring their circulation in general, have been everywhere recognized as important functions of state administration. (Menger 2009, p. 51)

Over time, this system evolved into what is known as the gold standard, in which paper notes could be traded for specific quantities of precious metals. These traditional forms of currency in which value is backed by a tangible resource ("commodity money") successfully carried out their primary functions, retaining value and simplifying transactions.

A key characteristic of the gold standard is that it limits the government's ability to manipulate the quantity of money or perform what economists call "monetary policy." As governments around the world struggled with the economic consequences of the Great Depression, they were pressured to find a new monetary system, one in which the government and its central bank could influence the macroeconomy by manipulating the money supply, stabilizing the value of money, and influencing the rate of inflation. The result was a new type of currency: fiat money. Today, "every state in the developed world has a central bank that issues paper money, manipulates the supply of credit in the interest of commerce, (and) uses fractional-reserve banking" (Lanchester 2019). In other words, fiat money rules the modern world.

Under this new currency system, central banks are tasked with two fundamental functions: regulating the amount of cash in circulation and manipulating interest rates. "The short-term interest rate is a tool for which they (the Federal Reserve) can control the quantity of money" (Friedman 2006). By buying and selling government bonds, the Federal Reserve can control the amount of money on the market and the supply based on predicted demand. (Friedman 2006). The rise of fiat money and increased autonomy of central banking has shifted the function of money away from the traditional functions of a store of value and serving as a medium of exchange and has evolved into a policy tool that can be used to encourage spending or saving in response to exogenous economic forces.

For most of its history, the functions of currency have remained primarily transactional. While precious metals and paper bills have been collected for speculative purposes, most of the money in circulation has been used to fund trade and consumption. More recently, a new type of currency, known as cryptocurrency, has made its appearance in global markets. Cryptocurrencies differ significantly from traditional currencies due to the small market that uses them for transactions versus collecting them as assets: "[Economists] are unable to determine the extent to which the demand for Bitcoin is transactional, rather than speculative. Hence, we cannot conclude definitively whether Bitcoin is widely accepted or expected to be widely accepted" (Hazlett & Luther 2019, p. 5). The ambiguity of cryptocurrencies' function as a transactional tool or investment has confused policymakers and led to conflict on treating cryptocurrencies as just another currency. "Financial Crimes Enforcement Network (2013) recognizes

Bitcoin as a 'medium of exchange ... The Internal Revenue Service (2014), in contrast, treats Bitcoin as property, meaning users must pay taxes if a capital gain is realized" (Hazlett & Luther 2019, p. 1).

The forms of money and the evolution between those forms have been mainly restricted by the idea of "saleableness", explained by Carl Menger. Menger defines the saleableness of an item as the ability "to dispose of it at prices corresponding to the general economic situation, at economic prices" (Menger 2009, p. 27). He explains why precious metals and the subsequent coins made from them are saleable:

There are the wide limits in time and space of the saleableness of the precious metals; a consequence, on the one hand, of the almost unlimited distribution in space of the need for them, together with their low cost of transport as compared with their value, and on the other hand, of their unlimited durability. (Menger 2009, p. 47)

The distribution, portability, and universal appreciation of precious metals increased the saleableness of the resources and ultimately made them a successful form of currency.

While the direct trade of precious metals and the standardization of coinage persisted for centuries, many countries adapted after discovering early Chinese paper records of credit. Monetary systems moved towards paper bills that could act as a placeholder for owners to trade for a specific weight of gold or other precious metals. The gold standard monetary system alleviated some of the problems of early coinage, such as individuals melting, dividing, and devaluing the metal (Lanchester 2019). Despite the

material having low saleableness, the value of the gold that backed it offered paper bills increased saleableness. Fiat bills differ because a universally desirable commodity does not support them. Still, they meet the saleableness criteria proposed by Menger due to government regulation encouraging the demand and protecting their value.

The prospects of future forms of currency are often analyzed through the same lens. Cryptocurrencies are unique because they are entirely contained to an online platform and do not face the same physical limitations as traditional currency. Stephan Livera analyzed the saleableness of digital currency. “Menger noted some factors that we could use to distinguish between cryptocurrencies: Permanence in the need of them, their durability, (and) the cost of preserving and storing them” (Livera, 2019). These factors can distinguish between cryptocurrencies and predict their relative success as a currency. However, it is still challenging to predict the future demand or success of cryptocurrency as a whole due to limited data.

An offshoot of cryptocurrency that would likely be rejected under Menger's theory of currency and saleableness are non-fungible tokens. “An NFT is a digital asset that represents real-world objects... Each has a digital signature that makes it impossible for NFTs to be exchanged for or equal to one another” (Conti 2022). Despite using similar software and often being traded with cryptocurrencies like Ether, NFTs are far more speculative. NFTs, in their current form, lack many of the accepted characteristics of money, such as being a medium of exchange. By having the ability to purchase sole ownership of a commodity, NFTs also pose a threat to copyright laws, as sellers can fraudulently imitate reputable artists (Hendrickson 2021). While they are currently

treated more as collector items, the future of NFTs could see much broader applications as it pushes the boundaries of property rights and copyright law.

By analyzing the history of currency and its forms, functions, and utility, we can better predict the potential success of cryptocurrencies and the byproducts of crypto. Moreover, a better understanding of these new forms of currency can help us devise better monetary policy.

II. Works of Art

A. *The Pearl*

1. Meaning and Inspiration

Pearls and other organic materials are some of the earliest forms of currency, acting as a medium of exchange as societies evolved beyond simple bartering systems. However, unlike metal coinage, pearls are not divisible or readily standardized. The related artwork needed to reflect this indivisibility and the organic nature of pearls. I hoped to exaggerate these qualities by creating a pearl that was not uniform in color or shape. Referencing pictures of freshwater pearls, I hoped to achieve similar color variation and texture in the final product.



Figure 1 - Rare Natural Purple Pearl

Rare Natural Purple Pearl from Texas 3.50 carats. (n.d.). Kari Pearls.
<https://www.karipearls.com/rare-natural-purple-pearl-from-texas-350-carats.html>



Figure 2 - Freshwater Pearls

Freshwater Pearls. (n.d.). Pearls of Joy. <https://www.pearlsofjoy.com/blogs/blog/real-pearls-vs-cultured-pearls>

2. Creation

Considering the show's logistics, I was limited to light materials to optimize storage and set-up. The art piece is relatively minimalist and straightforward, so I chose to make it as large as possible, given the materials available. I resourced the foam base first, as that set my scale. Connecting two foam semi-spheres, I taped the seam together. I covered the exterior in paper mâché (newspaper saturated in a water and glue mixture). I completed three layers of paper mâché to ensure the foam pieces were firmly secured and the seam was as minimal as possible.

I then explored alternatives to create the bumps and craters on the pearl. Initially, I attempted to build texture with more paper mâché, but it was a timely process to build up the desired volume. I considered using smaller foam spheres and cutting them down to size, but I was concerned about the seam that would be created between the base and the bumps. After exploring the materials I had on hand, I decided to use the foam cup inserts used in swimsuit tops. The foam cups had a thinner edge, allowing me to blend the seams more easily. Once I taped the foam cups down, I added two layers of paper mâché overtop to blend the cups into the base.

However, there was still quite a bit of texture across the surface and noticeable seams, so I researched methods to achieve a smooth finish on paper mâché projects. Referencing the strategies shared by Jonni Good on her YouTube channel, I spread a layer of joint compound over the whole pearl (Ultimate Paper Mache, 2019). After the joint compound had partially dried, I used a wet rag to buff out prominent ridges. Once

the joint compound had completely dried, I used fine grit sandpaper to smooth any remaining texture. I repeated this process to ensure the final product would be smooth and, therefore, highly reflective.

To create the iridescent reflective finish, I layered clear spray paint and mica powder. I sprayed a coat of clear sealant, and before it could dry, I dusted on various shades of mica powder using a large cosmetics brush. I layered on the spray paint and powder to intensify the pigment and create depth in color. Once I had achieved the level of saturation I desired, I sealed the pearl with five more layers of clear spray paint to create a glossy finish.



Figure 3 - The Pearl Progress

3. Placard

THE PEARL

Paper Mache

Pearls are one of many early materials used as currency. One key factor differentiating pearls from other primitive currencies is their lack of divisibility. Unlike minerals or animal hides, pearls are not easily divided without diminishing their original value.

This sculpture is constructed from a foam base coated in paper mache and joint compound. Duochrome mica powder was applied and sealed with a glossy spray fixative.

Figure 4 - The Pearl Placard

4. Images



Figure 5 - The Pearl



Figure 6 - The Pearl Closeup

B. *Two Sides*

1. Meaning and Inspiration

When planning the exhibition, I wanted a piece dedicated to coinage, one of today's longest-lasting forms of currency. However, I avoided overly cliché imagery like the U.S. penny or Euro. While hyperrealistic paintings pull interest when used in the appropriate setting, I chose to abandon the idea of painting as I wanted variation between the mediums used for each piece.

I wanted to take the opportunity to dive into the historical significance of coinage and the raw material gold. The art piece needed to represent both the moldable nature of gold and the imperialistic consequences of European powers assigning value to gold and other precious minerals. Historians argue that the penny produced by Henry III was the first mass-produced coin in gold ("Gold Penny of Henry III," 1874). While its mint date precedes the imperialist era, the coin's imagery depicts similar motifs used in later coinage. To represent the malleable nature of gold and the influence that gold mining had on international relations, I made *Two Sides* a touchable installation artwork. Due to the complexity of the coin's front face, I chose to depict the backside of the coin in the final exhibition.



