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Do you remember the sun...?

Travis Dodd

DO YOU REMEMBER THE SUN…?

by

TRAVIS DODD

Under the Direction of Jill Frank

ABSTRACT

Do you remember the sun…? is an interdisciplinary installation that explores gold's function as a utilitarian material within technology. Once reserved for the Gods, gold can now be found within the circuitry of cutting-edge space exploration technology or plated against the surface of mundane consumer electronics. Gold's utilitarian shift away from adornment and capital began in the 1970s when digital technology first entered the home. First-generation personal computers and video game systems, both latent with gold, allowed access to new interactive virtual worlds that would evolve into technologies that currently dominate culture and society. The imagery of *Do You Remember the Sun…?* documents gold's fall from grace by showcasing the extraction and refinement of gold from this first wave of interactive digital technology.

INDEX WORDS: Gold, Refining, E-waste, Video games, Technology, Fantasy, Sun

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TRAVIS DODD

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DEDICATION

For Mom, forever and always.

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A heartfelt thank you to my committee, Jill Frank, Jeremy Bolen, Kate Cunningham, and Craig Dongoski whose dedication and patience created an atmosphere where I could thrive.

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1 INTRODUCTION

Human civilization evolved in tandem with the ability to excavate and manipulate the raw materials of the Earth. Harnessing the properties of stone, metal, and silicon has led to the technologies that have shaped the way we live.[1] Of these raw materials, gold has proven to be a persistent influence on our collective existence. Divinity, power, death, and wealth are all historical outcomes of its accumulation. Before the 1970s, our cultural and societal relationship with gold consisted of symbolic adornment and financial capital. During the seventies, however, the consumer electronics industry began to engineer digital systems that required circuitry to be malleable, non-corrosive, and efficient at conducting low currents of electricity. As a result, the industry started incorporating gold-plated circuitry into its products to fulfill these requirements. From this point on, gold expanded its influence on culture and society as a utilitarian material. Gold's immortal aura, once a symbol reserved for the gods, was now being used to protect the functionality of electronic gadgets.

Simultaneously, the first wave of personal computers and video game consoles, latent with gold, made their way into domestic life. Marketing campaigns pushed these digital systems as the future of home management, entertainment, and play. Despite their availability, personal computers were financially out of reach for most families, and their functionality within the home was still in its infancy. Conversely, video game consoles were less expensive and augmented the already established television experience. An early slogan of Atari was "Don't watch TV tonight Play it!".[2] This type of marketing found an audience eager to invest and

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[1] Nicole Boivin and Mary Ann. Owoc, *Soils, Stones and Symbols: Cultural Perceptions of the Mineral World* (Routledge, 2012), 1.

[2] Michael Z. Newman, *Atari Age: The Emergence of Video Games in America* (Cambridge, MA: The MIT Press, 2017), 68.

integrate with the virtual. Brands such as Atari, Magnavox's Odyssey, Fairchild, and Mattel's Intellivision transitioned glass cathode-ray tube (CRT) television screens from passive forms of entertainment into interactive devices.[3] Joysticks and trigger buttons allowed a player to control light and sound through a variety of games ranging from Space Invaders to an Olympic simulation in Decathlon. A new mode of pleasure was born from interacting with these new virtual spaces. Corporations and marketing firms quickly realized the potential video games had to improve their bottom line. And with that, the console war began.[4]

Technological innovation and obsolescence are inseparable. Research and development departments forecast trends and test prototypes with the latest upgrade around the corner. In the case of video games, the next gaming system always promises better graphics, superior games, improved sound, and state-of-the-art hardware. For example, the Atari 2600 game console sold 10 million units between 1977-1982.[5] Atari was the clear leader of the game industry. However, in 1985, the Nintendo Entertainment System was released. Millions of gamers looking for a more immersive experience ditched their Atari systems in favor of Nintendo's latest technology.

This transition from 1st to 2nd generation gaming systems contributed to a waste stream of obsolescent technology known as electronic waste (e-waste). As a result, out-of-date gaming systems and their gold-plated circuitry became trash. In this context, gold was now garbage; the same material that historically caused war, genocide, and sustained economies, was now thrown away, forever gleaming in a waste-filled dump.

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[3] Richard Stanton, *A Brief History of Video Games* (Robinson, 2019).

[4] *Console Wars*, directed by Blake J. Harris and Jonah Tulis. (United States: Legendary Television, 2020).

[5] Stanton, *A Brief History of Video Games*, 51.

2 GOLD

A kilonova is a rare astronomical event produced when two neutron stars collide.[6] The resulting impact is a fierce display of power and creation. Gama-rays and gravitational ripples rocket through space, leaving an immense dust cloud in their wake. Within this cloud, an extreme environment exists where neutrons undergo reactions forging gold into existence.[7] In 2017, a binary neutron star collision was observed for the first time.[8] Analysis of this collision and the stars subsequent merger provided the science community with data confirming the mechanisms behind gold's creation. Hsin-Yu Chen, a postdoc in MIT's Kavli Institute for Astrophysics and Space Research, who studied the gold content of the 2017 collision, remarked, "The magnitude of gold produced in the merger was equivalent to several times the mass of the Earth."[9] One such collision billions of years ago dusted Earth's planetary foundation, solidifying gold's influence on human culture and society.

Gold has symbolized power and immortality throughout human history while creeping its way into multiple human rituals and institutions. From gold-encrusted cathedrals to finance systems to small tokens of love, gold activates our human impulses of control, greed, and desire. The pursuit of gold intoxicates and possesses its seeker; human conquest, annihilation, and dominance have resulted from its cultivation. The accumulation and dissemination of gold throughout human history has created a network of supply chains that has and continues to

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[6] Sean Potter, "NASA Missions Catch First Light from a Gravitational-Wave Event," NASA (NASA, October 16, 2017), https://www.nasa.gov/press-release/nasa-missions-catch-first-light-from-a-gravitational-wave-event.

[7] Ibid.

[8] Ibid.

[9] Jennifer Chu | MIT News Office, "Neutron Star Collisions Are a 'Goldmine' of Heavy Elements, Study Finds," MIT News | Massachusetts Institute of Technology, accessed November 21, 2021, https://news.mit.edu/2021/neutron-star-collisions-goldmine-heavy-elements-1025.

destroy the environment and damage the bodies of those who mine and refine gold. Over time, these supply chains evolved to support gold's specific function within a certain point in history. In the Epilogue of Peter L. Bernstein's, *The Power of Gold*, he reduces gold's functionality within society into two categories: adornment and money.[10] While this is true, the work in *Do you remember the sun…?* (DYRTS) explores a third category - utility.

The consumer electronics industry began its rise to power in the mid-20th century. Improvements in electronic engineering, circuit board printing, and chemical electroplating of nickel, copper, and gold all contributed to a more efficient product. The utilitarian use of gold plating on circuitry protects vital components from corrosion, preserving their functionality. Gold is also an efficient conductor of electricity and allows the transmission of tiny bits of information to pass throughout a device. As a result, electronic Engineers, CEOs, executive board members, and investors could rest assured knowing that their product's circuitry would perform routinely. The electronics industry's technological and manufacturing innovations produced a watershed moment during the 1970s where cost, functionality, and status would be marketed to a rising middle class eager to buy the latest gadget.

