video game art reader

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Volume 4

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VGA Reader Mission The VGA Reader is a peer-reviewed journal for video game audiences and video game practitioners interested in the history, theory, and criticism of video games, explored through the lens of art history and visual culture. Its primary aim is to facilitate conversation and exploration of video game art, documenting and disseminating discourse about the far-reaching influence of video games on history, society, and culture.

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Video Game Art (VGA) Gallery seeks to increase cultural appreciation, education of video games and new media through exhibition, study, critique, and sale. Annual programs include exhibitions and events featuring the work of significant artists and game developers from around the world; educational programs are comprised of talks, screenings, and student programs; and a scholarly publications program that includes the *VGA Reader*. VGA Gallery is an Illinois 501(c)(3) not-for-profit corporation.

Cover: Paloma Dawkins, *Gardenarium*, 2015

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Table of Contents

5 Letter from the Editor: *Time's Up*
Tiffany Funk

9 Exponential Backlogs, or a Short Game Manifesto
Chaz Evans

19 Artists as Assets: Labor and Capital in the Unity Asset Store
D'An Knowles Ball

31 Racial Architecture: Building the FGC
Uche Anomnachi

43 Multiball and Multiplicity: Suzanne Ciani and The Voice of *Xenon*
Chris Reeves

59 Creating Game History: Intertextuality and the Formation of a Collective Memory of Games
Regina Siewald

77 Stealth Algorithms: Hito Steyerl's Encoding of Metal Gear into her *Factory of the Sun*
Andrew Bailey

95 Life as We Don't Know It: Cyclical Time and Collectives in *Horizon: Zero Dawn*
Alexandre Paquet

LETTER FROM THE EDITOR

Tiffany Funk
Editor-in-Chief of the *VGA Reader*

> ***"Death to the gaming industry! Long live games."***
>
> ***—Home of the Underdogs, "The Scratchware Manifesto," 2000***[1]

THIS ISSUE DECLARES: *TIME'S UP!*

Our original call for papers asked: In the same way that a computer user might *overclock* the processor of a machine to achieve results beyond its intended use, how might *overclocking* serve as a foundational metaphor for how games are produced and experienced today? How do overclocking practices produce strain and wear on video game workers and players in a variety of ways that need to be identified and understood? Lastly, how might we critically analyze video game art at the limits of temporality—through long historical vectors, across significant investments of lived human experience, and in terms of other considerations of time—in order to more equitably consider the long history of the medium?

Now, in the midst of a pandemic and worldwide social unrest, overclocking has taken on yet another and more fundamentally important meaning: that of corporeal and spiritual overclocking. The pandemic has pushed us all to our physical and psychological limits, having exacerbated already existing systems of oppression. The effects of centuries of racial, gender, and class inequality are now more than ever apparent in the way we develop and experience games as vehicles for artistic expression, psychological decompression, and scholarly reflection.

The essays in this issue not only reflect on the many ways in which overclocking can be read as a means of oppression, but also offer a strategy of raising awareness of how these inequities have shaped video games as we understand them. By declaring *Time's Up!* to obfuscation, marginalization, and inequity in the video game development industry, player communities, and scholarship, together we can imagine and manifest a more equitable gaming future.

Our first essay is a manifesto by Chaz Evans, VGA director of exhibitions, which lays out how the dominant game development industry has normalized abusive labor practices in pursuit of the ever-longer, open world game. Evans sees the short game genre—as he describes them, games "with an average, or intended, playtime of 10 hours or less"—as one powerful method to encourage healthier labor practices and more creativity in the industry.

D'An Knowles Ball also examines labor in the video game industry, particularly as practiced by the Unity Asset Store, and its role over the past decade in multiplatform game creation. While the Unity Asset Store markets itself as a democratic playground, its operations emerge as performative masking of a capitalist infrastructure with marginalizing labor practices.

Uche Anomnachi analyzes the Fighting Game Community and provides a window into the enhanced racial equity felt by its members, and highlights potential pitfalls and shortcomings that arise with such demand for spectacle.

Chris Reeves seeks to reevaluate our gendered assumptions about the early days of electronic gaming by reevaluating foundational electronic music pioneer Suzanne Ciani's role in the production of the first talking pinball game by Bally Entertainment, *Xenon* (1980).

Regina Siewald challenges popular notions of games' histories by examining how game makers mine nostalgia by inserting other games into their own, and in doing so reify rote conceptions of arcade and popular gaming console culture.

Andrew Bailey also explores the infrastructure of oppression, particularly as a function of computational algorithms. He analyzes Hito Steyerl's video art installation *Factory of the Sun* (2015) and its referencing of Hideo Kojima's *Metal Gear* series as a way to discuss how computational algorithms function as tools of control, beginning with WWII surveillance networks and extending to the present-day existence of automated stock exchange software.

Alexandre Paquet examines how video games have the unique ability to allow the player to experience nonhuman conceptions of time: games such as *Horizon: Zero Dawn* (2017) allow one to examine the ways in which entanglements of different forms of life (such as the coexistence of humans, nonhumans, and technology) as planetary collectives are tied to reinterpretations of linear and cyclical time.

Though one issue of our peer-reviewed journal is only a drop in the bucket poured into the tide of protest we've recently experienced, we promise to continue to strive toward an inclusive video game art scholarship, in which we can all see ourselves reflected equitably in its history, production, and future.