Figure 7 - Edward III Gold Noble

Edward III Gold Noble. (n.d.). Bullion by Post.

<https://www.bullionbypost.co.uk/collectible-coins/gold-noble/edward-iii-gold-noble/>



Figure 8 - King Henry III Gold Penny

King Henry III Gold Pennies. (n.d.). Mirror. <https://www.mirror.co.uk/news/uk-news/first-ever-english-gold-coin-11753688>

2. Creation

The creation of the coin presented constant functional and structural challenges. I intended the viewer to be able to press their hands into the piece, temporarily molding the coin and leaving their impressions. However, this project was unlike anything I had ever attempted, so I was forced to experiment with different materials and methods. The primary challenge was creating a durable product with the elements necessary to identify it as a coin: reflective gold finished, raised letters, ornamental details, etc.

The base was constructed from a 2-inch memory foam bed topper secured to hardboard with spray adhesive. I drew out the coin's design on the foam to plan the additional foam needed to carve out details. I cut out the details from a 1-inch piece of memory foam. Initially, I planned to attach the detailed foam pieces to the base and drape gold spandex over the entire structure. However, after stretching the spandex over trial pieces, I abandoned this idea as too many details were lost as the spandex smoothed over. I thought to hand-stitch the spandex sheet into the groves of the coin, bringing life back to the details, but my limited time frame forced me to find alternative solutions.

Instead, I stretched a sheet of spandex over the base, secured it using short staples, and encased all the detailed pieces in their own spandex sleeves. This approach allowed me to sew the casings with a sewing machine and secure them to the base with a few stitches and E6000 glue. When I attempted to stuff the detail casings, I found the memory foam challenging to work with for many shapes. Where necessary, I switched to polyfill as my stuffing material.

The letters proved to be the most challenging component of the project. I did trials with foam and polyfill stuffed casings, but the sharp corners did not translate well to these mediums. With limited time remaining to complete the art piece, I switched to gold rope. This material offered me much more detail, and it was less time-consuming to construct the shapes. I similarly attached the gold rope with hand stitching and E6000 glue. Incorporating the gold rope in other areas of the piece helped join the overall composition of the piece.



Figure 9 - Two Sides Progress

TWO SIDES

Spandex, Upholstery Material, Rope

The creation of coinage is a tangential point in the history of currency. Metal coinage is one of the first easily divisible and standardized forms of currency. It can be melted, molded, and mixed. As easily as gold is manipulated, the demand for gold has shaped international relations as colonial powers exploited foreign nations for this natural resource.

This installation is comprised of a layer of memory foam covered with stretched gold spandex. Details were added by stuffing spandex tubes with polyfill and using various sizes of metallic ropes. These details were glued and hand-stitched to the frame.

Figure 10 - Two Sides Placard

PRESS GENTLY

No Pulling or Tugging

This piece is designed to be touched. Please **press** gently. Refrain from pulling or tugging on any piece of the installation. Thank you for being respectful of the artwork and gallery space.



Figure 11 - Two Sides Touching Placard

4. Images



Figure 12 - Two Sides



Figure 13 - Two Sides Angle

C. The Federal Reserve

1. Meaning and Inspiration

Moving on to the next critical junction in currency's evolution, I needed to create an art piece representing a paper currency. I wanted to focus on fiat currency, specifically that which is not backed by any tangible resource. While creating this piece, the United States underwent political changes that influenced monetary policy and how the U.S. dollar retained value. For this reason, I wanted to use this piece to highlight how much the U.S. dollar has changed since the era of gold-backed currency. I sought various inspirational photos of exaggerated bills (reference million dollar bill and Monopoly money). I even considered possibly incorporating the iridescent strip found on the U.S. \$100 bill and other international bills. However, I wanted to avoid creating a stagnant painting and sought to continue adding variation in the mediums used throughout the exhibition. I decided to focus more on the printing process rather than the image of the bill itself. To accomplish this goal, I had to design and construct a rudimentary print press.



Figure 14 - Million Dollar Bill

American Art Classics. (n.d.). *Traditional Million Dollar Bills*. Amazon. <https://www.amazon.com/American-Art-Classics-Set-500/dp/B00S41JE0U>



Figure 15 - Hasbro Monopoly Money

Hasbro. (n.d.). *Hasbro Monopoly Money*. Amazon. <https://www.amazon.com/Hasbro-28852-Monopoly-Money/dp/B00000IWCW>



Figure 16 - Five Euro Banknote

Kraft74. (n.d.). *Detail of 5 Euro Banknote with Anti-counterfeiting Holograms*.
Shutterstock. <https://www.shutterstock.com/image-photo/detail-5-euro-banknote-anticounterfeiting-holograms-1346614604>

2. Creation

Sourcing and constructing the mechanics of a print press was out of my area of expertise. I wanted to ensure a high-quality and durable product that could operate during the entirety of the two-week exhibition. I created a sketch of the original design and reached out to the engineering department and individual engineering students to find assistance in executing my vision. I got in contact with MTSU students Jack Geiger, Michael, and Eli, and they were willing to help me fine-tune the design and build the piece (last names excluded by request). I essentially let the team of engineers take creative liberty in the construction as I knew that structural changes might be needed to be done for functional purposes. Originally planning for an active print press, the team began designing stamping elements which consisted of a rolling pin filled with ink. Foam inlays would be saturated with ink and then rolled over paper to create the image of the bill. As the paper looped on itself, the stamped images would begin to overlap. The images would slowly become distorted until the bill was utterly unrecognizable.

However, despite much trial and error, the stamping element was unsuccessful, and the design needed to be pivoted to accommodate pre-stamped fabric rolls. After the team finished constructing the base and the mechanics, I took over sewing the fabric loops, creating the bill stencils, and fine-tuning the overall appearance of the machine.



Figure 17 - Federal Reserve Stencil Layers

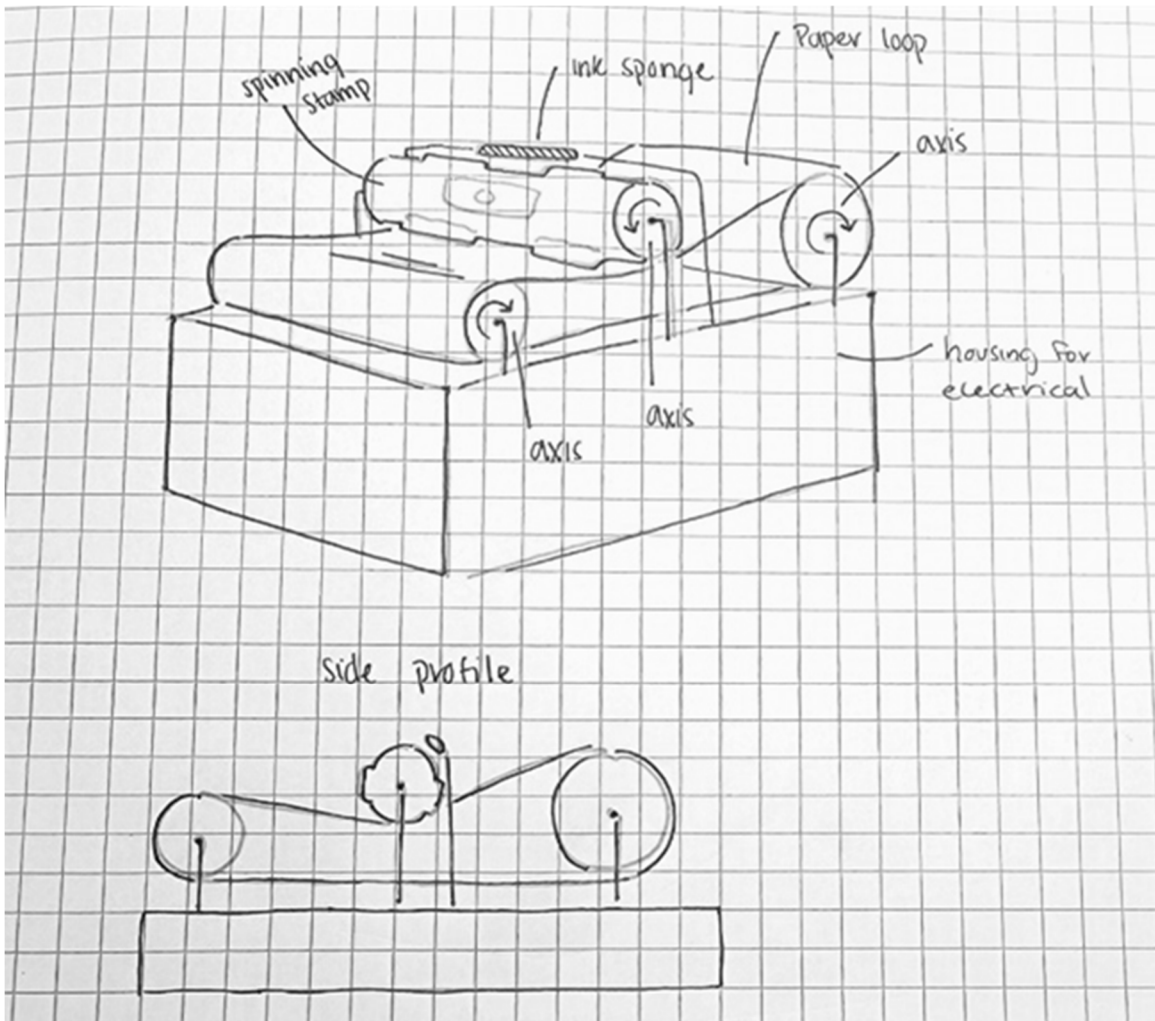


Figure 18 - Federal Reserve Design Sketch

To refinish the machine, I painted the frame supports black and covered the base in joint compound and textured spray paint. These changes were made to give the machine a tidier appearance and lean into the industrial aesthetic. I sewed multiple stretch cotton loops onto which the stencils were applied. Initially, I planned to display multiple fabric loops on the machine, each loop getting progressively more distorted. However, this approach would have required more frequent maintenance and would not allow the viewer to experience the entire progression in one visit. Instead, I chose to depict the progression on a single fabric loop. I referenced a dollar bill and simplified the image digitally to create the bill stencil. Dividing the image into separate colors, ranging from the lightest green to the near-black details, I imported these various stencil layers into the Silhouette Design Studio to convert the document into a vector file. After making the necessary adjustments to the file, I used a Silhouette vinyl cutter to create the stencils from a rigid vinyl sheet. I then weeded (removing all the unwanted vinyl) the three stencils and prepped them for stamping.