In November of 1976, the Fairchild VES (Video Entertainment System) was released.[11] The Fairchild was the first cartridge-based home video game system and sold over 250,000 units during its first year of production.[12] However, the Fairchild's ascension to the top of the gaming industry would be short-lived. The Atari VCS (Video Computer System) was launched less than a year later and quickly eclipsed the total sales of the Fairchild in just 4 four months.[13] Atari

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[10] Peter L. Bernstein, *The Power of Gold: The History of an Obsession* (New York: John Wiley, 2000), 368.

[11] Stanton, *A Brief History of Video Games*, 49.

[12] Ibid, 50.

[13] Ibid, 51.

quickly became the leader of the gaming industry and would hold that honor until Nintendo released its Nintendo Entertainment System (NES) in 1985. The NES was a massive upgrade to any gaming system available. Its innovative graphics, cutting-edge hardware, and iconic characters such as Mario and Zelda would lead the company to sell 61.1 million units globally.[14]

Millions of video game cartridges were sold during the golden age of cartridge-based game consoles, from roughly 1977 – 1996. Nintendo's *Super Mario Bros.* is considered the best-selling game cartridge of all time, with over 40 million units sold.[15] That cartridge contains thirty-six vertical strips of gold-plated connection points referred to as gold fingers. Over 144 billion gold fingers were manufactured to support the sales of *Super Mario Bros*. Furthermore, Nintendo and Atari had several titles that sold over a million copies. The gaming industry would manufacture billions more gold fingers during this period. Over time, millions of these games were discarded when players upgraded consoles or lost interest in gaming. Dumps, attics, basements, storage units, and thrift stores became the resting place for these unwanted and out-of-date cartridges. They piled up as worthless technology - not worth their weight in gold.

[14] Ibid, 118.

[15] "Super Mario Bros: 25 Mario Facts for the 25th Anniversary," The Guardian (Guardian News and Media, September 13, 2010), https://www.theguardian.com/technology/gamesblog/2010/sep/13/games-gameculture.

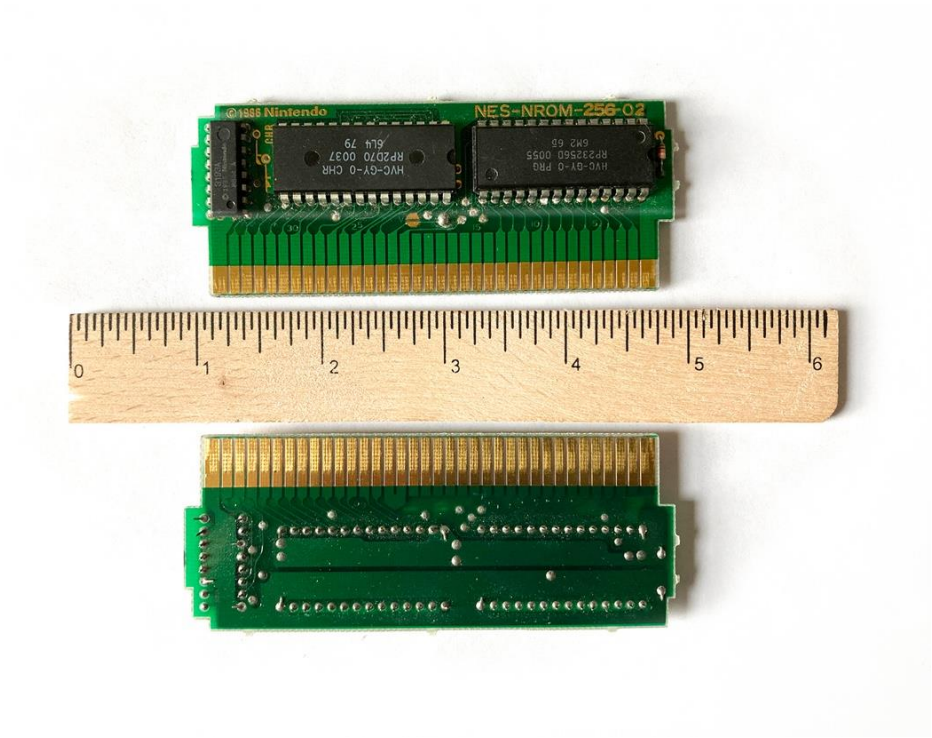

Figure 2.1 Nintendo Entertainment System PCB Board with Gold Fingers, 1986.

Gold may preserve a device's functionality, but even gold itself is useless against technological obsolescence. Each year an unfathomable amount of end-of-life electronics latent with gold are thrown out as waste. Electronic waste (e-waste) is a growing problem among all nations worldwide. *New York Times Magazine* writer, Brook Larmer, provides staggering data along with a grimacing visual in his 2018 article "The world's fastest-growing trash stream, e-waste, offers economic opportunity as well as toxicity." He writes:

> The worldwide accumulation of e-waste has more than doubled in the last nine years. In 2016, according to the United Nations University, a global think tank that tracks the problem, the yearly accumulation reached 49.3 million tons - enough to fill more than a million 18-wheel trucks stretching from New York to Bangkok and back. By 2021, the

annual total is predicted to surpass 57 million tons.[16]

What a sobering visual of waste.

Figure 2.2 Pieter Hugo, Untitled, Agbogbloshie Market, Accra, Ghana, 2009-10

[16] Brook Larmer, "E-Waste Offers an Economic Opportunity as Well as Toxicity," The New York Times (The New York Times, July 5, 2018), https://www.nytimes.com/2018/07/05/magazine/e-waste-offers-an-economic-opportunity-as-well-as-toxicity.html.

In the first semester of my MFA studies, I was introduced to the work of Pieter Hugo with his *Permanent Error* series. This collection of photographs captured individuals on the outskirts of Ghana's capital city Accra within the dystopian scrapyard known as Agbogbloshie.[17] Laborers and livestock live and work in this scrap yard to reduce e-waste to its elemental form of copper, lead, iron, aluminum, and gold. They burn away plastic casings and rubber insolation in a metal salvage process that harms the workers and introduces hazardous waste into the environment. Hugo's portraits of the Agbogbloshie workers and cattle struck a chord with me. What was going on there? Is this what ultimately happens to e-waste? And if so, how much e-waste is out there in places like Agbogbloshie? This line of questioning recalled my experience with e-waste's final resting place. I have seen and participated in the accumulation and disposal of e-waste.

I had a technology job where the acquisition of cutting-edge media technology was vital for its existence. To stay relevant, every digital device reaches its institutional end-of-life every 4 years. Once this happened, management decommissioned the technology. It was then my responsibility to extract, box, and replace technology. All the while, I was filling pallets and boxes full of keyboards, mice, cords, screens, computers, laptops, projectors, scanners, printers, phones, etc. Imagine all the other institutions, corporations, governments, and families worldwide generating end-of-life inventory. Where does all this technology go? My curiosity took over. I wanted to know more about e-waste and the salvage process seen in Hugo's photographs. A Google search led me to an entire world of e-waste and precious metal

[17] Adam Minter, "The Burning Truth behind an e-Waste Dump in Africa," Smithsonian.com (Smithsonian Institution, January 13, 2016), https://www.smithsonianmag.com/science-nature/burning-truth-behind-e-waste-dump-africa-180957597/.

refinement from electronic scrap. After completing a surface-level amount of research on the subject, I became hooked on the process of extracting precious metals from e-waste. I was compelled to learn these techniques and incorporate them into my artistic practice.

The YouTube channels of Moose Scrapper[18] and 999 Dasun[19] would teach me everything I needed to know about the extraction and refinement of precious metals from e-waste. I began with silver extraction from computer keyboard mylars but quickly turned my attention to the symbolic potency of gold. The source material used for my first gold refinement experiment came from an eBay listing of 150g of decommissioned military-grade gold fingers. I would refine 1 pound of memory CPU gold fingers, 45g of gold-plated printed circuit boards, and other gold latent scrap. During these initial experiments, I photographed and captured video throughout the extraction and refinement process. These early photographs showed the scrap's before and after stages during gold refinement. The process's remnants and evidence were photographed on a black background, mimicking the style of archeological artifact photography. The videos recorded bubbling chemical reactions in laboratory glassware as gold plating was transitioned back into its elemental form. With a few successful refinements, I began to consider what type of e-waste should be used in future experiments. I wanted the source of my gold to carry meaning. But I couldn't make the proper connection yet. What this early work lacked was an aesthetic foundation. I was using anonymous pieces of scrap purchased off eBay. They had no story other than the description from the seller. This lack of specificity had to be addressed before an aesthetic could evolve.

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[18] Moose Scrapper, "Moose Scrapper," YouTube (YouTube), accessed March 4, 2022, https://www.youtube.com/channel/UC-HvWUD0GAnJeTBGqrNOfrQ.

[19] 999 Dasun, "999 Dusan," YouTube (YouTube), accessed March 4, 2022, https://www.youtube.com/channel/UCPIKoPHRyxrvZl8qkUbuIWA.

Figure 2.3 Travis Dodd, Gold Fingers #1, 2020

Figure 2.4 Travis Dodd, Gold Fingers #2, 2020

I re-examined my relationship with consumer electronics during my search for appropriate material. When did gold-plated circuitry enter my life? I traced it back to video games. Atari, Nintendo, and Sega were the video game systems of my childhood. These cartridge-based games all contained strips of gold plating on the exposed connection points – gold fingers. “Video games are my material,” I wrote in my sketchbook. No more anonymous RAM or unidentifiable circuit boards; I no longer had to hide behind materials that were not authentic to my experience. Video games offered a rich catalog of imagery and narrative that helped shape my work’s aesthetic foundation. Furthermore, the interactive worlds of gaming satisfied my desire to showcase the influence utilitarian gold had on creating immersive technology.

3 AN IMMERSIVE ESCAPE

In 1986 my name was published in a children's book titled, *My Rainy Day, With Rainy Day Games and Puzzles by The Magic Computer*. In this book, I was the protagonist. My name, Travis Dodd, was inserted into the main character's subject line throughout the story. *My Rainy Day*, which feels like a child's fanzine, is sixteen pages, staple-bound and printed on medium-grade paper. The plot was simple. I befriended a magic turtle who entertained me through the monotony and boredom of a rainy day spent at home. Educational puzzles, connect the dots illustrations, mazes, and ciphers led me through a quest as I escaped the drag of a rainy day in King's Grant, the name of my subdivision.

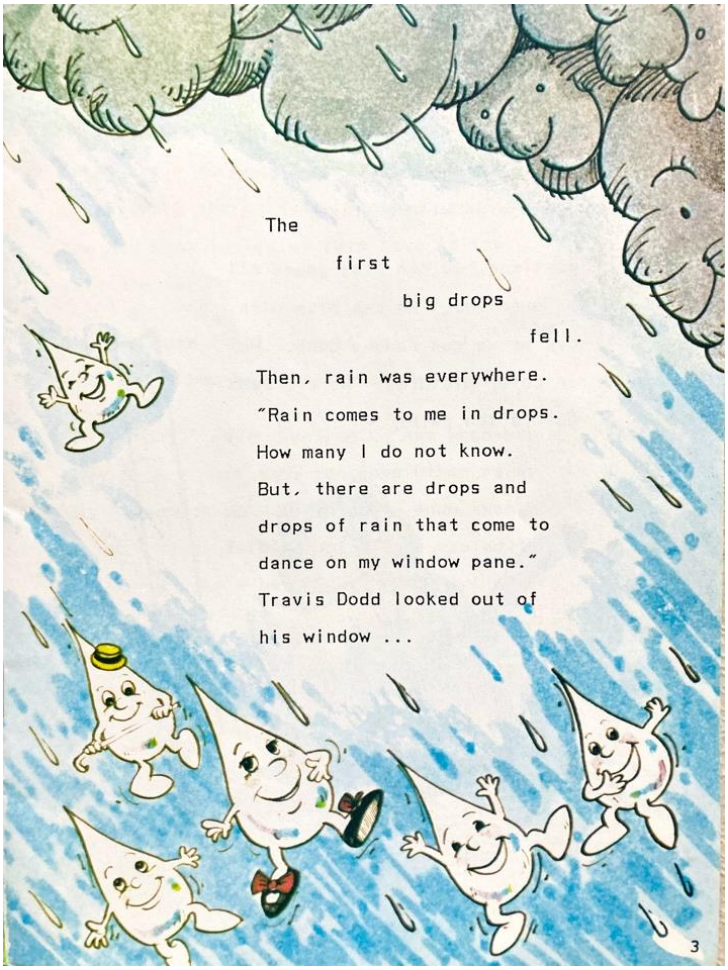

Figure 3.1 My Rainy Day. Story and Pictures, 1986

My Rainy Day was a mass-produced novelty. Any gift giver, in my case, my grandmother, could submit a child's name that would then be printed into the pages of the story. I was young and oblivious to the complexities of consumerism and marketing schemes. I never considered that hundreds of other children were reading this same story with their names in it. For me, the book was unique. The story was special. I, Travis Dodd, was a legitimate character in a fictional world. In *My Rainy Day*, the power of personalization was an analog foreshadowing of how early video game developers would use a similar tactic when they allowed a player to customize their character's name before beginning a game. Naming a character not only personalized the game's dialog but also intensified the connection with the game's main character. Customization deepens a video game's immersive qualities. For example, when playing early games like *Pac-Man*, *Mario Bros*., or *Pitfall*, a player never refers to Pac-Man, Mario, or the Adventurer as an avatar. Those characters are always themselves. However, this ownership over the subjectivity of a digital self would change with the customization capabilities of Role-Playing Games (RPGs). Once a player could curate a character's name, outfit, class, or abilities, the ownership over a digital character was transferred away from the game developer's code, and a certain amount of autonomy was given to the player. Subject, object, and possessive pronouns were now associated with a virtual avatar. That is "my" character. "I" was attacked by the dragon. Watch "me" as I navigate this quest. This shift in language and the customizations listed above created a space where a virtual self could be modified.