Using hand-mixed colors, I sponged the homemade ink onto the stretched fabric loop. I applied the ink in layers, starting with the lightest and least complex. As each layer dried, I continued applying details. I ensured that all the stamps lined up for the first bill in the cycle and created a clear image. However, as I progressed, I was much more relaxed with my stencil placement and encouraged errors by using more watered and less easily controlled ink. On the later bills, I layered on the stencils more heavily, moving the stencil lightly between applications. I added smears and splatters of ink to exaggerate the messiness of the final bills.

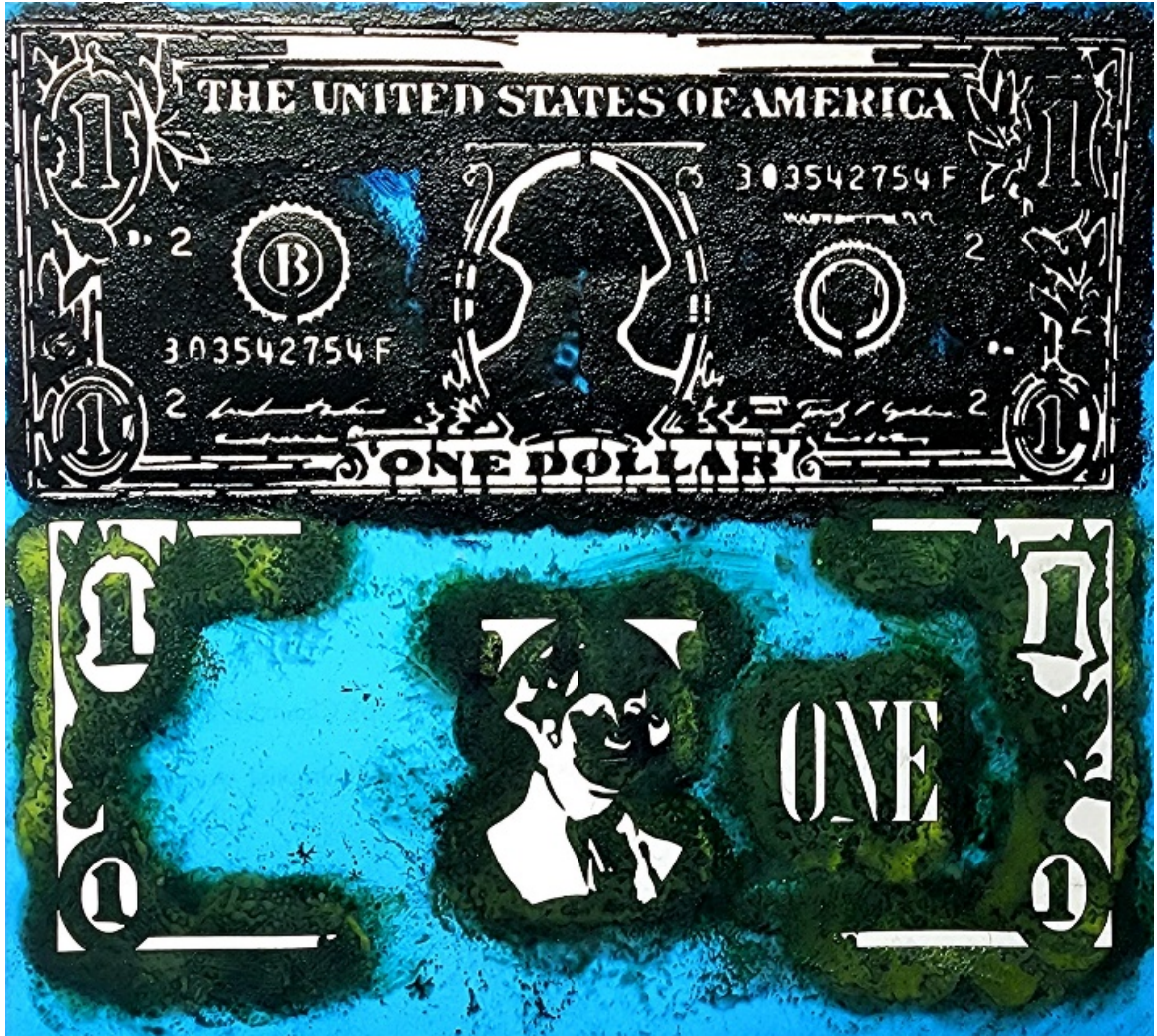


Figure 19 - Federal Reserve Stencil

3. Placard

FEDERAL RESERVE

Stencil Print on Cotton

Historically, paper bills were backed by a tangible material—typically gold. However, in the 1970s, the Federal Reserve and other foreign monetary agencies switched to fiat bills, a currency whose value is primarily determined by the holder's trust in the government that issued them. Fiat currency, specifically the printing of these bills, has been a topic of debate since its conception.

This instillation was largely constructed by E, M, and Jack Greiger. The frame and mechanics of this project could not have been completed without their time and expertise. Various plastic stencils were designed to create isolated components of the bill image.

Figure 20 - Federal Reserve Placard

4. Images



Figure 21 - Federal Reserve



Figure 22 - Federal Reserve Closeup

D. *Hash*

1. Meaning and Inspiration

When starting this project, Bitcoin mining was the most elusive subject. While I understood that the process was completed electronically and required large amounts of processing power, I knew very little about the science of mining and how computers created Bitcoin. When starting my research on Bitcoin mining, most of my attention was directed to the hash. Simply put, a hash is a formatted output. In the case of Bitcoin, it is a series of 64 digits. Regardless of the input length, Bitcoin hashes will be 64 digits, uniquely representing the input. Frankenfield explains the function of a hash in relation to the blockchain: “Hashes ... are used to ensure data contained in the blocks on a blockchain are not altered. The information ... is validated by network participants when they attempt to generate a hash less than the network target” (Frankenfield, 2023). Bitcoin miners use a series of complex equations to guess the hash. The Bitcoin network uses these attempts to validate the input. This process ensures that the information is unaltered and encrypted. The miners who successfully solve for the target hash ultimately earn the Bitcoin (Frankenfield 2023). While the complexities of the Bitcoin Blockchain can be intricate for even economists to explain, the mining process is relatively rudimentary. Miners are solving a puzzle with a narrowly tailored answer.

I used the fourth art piece in the series to explain the relationship between hashes and Bitcoin mining, making the information easily digestible for an audience that may

know little to nothing about cryptocurrency. I hoped to demystify Bitcoin and help the viewer understand more about a topic prevalent in current events.

2. Creation

When designing this piece, I hoped to keep the imagery as straightforward as possible. While I expected the artwork would be aesthetically pleasing, I wanted to prioritize its educational function. For this reason, I simply created a visual representation of a hash, a combination of 64 digits. While my "hash" was just a series of randomized letters and numbers rather than an encryption of a set input, the artwork was intended to represent this stage in the mining process rather than function as an actual encryption tool.

5	8	V	2	G	E	X	0
2	T	Z	X	L	0	X	J
T	5	G	H	8	M	F	N
F	N	T	8	Q	G	C	9
0	5	D	A	7	V	R	I
M	0	B	K	T	L	P	4
T	S	N	G	S	0	V	Z
N	3	U	K	1	W	G	I

Figure 23 - Hash Digital Grid 1

W	8	V	I	G	E	L	Y
2	T	Z	I	S	ø	X	J
T	5	G	H	8	7	F	N
F	N	W	8	Q	G	C	9
0	5	D	A	7	W	R	I
T	I	T	K	T	L	P	O
W	S	W	G	S	ø	V	Z
N	6	U	F	8	J	G	I

Figure 24 - Hash Digital Grid 2

Going into the project, I knew I wanted to incorporate a digital element to highlight cryptocurrency's much more sterile and electronic components in contrast to more organic currency forms seen in *The Pearl*. The most accessible way for me to incorporate digital elements was with a projector. As solving the hash requires the miners

to get as close as possible to the combination without going over, I wanted this artwork to simulate "errors" in the hash or unsuccessful attempts.

I first used random combination generators to produce a series of digits. I then used illustration software to display the 64-digit combination in an 8x8 grid. I tested different fonts for readability and aesthetics and changed some digits to improve the piece's overall composition. Once I had chosen a combination and font, I projected the image onto a 4ft x 4ft piece of hardwood primed with gesso. The projector and board had to be completely level to ensure no warping or distortion of the projected image. I then lightly outlined each of the letters using the projection. I hand-painted each of the letters using red acrylic paint.