Figure 3.2 Miracle Warriors, Tonka Group, 1988.

My interaction with gaming began by playing my sister's Atari 2600 when I was four or five years old. I remember playing *Pitfall* and *Combat,* but not obsessively. Maybe I was too young, or the game design and overall experience lacked the power to compete with physical play. At that time, playing video games was an occasional act for me. That would change in the mid-1980s when I was gifted a Sega Master System.

My experience of being a virtual self began within the 8-bit landscapes of role-playing games. *Miracle Warriors*, released in 1988 for the Sega Master System, started with a virtual keypad where a player could customize the main character's name. I remember playing *Miracle Warriors* for hours as I leveled up in preparation for the final boss fight against the Dark Lord Terarin.[20]

[20] Sega Retro, "Miracle Warriors: Seal of the Dark Lord," Sega Retro (Sega Retro, October 7, 2021), https://segaretro.org/Miracle_Warriors:_Seal_of_the_Dark_Lord.

After the hundreds of hours spent saving the people of the Five Lands, I was hooked on the immersion that an RPG offered. I would spend thousands more hours saving other ill-fated populations in subsequent RPG titles. The time I dedicated to gaming increased as game designers enhanced and improved gameplay, graphics, sound, and storylines - all of which provided a deeper immersion into the virtual.

Ultimately, video games provided me with an easy escape from reality. With a push of a button, a digitized arrangement of light and sound could now transport players away from their domestic environment and into far-off lands of fantasy. These virtual landscapes became a sanctuary for millions of kids who wanted - or needed a break from reality. In a 2018 article published in *Uncanny Magazine*, author Kelly McCullough argues that escape into fantasy should not be seen as fundamentally negative. He writes:

> One of the great criticisms aimed at science fiction and fantasy is that it is "escapist," framed as if that's some terrible indictment - and the impulse to escape is a character flaw…The idea that escape is inherently tainted is fundamentally an argument of privilege made primarily by people who have never been in a position where they needed to escape from a situation when actual escape was impossible.[21]

The accessibility of escape is what makes video games so effective at attracting and maintaining players, especially within fantasy-driven RPGs. When playing a video game steeped in adventure and quest, gamers gain control over their destiny within that fictional world. Sure, the game may contain chance elements, and virtual freewill can only extend as far as the digital code. Still,

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[21] Kelly McClullough, "In Defense of Escapism," Uncanny Magazine, 2018, https://uncannymagazine.com/article/in-defense-of-escapism/.

within these worlds, players who feel powerless in the everyday could now fire up their gaming consoles and become immersed in a customizable reality devoid of real-life consequences.

Escape, control, and immersion are conditions that make a virtual self potentially dangerous. Modern society is full of technology that promotes our well-being while distracting us from our contemporary existence. Society is volatile: war, racism, social and economic injustices, climate change, fake news, and a COVID-19 pandemic are all recent headlines. This daunting set of affairs can overwhelm even the strongest of individuals. Our current media platforms of 24-hour news cycles, social media feeds, phone notifications, and a constant barrage of late-stage capitalist marketing schemes have contributed to a reality full of anxiety, doubt, and instability. It's no wonder that millions of kids and adults alike are choosing to escape the complexities of daily life in favor of the reliability of the virtual. In 2019, the World Health Organization (WHO) recognized gaming addiction as a modern disease.[22] *Times Magazine* writer Alice Park, who covered the WHO's 2019 decision, uncovered an important research distinction on which the WHO based its decision. She writes:

> According to the WHO experts who analyzed studies on gaming behavior, people's use of gaming is different from their use of the internet, social media, online gambling and online shopping. There isn't sufficient data, they say, to indicate that people's reliance on those is a "behavioral addiction" the way gaming can be.[23]

If we follow this logic, social media is not addictive, but gaming is? That is an

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[22] Alice Park, "WHO Makes 'Gaming Disorder' an Official Medical Condition," Time (Time, May 29, 2019), https://time.com/5597258/gaming-disorder-icd-11-who/.

[23] Alice Park, "WHO Makes 'Gaming Disorder' an Official Medical Condition," Time (Time, May 29, 2019), https://time.com/5597258/gaming-disorder-icd-11-who/.

interesting distinction to make. What if a platform combined social media, video games, and online shopping? That type of platform would most certainly be a consuming experience.

Roblox, released in 2006, is an online gaming mega-platform where players of any age can log on and play millions of user-created games with millions of players across the world. In February 2022, a PC Gamer Magazine headline read, "If Roblox's daily users were a country, it would be bigger than Canada." The article goes on to quote Roblox CEO David Baszucki:

> With nearly 55 million daily users, Roblox is increasingly an integral part of people's lives," the quote continues. "As we look ahead to 2022, we will continue to develop our technology to enable deeper forms of communication, immersion and expression on our platform.[24]

Communication, immersion, and expression – are deliberate words that Mr. Baszucki used that need a little unpacking. Consider the following analogies:

1. Communication = Social media platform
2. Immersion = Video game engineering and first-person world navigation
3. Expression = Consumerism – Players can customize their avatars, outfits, and accessories by procuring Robux. Robux are a virtual currency that can be earned or

[24] https://www.pcgamer.com/if-robloxs-daily-users-were-a-country-it-would-be-bigger-than-canada/

purchased while playing Roblox.

Figure 3.3 I Bought The NEW Most Expensive Wings To Impress The Girl With The Christmas Halo...-Roblox, Leah Ashe, 2018.

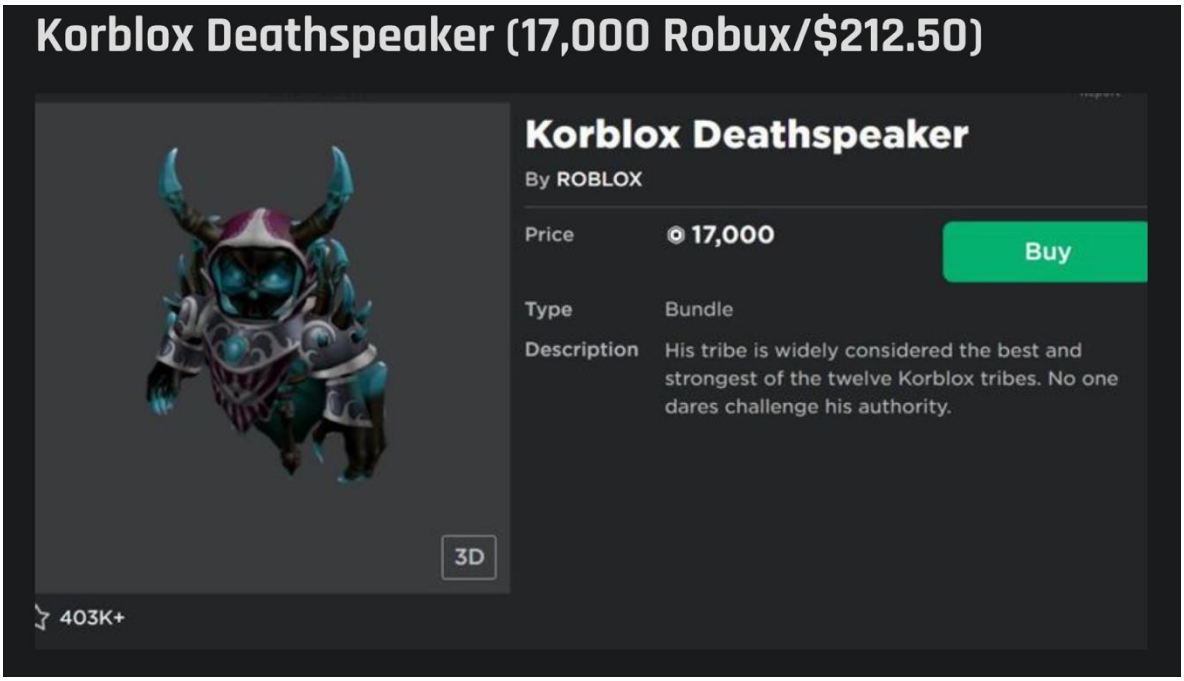

Figure 3.4 Korblox Deathspeaker, Roblox, 2013.

Roblox's 55 million daily users does not come close to Facebook's peak of 1.929 billion daily active users.[25] With those numbers, just imagine what Mark Zuckerberg's Metaverse is capable of. Of course, no one fully knows what the Metaverse will ultimately look like. Still, all indications point to a 3D immersive world that will allow people to use avatars to socialize, play, work, and consume - all within a customizable virtual world resembling a video game aesthetic.

[25] "Facebook: Daily Active Users Fall for First Time in 18-Year History," BBC News (BBC, February 3, 2022), https://www.bbc.com/news/business-60238565#comments.

Figure 3.5 Figure 3.5. Metaverse, Facebook, 2021.

Lying beneath today's internet and tomorrow's Metaverse is a vast infrastructure on which all of cyberspace operates, and cyberspace is gold-plated. Every bit of data circulating through the internet has been in contact with gold during its journey to and from our devices: from the gold-plated circuitry of telecommunication satellites, through the gold-tipped wiring of servers, to gold pinned CPU processors, and ultimately to the estimated .034 grams of gold residing in your smartphone.[26] Gold is omnipresent and essential for modern society to function. As mentioned in my introduction, our utilitarian dependency on gold began with that first wave of personal computers and video game consoles that entered the home during the 1970s. At this point in history, gold has staked its claim in the virtual and has diversified our reliance on it.

[26] Bianca Nogrady, "Your Old Phone Is Full of Untapped Precious Metals," BBC Future (BBC, October 18, 2016), https://www.bbc.com/future/article/20161017-your-old-phone-is-full-ofpreciousmetals#:~:text=A%20typical%20iPhone%20is%20estimated,and%20copper%20(around%2015g).

4 THESIS EXHIBITION

Figure 4.1 Day Vanitas. Installation image. 2022. Projection, cathode-ray tube televisions, Atari 2600 gaming consoles, Atari 2600 game cartridges, Pyrex glassware, watch glass beaker cover, rooster wings on stage.

Gold has an uncanny way of lingering around. As a species, we have become reliant on gold's physical properties and spellbound by its cultural symbolism. Our relationship with the shiny metal has been physically destructive while being technologically innovative. Gold's influence transcends our physical reality and travels with us into the afterlife. The golden gates of heaven, the golden funeral masks of the pharaohs, and gold coins gently placed in the mouths of the deceased; are all examples of gold's extension into the realms of our immaterial

constructs. Simply put, gold's power is inescapable. Gold has solidified itself in our physical reality, spiritual spaces, and most recently, gold has followed us into the virtual.

Do you remember the sun…?, is an interdisciplinary installation consisting of three multimedia vanitases, animated projections, an audible elegy, and a gold artifact. These elements combine to form a sorrowful expression of loss. At its core, *Do You Remember the sun…?,* is a sonic and visual elegy lamenting humanity's decline caused by a dependency on immersive technologies.

Figure 4.2 Travis Dodd, Sun War: Nintendo and Atari gold foils in aqua regia.

The crux of the installation is the written elegy. Ceiling mounted speakers broadcast the elegy's narration throughout the gallery. Accompanying the narration is a layering of sounds that create a melancholic drone. Within this drone, the listener hears field recordings of a gold refinement experiment, manipulated low-frequency Sun waves captured by NASA, and a tiny melodic sequence generated by a modular synthesizer. The elegy's opening line, "Do you remember the sun?", is a somber inquiry meant to displace the listener's sense of time and place.

The ensuing poetic interview recounts a reality where humankind has completely withdrawn from the physical, resulting in complete integration within the virtual. At this point, digital immersion is the only reality, and the sun has been completely forgotten:

> Do you remember the sun?
> The sun is difficult here – from our sky
> We can't see, from this position, but we know it's there.
>
> How do you know - how can you be certain?
> Our light,
> The light that feeds us
> The light that separates objects – shows contours
> The light that allows me to see your face – all reflected from our moon.
>
> That's problematic - can you explain?
> Never waning – always there
> A gut-wrenching beauty pours without hesitation
> Down onto our surface of spinning metal and endless shafts
> An exhausted adventure through wire.
>
> Why did you come here?
> End-of-life satellites latent with precious metals
> Refined - providing shelter
> allocating utopia.
>
> Will you remember the sun?
> It's not necessary, memories and knowledge will fade without consequence
> An ancient sense of familiarity will remain with the light – at least for a while.
> You and I won't lose her, but she will be lost
> The moon will rust, cutting off all light
> As we float quietly in the dark.