After completing the painting, I returned to work on the digital element. I made the projected image black and blurred the edges of the digits to help disguise any variation between the projected image and the painted image. I then saved 64 images in which one digit was erased. I randomized the order of the images and created a video that displays each image for one second. I looped the footage to create a 30-minute copy that could be displayed in the exhibition. When projecting the video over the painting, one digit is highlighted as the projection is blank in that area. As the video cycles, the highlighted digit changes, exposing a potential "error."

Because of the complex nature of the subject, I relied heavily on the placard to give the artwork context and explain the components of the piece. As stated above, I anticipated this piece to have an educational focus, so I wanted to provide adequate

background for the viewer to engage with the artwork. For this reason, I defined a hash and briefly described the mining process alongside the art piece.



Figure 25 - Hash Progress 1



Figure 26 - Hash Progress 2

HASH

Acrylic on Hardboard

Bitcoin is one of the most notable cryptocurrency ecosystems. The "mining" of Bitcoin is fundamental to the currency's value and maintaining the quantity in circulation. However, this technological mining no longer needs pickaxes and hard hats. This form of mining needs graphics processing units. The mining process can be simplified down to a puzzle in which the miners create complex equations to solve for a specific combination of 64 letters and digits—a hash. Ultimately, the closest calculation, while not going over, wins.

This installation is comprised of two parts—an acrylic painting on a hardboard and a video projection of an identical image. The projection changes to highlight the individual characters and potential errors in the hash.

Figure 27 - Hash Placard

4. Images



Figure 28 - Hash Base Painting



Figure 29 - Hash with Projection

E. *Bored Ape Yacht Club*

1. Meaning and Inspiration

For the final piece in the exhibition, I wanted to depict the extremes of modern currency and open discussion about the uncertain future of cryptocurrency and its byproducts. For this reason, I focused my attention on NFTs. While NFTs are not a form of currency by strict definition, the digital files are backed by cryptocurrency, typically Ethereum (Conti 2022). As Henderickson discussed, NFTs exacerbate a problem already present in the art dealing world by making these transactions and authenticity less traceable (2021). Additionally, the platform allows users to post NFTs that are digital files of tangible artwork (i.e., a picture of a painting). The most notable NFT series during the platform's birth was the Bored Apes Yacht Club, a series of digital illustrations and videos created by Yuga Labs, LLC. Despite the series' success, many art critics and consumers question the artistic value of the illustrations. To poke fun at the series' arguably unaesthetic nature, I created my own version of a Bored Ape. Referencing classical French paintings and photography of chimpanzees, I painted a fine art counterpart to the colorful illustrations.

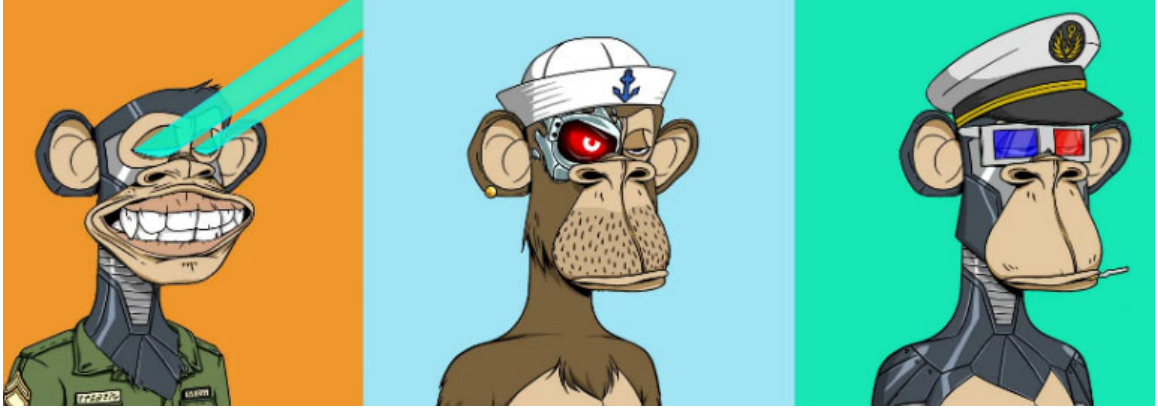


Figure 30 - Bored Ape Yacht Club Inspiration

Bored Ape Yacht Club. (n.d.). <https://boredapeyachtclub.com/#/home>

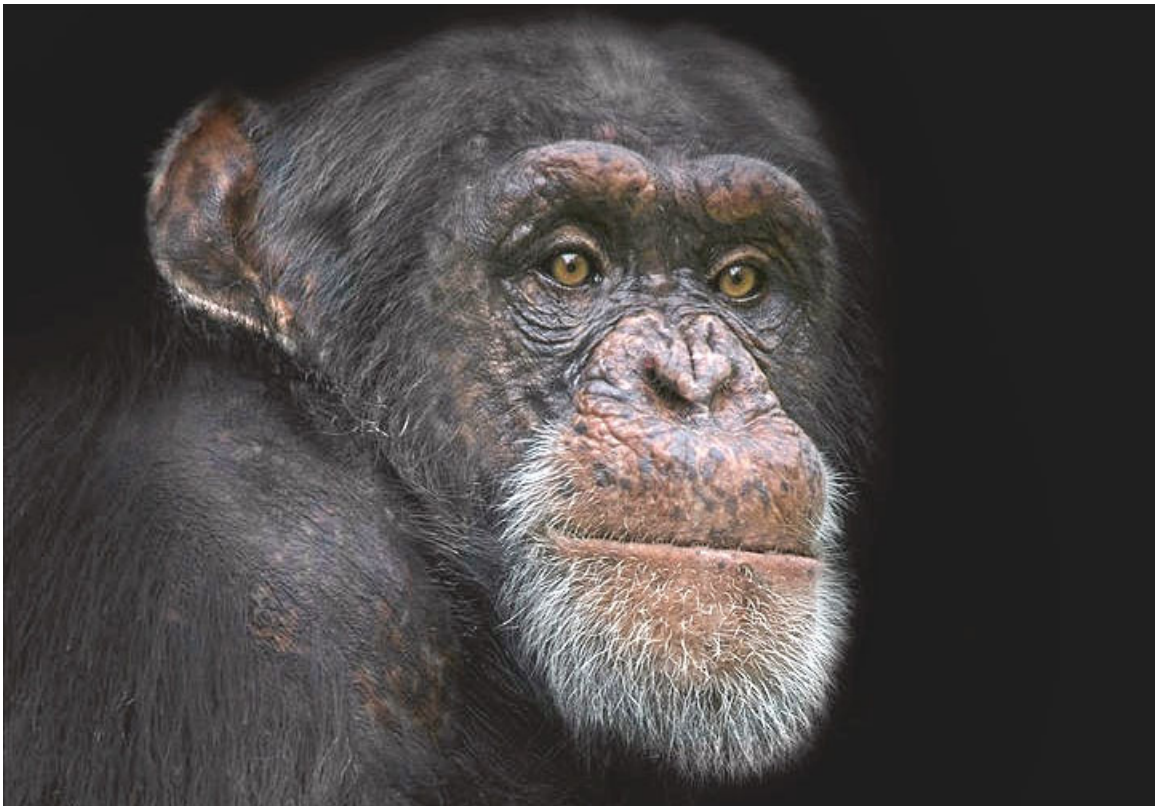


Figure 31 - Chimpanzee Portrait

Rawshutterbug. (2019, October 21st). *Chimpanzee Portrait*. Fine Art America. <https://fineartamerica.com/featured/chimpanzee-portrait-rawshutterbug.html>



Figure 32 - Baron Joseph-Pierre Vialès de Mortarieu

Ingres, J. A. D. (n.d.). *Baron Joseph-Pierre Vialès de Mortarieu*. Useum.
<https://useum.org/artwork/Untitled-Jean-Auguste-Dominique-Ingres-1805-1>

2. Creation

Oil painting is typically my area of personal interest. I planned to use this piece to expand my skillset with the medium and fine-tune my technique. I began the piece with an underpainting, a monochrome base layer of paint designed to set values and plan the overall composition. I chose to use a burnt orange color for my underpainting as any amount shown in the final product would bring warmth to the subject and contrast nicely with the anticipated background colors. I used mineral spirits to remove excess pigment and define the lightest values.

I then applied body color or a layer of color-accurate, opaque paint. When applying the body color, the painting can easily lose value or color variation. Glazes, pigment mixed with a transparent medium, can reinforce values, change the hue, or adjust the saturation below without outright repainting the area. I applied glazes over the piece to give the subject a lifelike appearance and create more depth. After fine-tuning the values and colors, I added details such as hair and wrinkles with fine liner brushes. I chose to keep the background rough and painterly to contrast the more refined subject. I included a small sailboat in the background to exaggerate the "Yacht Club" theme.

When the painting was completed, I wrapped the whole piece in plastic to protect the oil paint from dust and debris. Oil paint can take months to dry fully, so this piece was the first one that I completed in the series. After four months of drying, I applied a glossy varnish designed to both protect the paint and unify the finish, as oil paint can go dull in spots where excessive mineral spirits are used or where the canvas was improperly

primed. I covered the piece in plastic the month before the exhibition to avoid debris binding to the uncured varnish.