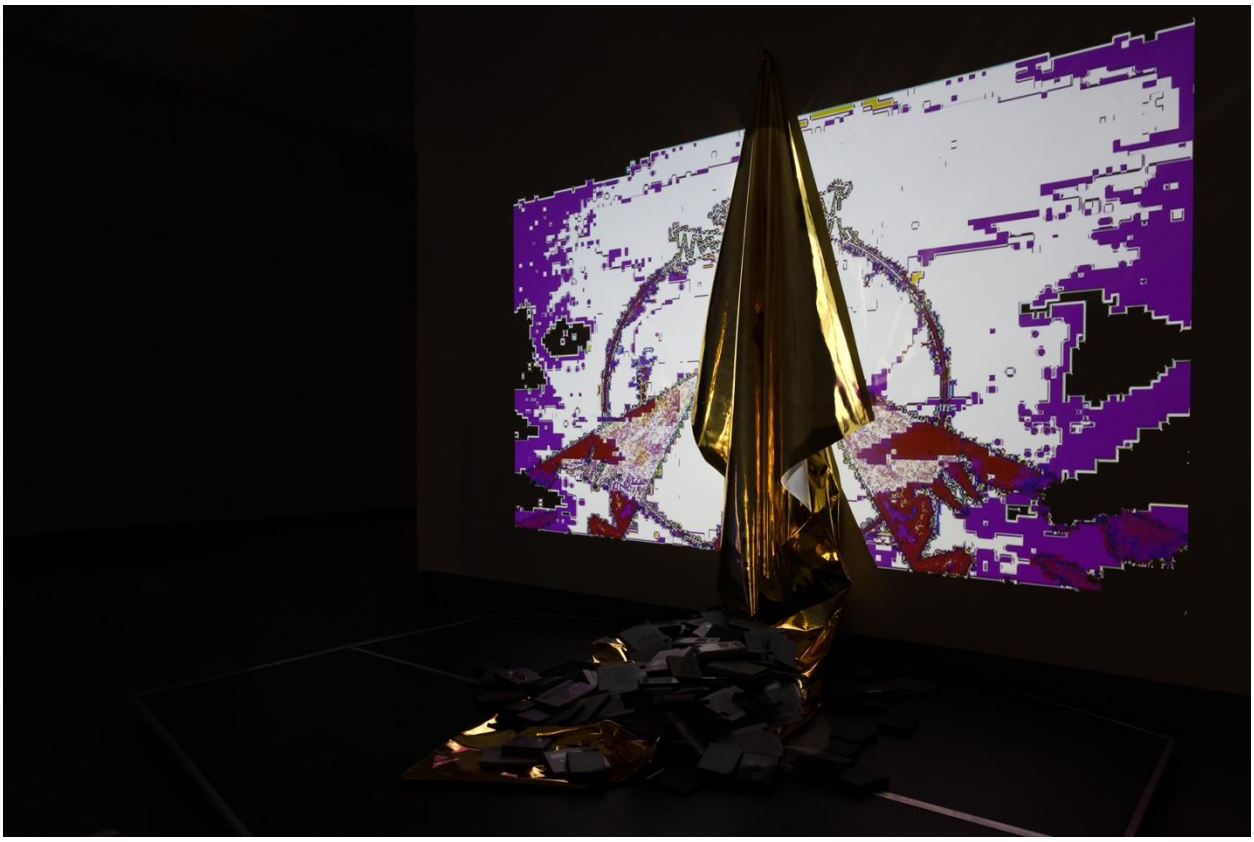

Figure 4.3 Source Vanitas. Installation image. 2022.

The three multimedia vanitases are illuminated by video game-inspired 8bit animations that collectively show gold's creation, destruction, and refinement. *Do you remember the sun…?: Source Vanitas,* consists of 98 Atari 2600 cartridges and 110 Nintendo NES game cartridges. As the title suggests, these cartridges were the source of the project's gold content. A looped 8bit animation depicting a kilonova, the astronomical event that brings gold into existence, is projected onto the cartridges and accented by gold-colored cloth. At the end of the animation, the DYRTS sigil rises from the kilonova's aftermath as a warning of gold's arrival.

Figure 4.4 Day Vanitas. Installation image. 2022. Cathode-ray tube televisions, Atari 2600 gaming consoles, Atari 2600 game cartridges. Pyrex glassware, watch glass beaker cover, rooster wings on stage.

Do you remember the sun…?: Day Vanitas, focuses on the alchemical refinement of gold from Atari and Nintendo game cartridges. These videos show the experiments used to extract gold plating from circuitry and document the transmutation of gold back into its analog state. The projected video highlights the three steps associated with e-waste gold refinement - removal, dissolution, and precipitation. Gold fingers sit in hydrochloric acid while base metals of copper, tin, and nickel are dissolved. This allows the gold foils to separate from the circuit board. Other clips show gold dissolving in aqua regia, an acid solution consisting of hydrochloric acid and nitric acid. When these acids are combined, the mixture has the rare ability to dissolve gold, holding gold in stasis in the form of chloroauric acid. Lastly, a sodium metabisulfite solution is added to the aqua regia. The resulting chemical reaction precipitates the refined gold content from the chloroauric acid. This is my favorite chemical reaction in the process. In this reaction, the bright yellow chloroauric acid solution tries to retain its gold content and resists precipitating it out, also known as “dropping” its gold content. This power struggle lasts until the amount of sodium metabisulfite reaches a tipping point. When it does, the solution transitions from the golden aura of chloroauric acid to a blackish-brown tone when the gold is released and restored to its elemental form.

Figure 4.5. Travis Dodd, Sun War: Chloroauric acid precipitating its gold content. Video, 2020.

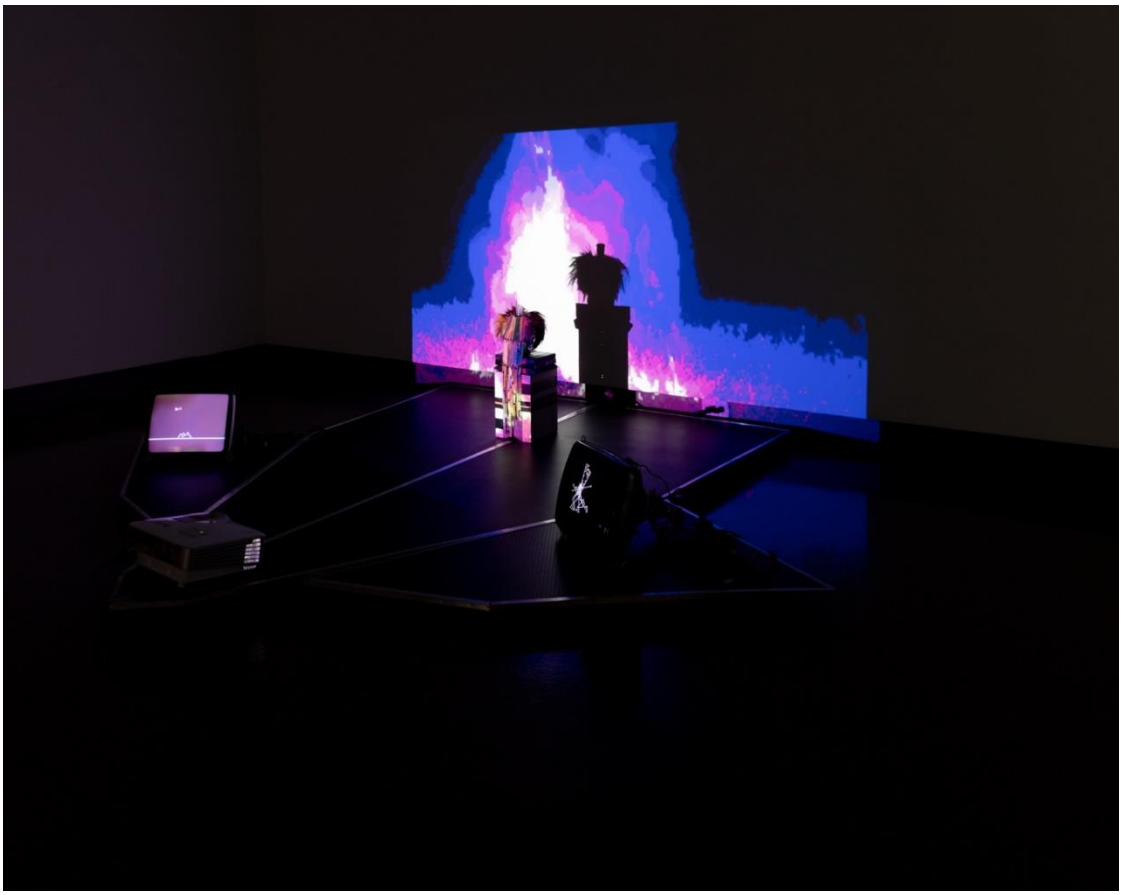

Figure 4.6 Do you remember the sun…?: Night Vanitas. Installation image. 2022. Projection, cathode-ray tube televisions, Nintendo Entertainment System gaming consoles, Atari 2600 game cartridges, Pyrex glassware, stripped gold fingers, faux fox fur, rooster hackles on stage

Do you remember the sun…?: Night Vanitas, shows the incineration of integrated circuit chips (IC chips) extracted from Atari and Nintendo games cartridges. The information driving a game is saved onto a silicon die kept at the center of an IC chip. Gold bonding wires and gold-plated connection points connect the die's code to the pathways leading to the gaming console. Fire is used to melt away the black resin casings of these chips, revealing tiny bits of gold. They shine against a charred landscape of plastic, fiberglass, and base metals. Gold in this state seems delicate, but ultimately it is immortal.

Figure 4.7 Incinerated IC chip revealing gold-plated connection points.2022.

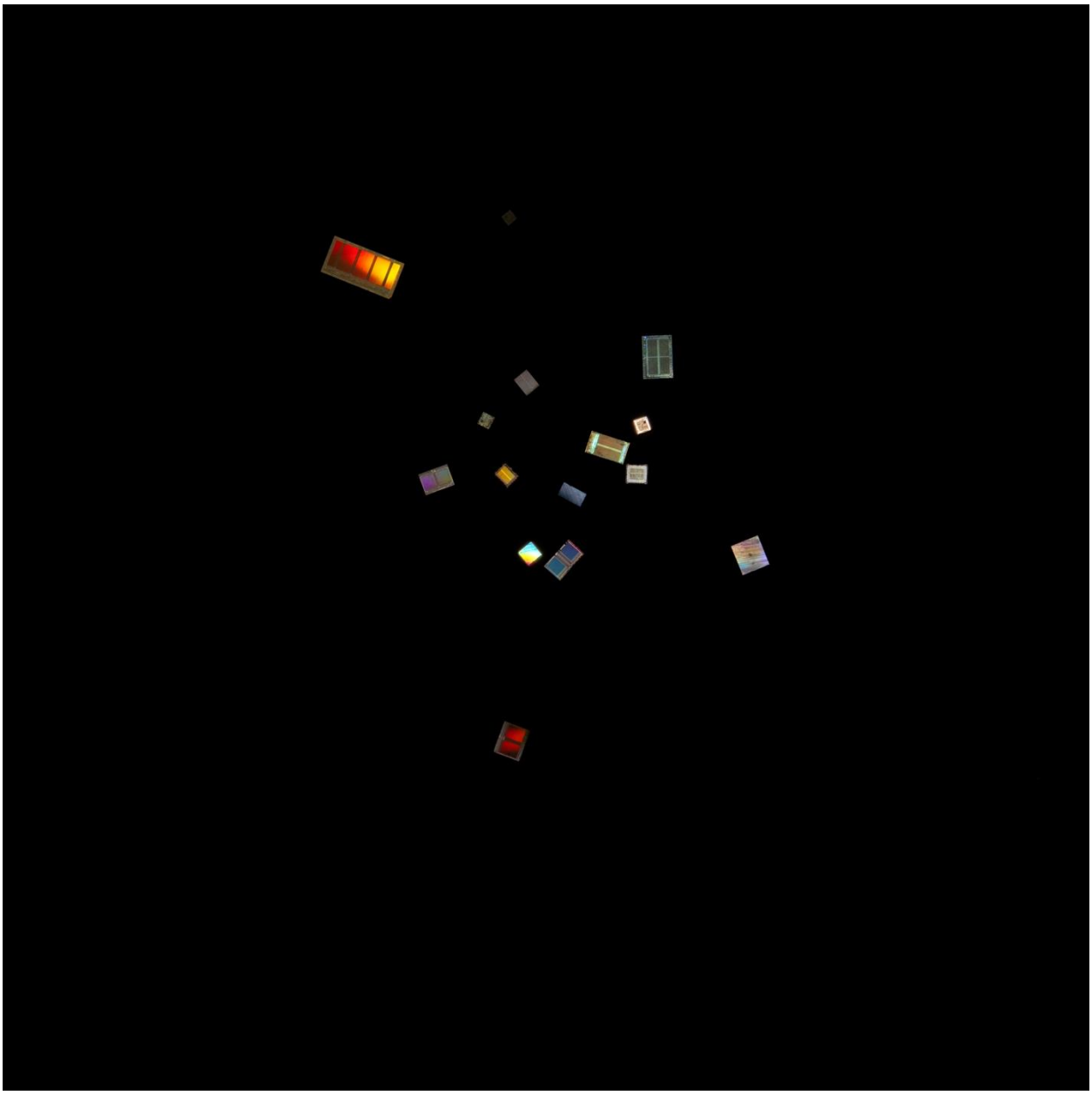

Figure 4.8. Travis Dodd, The Refiner: Atari and Nintendo Silicon Dies, Archival pigment print, 30”x 30”, 2021.

DYRTS: Day Vanitas and *DYRTS Night Vanitas,* are accompanied by flanking CRT televisions. Before video games, CRT televisions generated a passive experience. A viewer sat and watched. After video games, television screens across the world became interactive. Players could now control their entertainment. The CRT televisions of *DYRTS*, show 8bit animations simulating the aesthetics of an early video game. In this imagined video game entitled, *Foxbite,* fox and rooster hybrids float through a bleak landscape firing shots and capturing gold. Clunky movements, screen flashes, and pixelated graphics are interrupted by green lines of hacker code that repeat the lines of the *DYRTS* elegy.

Figure 4.9. Do you remember the sun…?: CRT Television screen, 2022.

Rising from the black and aluminum trimmed stages sits an anthropomorphic character on a plinth made of Atari and Nintendo gaming consoles. Each character is a piece of glassware that I used throughout the project's experiments, adorned with Egyptian and alchemical symbolism. The fantastical imagery of the hybrid, Ra, chemical foxes, and gilded roosters all influenced my material choices and assemblage. In addition, the character's position on the stage creates a silhouette that adds and subtracts from the experience.