Figure 33 - Bored Ape Yacht Club Progress 1



Figure 34 - Bored Ape Yacht Club Progress 2

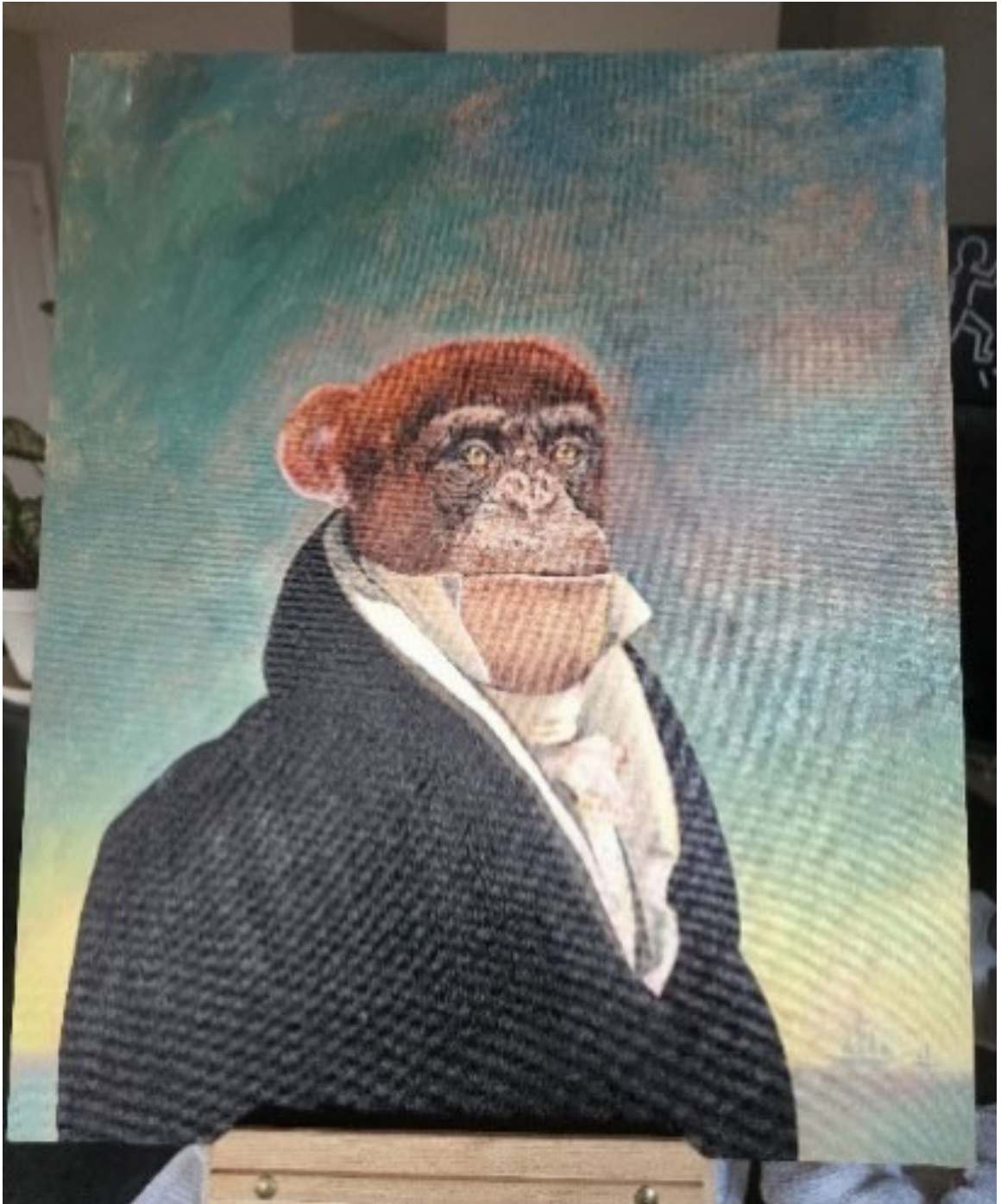


Figure 35 - Bored Ape Yacht Club Progress 3

3. Placard

BORED APE YACHT CLUB

Oil on Canvas

The Bored Ape Yacht Club is a series of NFTs (Non-Fungible Tokens) depicting ape illustrations in unique colors, outfits, and scenery. The series gained significant popularity at the beginning of the NFT movement, but it has also been the source of controversy as investors have fallen victim to fraud and theft. The rise of NFTs has sparked discussion of the definition of ownership, the limits of copyright laws, and the financial nature of the artwork.

This piece was completed in oil paint on canvas board. Traditional oil painting techniques were applied.

Figure 36 - Bored Ape Yacht Club Placard

4. Images



Figure 37 - Bored Ape Yacht Club

III. Exhibition

A. Gallery Space

To display the exhibition, I needed to reserve a gallery space. Ideally, I wanted the collection displayed on campus in a high-traffic area. I reached out to the Todd Art Gallery as I had previously displayed a solo exhibition in one of their gallery spaces. After contacting Eric Snyder, the Gallery Coordinator at the Todd Hall, I received blueprints of each gallery space. I chose the Glass Gallery as it is spacious, and the glass front allows the artwork to be viewed from the hall, attracting visitors.

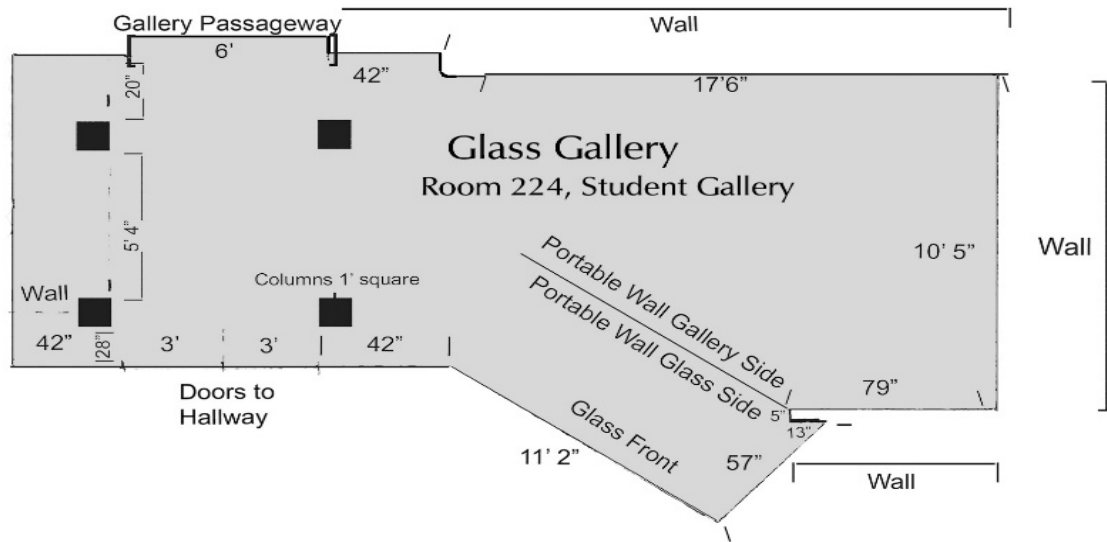


Figure 38 - Glass Gallery Blueprint

Department of Art and Design | Middle Tennessee State University. (n.d.).
<https://www.mtsu.edu/art/gallery-layout.php>

B. Production Schedule

April 11th, 2022: Submit Revised Proposal and Student Assessment

April 11th, 2022: Reserve Gallery Space at Todd Art Gallery

April 18th, 2022: Conclude Primary Research Component

May 9th, 2022: Complete Concept Art and Concept Notes

May 16th, 2022: Purchase Art Materials or Necessary Programming

May 17th, 2022: Start First Art Piece

June 7th, 2022: Submit First Piece to Advisor for Check-in

June 21st, 2022: Complete First Art Piece

June 22nd, 2022: Start Second Piece

July 13th, 2022: Submit Second Piece to Advisor for Check-in

July 27th, 2022: Complete Second Art Piece

July 28th, 2022: Start Third Art Piece

August 18th, 2022: Submit Third Piece to Advisor for Check-in

September 1st, 2022: Complete Third Art Piece

September 2nd, 2022: Start Fourth Art Piece

September 23rd, 2022: Submit Fourth Piece to Advisor for Check-in

October 7th, 2022: Complete Fourth Art Piece

October 8th, 2022: Start Fifth Art Piece

October 29th, 2022: Submit Fifth Piece to Advisor for Check-in

November 7th, 2022: Enroll in UH 4950

November 12th, 2022: Complete Fifth Art Piece

November 13th, 2022: All Pieces are Complete and Drying (if applicable)

January 20th, 2023: Hang up Exhibition Flyers

January 27th, 2023: Set up Gallery Space

January 28th, 2023: Opening Reception for Exhibition

January 28th – February 8th, 2023: Display Art Pieces in Reserved Gallery Space

February 9th, 2023: Take down Exhibition.

February 11th, 2023: Message visitors and collect Feedback Surveys

This timeline was subject to change as some art pieces required more revisions. Some art pieces inevitably took longer than anticipated due to how difficult the concept is to execute, the nature of the materials used, or my inexperience with the medium. Once the exhibition dates were committed, the flexible dates in this timeline were shifted to accommodate. I attempted to stay within the bounds of this timeline as much as possible and limit delays. By doing so, I reserved roughly two months of additional time to refine any artwork, create promotional content, and construct display-related materials. During

this time, promotional materials were distributed to advertise the show. Flyers were displayed across campus, and digital invitations were emailed and shared on social media platforms.