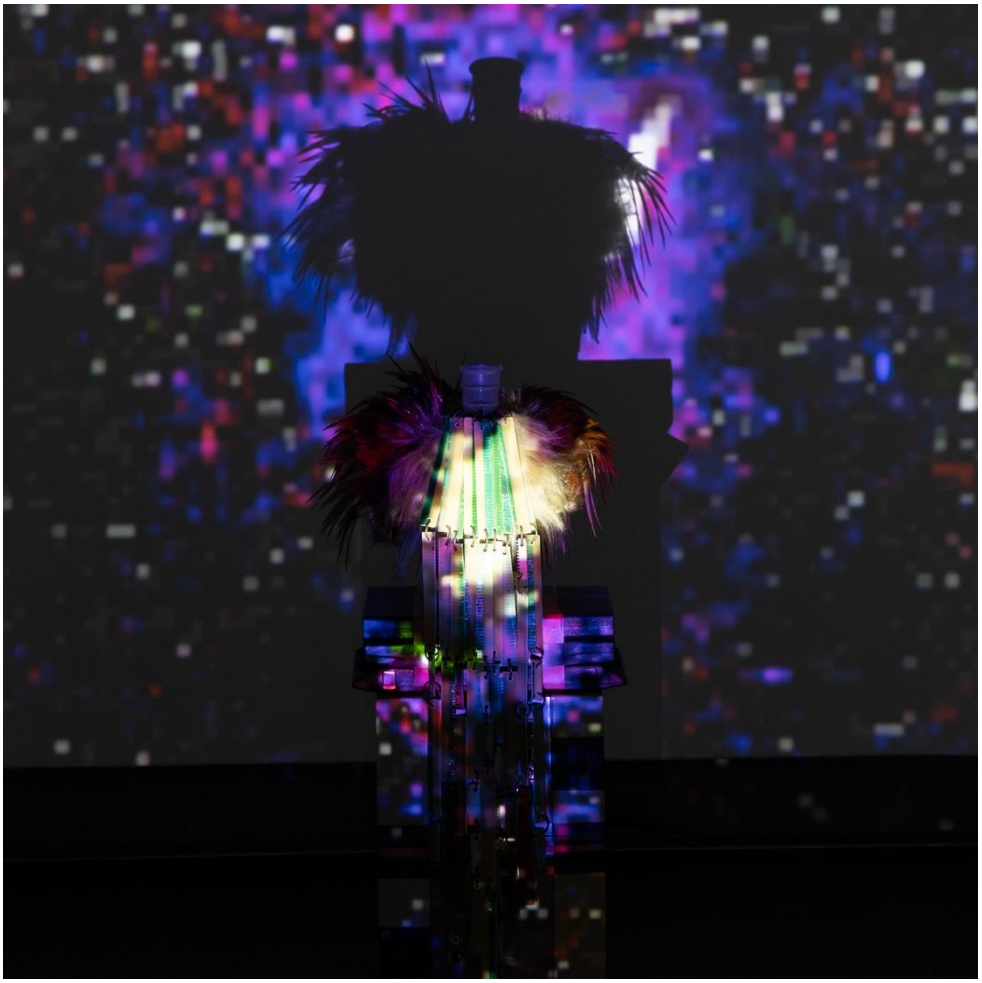

Figure 4.10. Do you remember the sun…?: Night Character, Nintendo Entertainment System gaming consoles, Atari 2600 game cartridges, Pyrex glassware, stripped gold fingers, faux fox fur, rooster hackles, 2022.

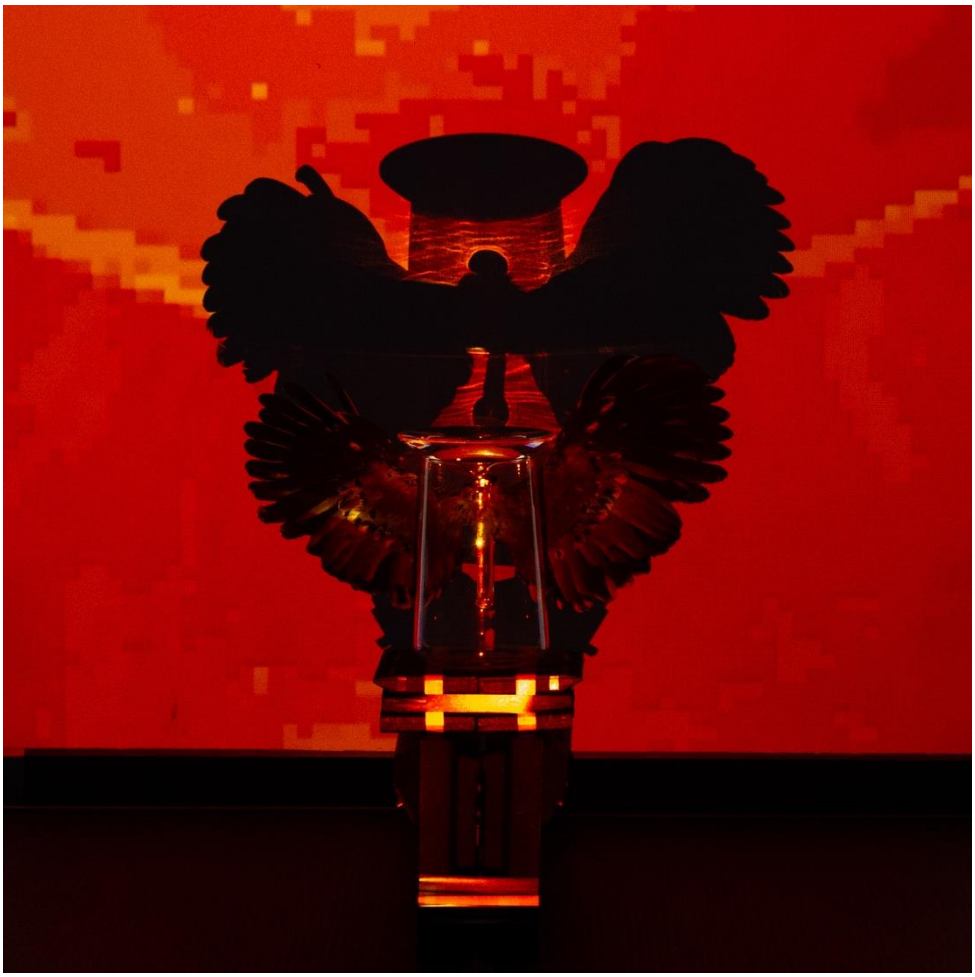

Figure 4.11. Do you remember the sun…?: Day Character, Atari 2600 gaming consoles, Atari 2600 game cartridges, Pyrex glassware, rooster wings, 2022.

A hexagonal black plinth stands in the center of the gallery. On this plinth rests a hexagonal black velvet riser and, on this riser, sits .36 grams of 18 karat gold recovered from Do you remember the sun…?: *Source Vanitas.* Imagine the thousands of hours of interactive worlds that have pulsed through the gold sitting there. For me, this gold is a moment in history. It symbolizes the moment humanity began to escape into the virtual.

Figure 4.12 Do you remember the sun…?: Gold, 2022. .36 grams of 18k gold refined from Atari and Nintendo game cartridges

5 CONCLUSION

I began this project with a determination to make gold disappear. I wanted to obliterate it, dissolve it into nothingness. But over time, as I worked with the material, I developed a certain respect for gold. It's the respect one has for an adversary – deeply troubling but required for survival. In the introduction to Hans-Gert Bachman's, *The Lure of Gold: An artistic and cultural history*, he reinforces gold's resolve, "Gold is not used up, just used. Unlike iron, which is corroded by rust and vanishes, gold, once it has been mined or found, survives. It can be buried, forgotten, or lost, but though hidden, it still exists physically, and chance may reveal it again."[27]

Far into the future, gold will remain long after our civilization has ended. It will sit untarnished - patiently waiting for its subsequent distribution through space.

[27] Hans-Gert Bachmann, Jörg Völlnagel, and Kerstin Ludolph, *The Lure of Gold an Artistic and Cultural History* (New York: Abbeville Press, 2006), 25.

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