C. Promotional Materials

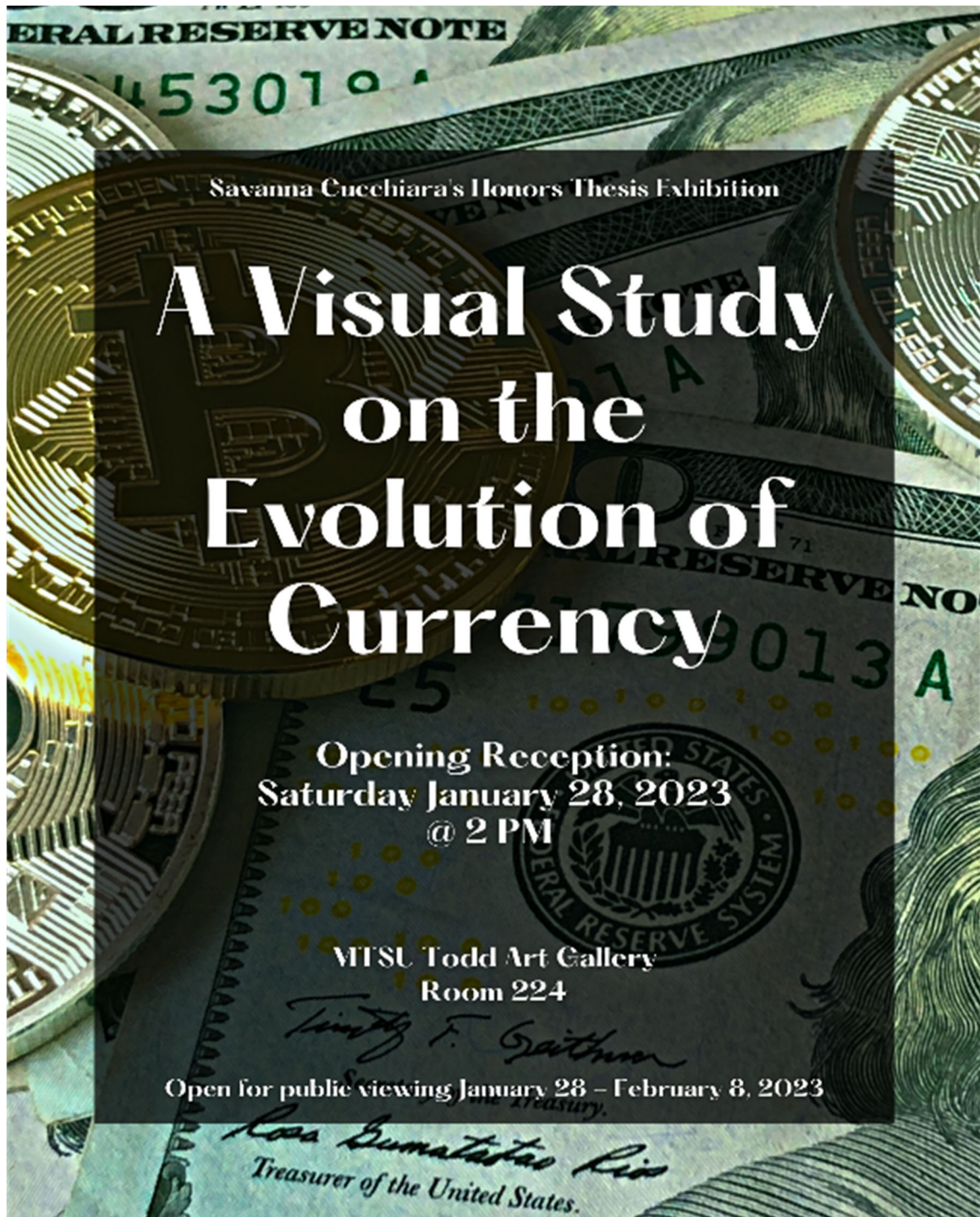


Figure 39 - Exhibition Flyer 1

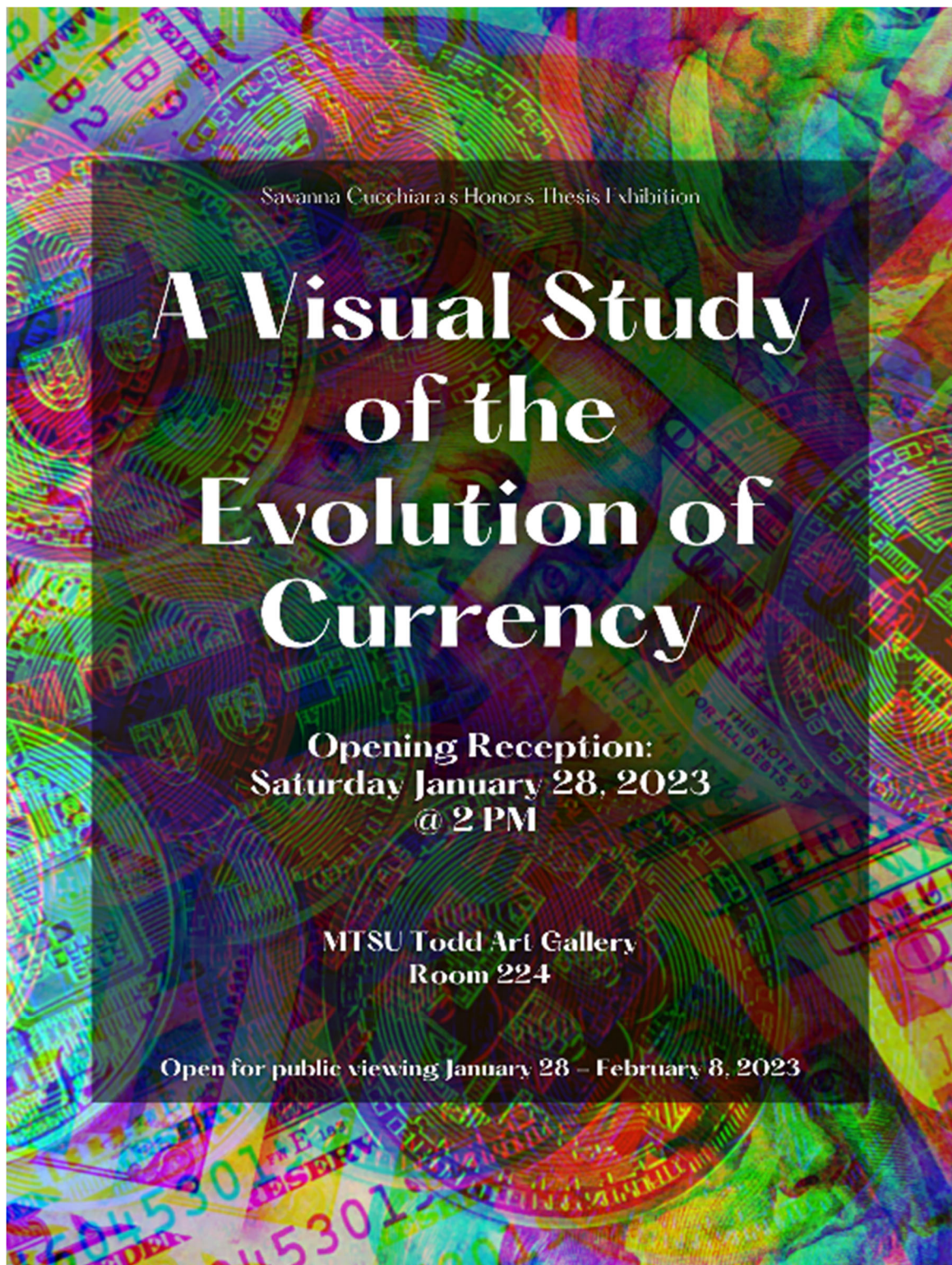


Figure 40 - Exhibition Flyer 2

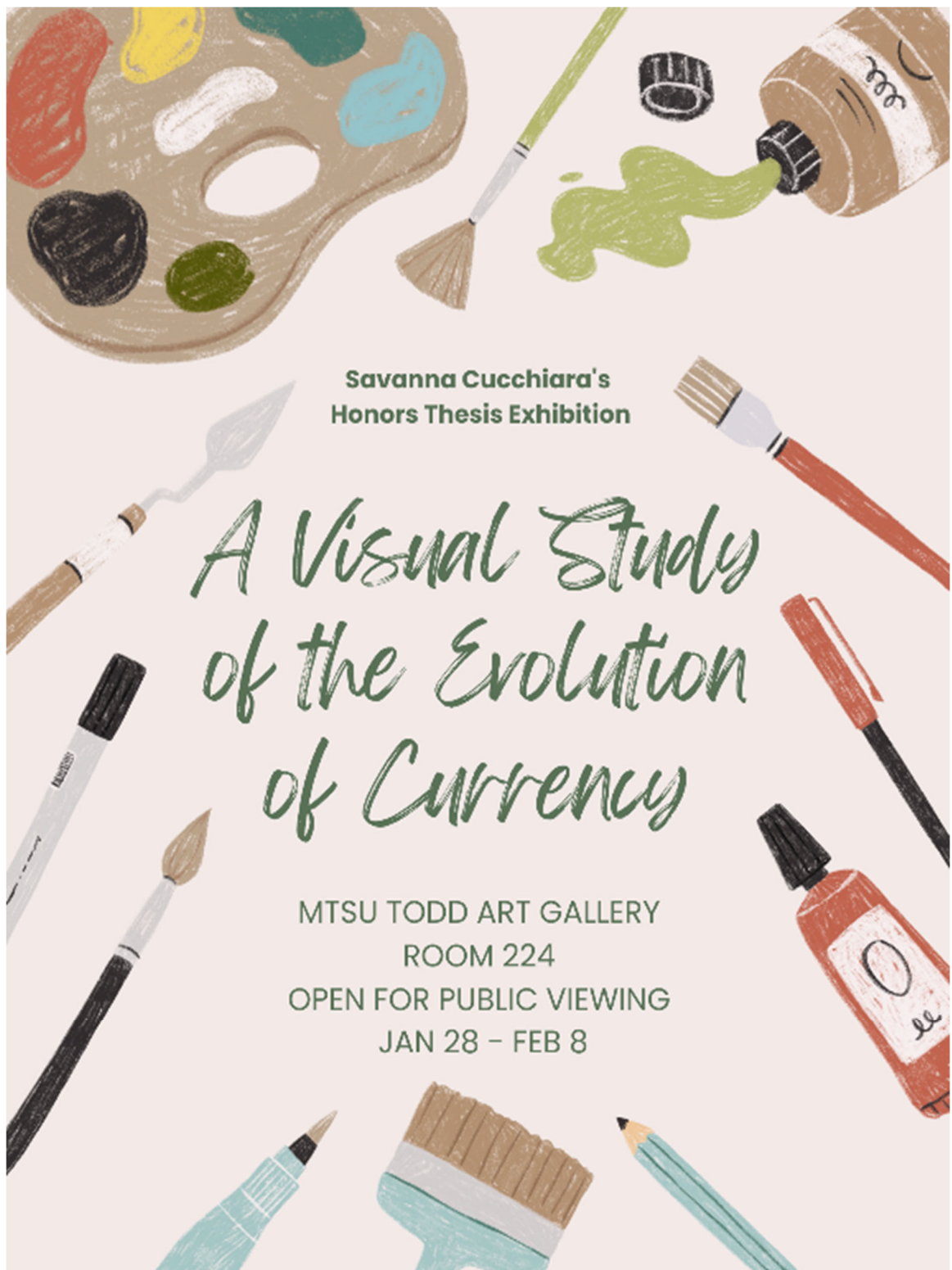


Figure 41 - Exhibition Flyer 3

SAVANNA CUCCHIARA'S HONORS THESIS EXHIBITION

A VISUAL STUDY OF THE EVOLUTION OF CURRENCY

OPEN FOR PUBLIC VIEWING
JAN 28 - FEB 8, 2023

OPENING RECEPTION:

DATE : 01.28.2023 2PM

PLACE : MTSU TODD ART
BUILDING ROOM 224

LOCATION

542 Old Main Circle, Murfreesboro, TN 37132

PHONE

615-605-9911



Figure 42 - Exhibition Flyer 4

A Visual Study on the Evolution of Currency

SAVANNA CUCCHIARA

What is currency? While this appears to be a straightforward question with a straightforward response, the concept of currency has been stretched far past the images of dollar bills and pennies you initially think of. The discussion of Bitcoin, the validity of cryptocurrency, and the economic impact of "mining" have brought this discussion to the forefront of people's minds and the desks of monetary policymakers.

This exhibition tracks the progression of currency, ranging from the foundation of currency with trading metals and early coinage to the complexities of cryptocurrency today. The evolution of currency's form, function, and utility inspires a visual analysis that summarizes these advancements and initiates a conversation on the future of monetary policy and the public's relationship with money.

Savanna Cucchiara is a Senior at MTSU completing her degree in Business Administration. Using the Honor's Thesis requirement as an opportunity to rekindle her love of art, Savanna used this exhibition as a means of exploring new visual mediums and topics with contemporary applications. Savanna's artwork has been displayed in the Todd Art Gallery, Rutherford County Exhibitions, as well as the Frist Art Museum.



Please complete this visitor survey and let us know what you thought about the show!

For more content, visit @Dagnabbit_ on Instagram.

Figure 43 - Exhibition Overview Placard

D. Set-Up

Before the set-up date, the final display materials had to be constructed and collected. The frame for *Bored Ape Yacht Club* was sourced, while the frame for *Hash* had to be handmade using 2in x 2in boards finished with acrylic paint. The most complex display feature in the show was the projector. Ensuring that the projector was level with the painting was a challenge. I also had to position the projector at the same distance it had been placed to trace the original projection. If not, the images would not correctly line up.

To achieve this goal, a custom pedestal was built to house the projector and display *The Pearl*. Designed to match the other pedestals in the gallery, the base was made from MDF panels covered in orange peel spray and white paint. The video file was played through a projector borrowed from the Todd Gallery. Both the position of the canvas and the projector had to be carefully aligned once the projection was on.

The other set-up challenge was securing *Two Sides* firmly to the wall. As the piece was designed to be touched, I wanted to leave no chance of the piece wobbling or falling from the wall. However, the fabric made securing the base to the wall difficult, as the spandex would bind around the drill or screw. Each screw had to be carefully inserted not to damage the power tool and to not tear the fabric in any way that would be visible to the viewer.

The remaining pieces were positioned on their respective pedestals or hung using picture frame wire and nails. The display placards were printed on light cardstock so that

they could be hung with tacky putty. A binder full of sign-in sheets was provided under the placard of the exhibition overview.

IV. Evaluations

A. Visitor Survey

The viewers had the opportunity to evaluate the final exhibition. These evaluations were completed by accessing a Q.R. code inside the gallery space linked to the Google Forms Survey. The Visitor Survey allowed the viewer to rate attributes of the exhibition, such as aesthetics, cohesiveness, interest, context, and takeaway, on a scale of 1-5. The surveys also allowed the viewer to leave comments or critiques of the exhibition.

Following the exhibition, I sent emails thanking all the visitors who left their contact information. In these emails, I attached photos of the exhibition and a link to the survey for those unable to complete it in the gallery space. Note that the gallery space had poor service, limiting visitors' ability to complete the survey. The ratings and responses were completely anonymous and voluntary.

Of the seventy-plus visitors, seventeen submitted survey responses. This turnout was expected due to the voluntary nature of the survey and the poor service in the gallery space. Fifteen responses were submitted during the exhibition dates; two were submitted following my email. Due to the number of documents shared in the email, the images and survey had to be shared through links rather than embedded in the email. Because of this, some visitors may have been deterred from submitting a response.



B. Questions

Visitor Survey

A Visual Study on the Evolution of Currency

Thank you for visiting the exhibition!

This visitor's survey is anonymous and voluntary. The responses will be used to gauge the success of the exhibition and provide feedback to guide future improvements. We appreciate your time in writing thoughtful responses.

 **scucchiara01@gmail.com** (not shared) [Switch account](#) 

* Required

Aesthetics of Exhibition *

1 2 3 4 5

Not aesthetically pleasing. ☐ ☐ ☐ ☐ ☐ Very Aesthetically pleasing.

Cohesiveness of Exhibition *

1 2 3 4 5

The artwork does not work together. ☐ ☐ ☐ ☐ ☐ The artwork compliments each other.

Figure 44 - Visitor Survey Image 1

Interest in the Exhibition *

This exhibition was not interesting. 1 2 3 4 5 The exhibition was very interesting.

☐ ☐ ☐ ☐ ☐

Context of Exhibition *

This exhibition provided no context for the artwork. 1 2 3 4 5 The exhibition provided sufficient context to interpret artwork.

☐ ☐ ☐ ☐ ☐

Takeaway of Exhibition *

I learned nothing from this exhibition. 1 2 3 4 5 I learned many things from this exhibition.

☐ ☐ ☐ ☐ ☐

Open Feedback - Please provide specific elements that you enjoyed from the exhibition or areas of potential improvement.

Your answer

Figure 45 - Visitor Survey Image 2

C. Voluntary Feedback

Aesthetics of Exhibition

17 responses

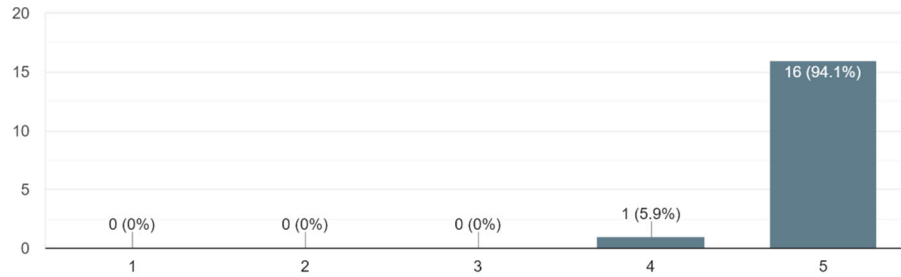


Figure 46 - Feedback Question 1

Cohesiveness of Exhibition

17 responses

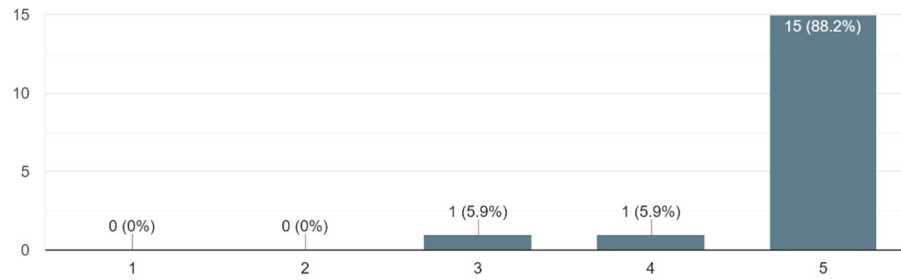


Figure 47 - Feedback Question 2

Interest in the Exhibition

17 responses

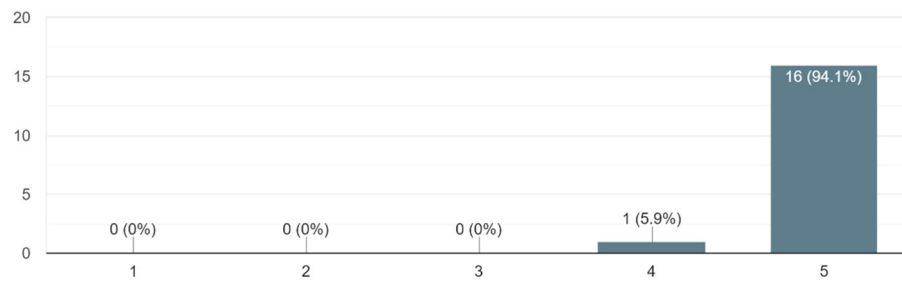


Figure 48 - Feedback Question 3

Context of Exhibition

17 responses

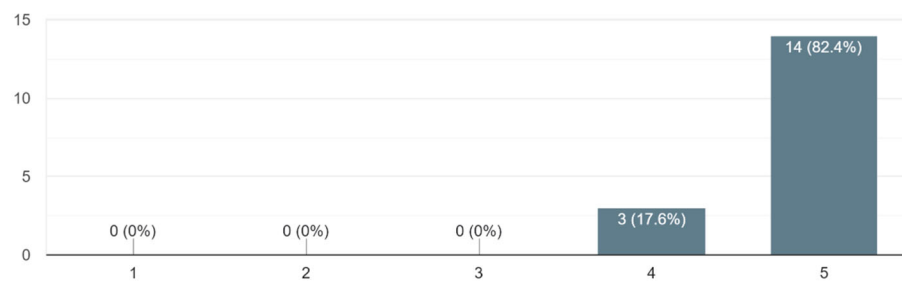


Figure 49 - Feedback Question 4

Takeaway of Exhibition

17 responses

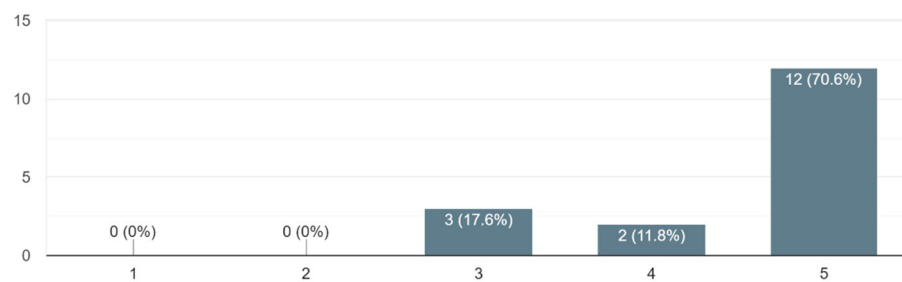


Figure 50 - Feedback Question 5

V. Conclusions

Overall, I would consider this a successful project as I met the goals that I set out to accomplish: bringing awareness and educating viewers about currency and related contemporary issues, acquiring creative skills, familiarizing myself with new mediums or modes of artmaking, and displaying a completed exhibition to showcase the artwork. In completing this written report, I have also successfully bridged this endeavor's academic and creative components.

While I am pleased with the ultimate product, the process and the feedback provided by visitors highlighted areas of improvement that I would like to focus more attention on in future exhibitions. I essentially completed this project independent of creative mentorship. The artwork could have been improved with more participation or guidance from experts in the respective crafts. I also believe that the overall cohesiveness and composition of the show could be improved by exposing my artwork to critique throughout the creative process.

In retrospect, I feel that the viewer would have also taken more from the exhibition if I had shifted my goal from education to advocacy. I tried to remain relatively noninflammatory with the artwork. Still, viewers often interact more with artwork that creates an immediate emotional response or raises more pertinent questions. While economics and the study of currency are personal topics of interest, the art pieces could have been framed in a way that connected them more clearly to contemporary issues.

As with most projects, I wish that my time was managed better. Nearly every art piece exceeded the allotted time. Broadly, this scheduling discrepancy is because I was balancing an involved creative thesis, full-time coursework, a job, and other responsibilities. However, I should have reduced my scale, extended my timeline, or switched to more familiar mediums to allow each piece to receive the full attention and exploration it deserved.

Starting this project last spring, this creative thesis has been one of the longest-running collections of artworks I have completed. I have spent a year cultivating these skills and creating these art pieces to represent my research. Projects such as these remind me of my potential as a scholar and artist. While I hope this project inspires some viewers to research further into the subject of currency, on a larger scale, I hope this interdisciplinary project motivates viewers to combine personal interests in unlikely ways and expand the possibilities.

VI. References

American Art Classics. (n.d.). *Traditional Million Dollar Bills*. Amazon.

<https://www.amazon.com/American-Art-Classics-Set-500/dp/B00S41JEOU>

Bored Ape Yacht Club. (n.d.). <https://boredapeyachtclub.com/#/home>

Conti, R. (2022, February 15th). *What Is An NFT? Non-Fungible Tokens Explained*.

Forbes Advisor. Retrieved March 22nd, 2022, from

<https://www.forbes.com/advisor/investing/nft-non-fungible-token/>

Department of Art and Design | Middle Tennessee State University. (n.d.).

<https://www.mtsu.edu/art/gallery-layout.php>

Edward III Gold Noble. (n.d.). Bullion by Post.

<https://www.bullionbypost.co.uk/collectible-coins/gold-noble/edward-iii-gold-noble/>

Frankenfield, J. (2023, February 12th). *What Is a Hash? Hash Functions and*

Cryptocurrency Mining. Investopedia.

<https://www.investopedia.com/terms/h/hash.asp>

Freshwater Pearls. (n.d.). Pearls of Joy. <https://www.pearlsofjoy.com/blogs/blog/real-pearls-vs-cultured-pearls>

Friedman, M. (Guest). (2006, August 28th). Milton Friedman on Money [Audio podcast episode]. In *Econtalk*. Spotify,

<https://open.spotify.com/episode/7CR5MVh9pUNeSDTWzXD2iE?si=S0ZKby98RJOGH29okZZcow>

GOLD PENNY OF HENRY III. (1874). *American Journal of Numismatics, and Bulletin of the American Numismatic and Archaeological Society*, 8(4), 80–80.

<http://www.jstor.org/stable/43586082>

Hasbro. (n.d.). *Hasbro Monopoly Money*. Amazon. <https://www.amazon.com/Hasbro-28852-Monopoly-Money/dp/B00000IWCW>

Hazlett, P. K., & Luther, W. J. (2020). Is bitcoin money? And what that means. *The Quarterly Review of Economics and Finance*, 77, 144–149.

<https://doi.org/10.1016/j.qref.2019.10.003>

Hendrickson, J. (2021, December 30th). *What is the Deal with NFTs?* Economic Forces. Retrieved February 10th, 2022, from https://pricetheory.substack.com/p/what-is-the-deal-with-nfts?utm_campaign=post&utm_medium=web&utm_source=url

Ingres, J. A. D. (n.d.). *Baron Joseph-Pierre Vialètès de Mortarieu*. Usum.

<https://useum.org/artwork/Untitled-Jean-Auguste-Dominique-Ingres-1805-1>

King Henry III Gold Pennies. (n.d.). Mirror. <https://www.mirror.co.uk/news/uk-news/first-ever-english-gold-coin-11753688>

Kraft74. (n.d.). *Detail of 5 Euro Banknote with Anti-counterfeiting Holograms*.

Shutterstock. <https://www.shutterstock.com/image-photo/detail-5-euro-banknote-anticounterfeiting-holograms-1346614604>

Lanchester, J. (2019, July 29th). *The Invention of Money*. The New Yorker. Retrieved February 10th, 2022, from

<https://www.newyorker.com/magazine/2019/08/05/the-invention-of-money>

- Livera, S. (2019, September 5th). *Carl Menger on Currency Durability: A Lesson on Cryptos?* Mises Institute. Retrieved February 10th, 2022, from <https://mises.org/wire/carl-menger-currency-durability-lesson-cryptos>
- Menger, C. (1892). On the Origins of Money (C. A. Foley, Trans.). *Economic Journal*, 2, 239–255. https://cdn.mises.org/On%20the%20Origins%20of%20Money_5.pdf
- Rare Natural Purple Pearl from Texas 3.50 carats.* (n.d.). Kari Pearls. <https://www.karipearls.com/rare-natural-purple-pearl-from-texas-350-carats.html>
- Rawshutterbug. (2019, October 21st). *Chimpanzee Portrait*. Fine Art America. <https://fineartamerica.com/featured/chimpanzee-portrait-rawshutterbug.html>
- Ultimate Paper Mache. (2019, January 6th). *Make Paper Mache Clay Smooth Without Sanding* [Video]. YouTube. <https://www.youtube.com/watch?v=Ad2iLa201kA>
- Yermack, D. (2015). Is bitcoin a real currency? An economic appraisal. In D. L. K. Chuen (Ed.), *Handbook of digital currency* (pp. 31–43). Academic Press.
- Yuga Labs. (2021, July 30th). *Bored Ape Yacht Club*. The New Yorker. <https://www.newyorker.com/culture/infinite-scroll/why-bored-ape-avatars-are-taking-over-twitter>