BIO

Tiffany Funk (PhD) is an artist, critical theorist, and researcher specializing in emerging media, computer art, video games, and performance art practices. She is the editor-in-chief of the Video Game Art Reader, visiting assistant professor and co-founder of IDEAS (Interdisciplinary Education in the Arts)—an intermedia, theory- and practice-based Bachelor of Arts degree at the University of Illinois at Chicago.

NOTES

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Exponential Backlogs, or a Short Game Manifesto

Chaz Evans

VGA Gallery Co-Founder and Director of Exhibitions

ABSTRACT

Popular opinion dictates that the creation of "long video games"—in which gameplay lasts dozens of hours—is a virtuous goal; long games promise a good return on monetary investment for players and perpetuate a "more is better" system of one-upmanship in gameplay and game development. Why, then, should we feel compelled to reconsider the "short game"? How do the advantages of making and playing short games involve questions of fair labor practices, ecology, access, and inclusion, and what kinds of recent games provide models for best practices?

In video game production, the extensive length of a given game is perennially viewed as a virtue in and of itself. Specifying how many dozens of hours it might take to complete a game on the back of its commercial packaging has been a regular selling point since the console era of the 1980s and continues with the packaging of

contemporary games to this day. In video game reviews, critics use extended length as a key indicator that the consumer is receiving a good value for the purchase price. In user reviews of games on the game distribution platform Steam, short gameplay length is often a key complaint in not recommending a title to other users. This "more is better" mentality pervades a culture of game production that is also releasing more and more titles at an increasing rate. Extended gameplay for each title becomes a point of competition that can extend the average total possible hours played in a game across the board. The combination of an increase in game production and increased gameplay time per title results in a staggering number of options for how players of video games spend the finite budget of gameplay time they may have. The problem of gameplay surplus has led to some novel approaches for consumers to manage these options.

On the sales and distribution side, one solution to the problem of gameplay surplus is the advent of the games bundle. It's now a standard sales practice for producers, typically months or years after initial release, to offer their game in a bundle with other titles at a price greatly reduced when compared to the launch value. Humble Bundle, a leader in bundle sales sites, offers post-release games at a pay-what-you-want scale with a set minimum.[1] Even if one pays more than the minimum price requirement, the overall price per game is still a fraction of its original price. Bundles are often offered within a special sales time window that motivates consumers to buy a bundle of titles containing games they are interested in, regardless of whether they plan to play any of the rest of the bundle. Sometimes it can seem like a worthwhile proposal to go ahead and buy a whole bundle even if the consumer doesn't have any interest in any of the games simply because the overall price is so low, and the player might be interested in those titles later. Additionally, platforms like Humble Bundle and Steam have frequent sales on individual games, and discounts can be surprisingly low, also driving sales with the sense of time-based opportunity. This highly mercurial marketplace is far less than ideal for game studios, but when your title loses purchase value exponentially post-release, this near giveaway of older releases can seem like an acceptable proposition. The old title is at least earning some revenue as opposed to none, and it might serve to drum up interest and attention for newer releases, perhaps gaining marginal promotional value in a highly saturated market that is difficult to stand out in.

Access to cheap games through online sales and bundles has led to a new predicament for users of sales platforms, and along with it a new piece of gamer jargon: the "backlog." Quite simply, users

often purchase many more games than they can play, creating a signal and noise problem not within a marketplace, but their own game libraries. With so many titles populating the lists of what one has purchased through platforms like Steam, Humble Bundle, or itch.io, it can be difficult to remember what you have purchased or to figure out what you wanted to play in the first place. A new genre of website has developed as a novel reaction to this phase of the problem: the Steam calculator site.

There are now several websites that run analytics on your database of game purchases within Steam, such as howlongtobeatsteam.com/#/, steamleft.com, and steamdb.info/calculator/.[2] These Steam calculator sites access a user's Steam account through their login and password and then deliver an estimate of how long it would take the user to complete their entire library. The results are commonly measured in months or even years of nonstop consecutive play. Another calculator, steamtime.info, not only calculates your remaining Steam library playtime but also places it on a leaderboard across other users who have signed up for the site. This is a very genuine expression of what the world of games does when confronted with a data-based problem: create another game out of it. Another site, steamadvisor.com, sifts through your Steam backlog to suggest what is good to play in it by cross-referencing your own game licenses with consumer reviews and popularity ratings. While I think both are interesting tools, the very existence of a competition between who has too many video games to play and automated digital valets to help recommend your games to you can also be read as expressions of a system in which the glut of games produced clearly exceeds the finite hours humans have to play them.

In addition to sales and audiences, the restrictions on time in video game production is a problem that has been raised—and *re*-raised—for decades. In 2000, Salon.com published a story titled "How do game developers hack it?"[3] detailing the eighteen-hour days and in-office sleepovers required to keep up with John Romero's so-called "death schedule" in the production of *Daikatana*. This same article is referenced in the notorious document, anonymously published the same year, known as "The Scratchware Manifesto," a call to arms for video game labor to rise up and no longer accept the grueling work conditions that systematically sap creative minds and energy out of the industry.[4] After issuing complaints against studio management, the Scratchware Manifesto doesn't propose labor unions or better working conditions, but instead valorizes the independent production of "scratchware": small games produced by no more than three people and sold for no more than $25. The overall tone is strident, but the proposal is both prescient

and influential, as it models the way many indie game producers operate today.

It's not difficult to find similar complaints throughout the industry's history. Famously, in 2004 an initially anonymous LiveJournal post attributed to EA Spouse (and later attributed to Erin Hoffman) described the substantial emotional and physical toll of crunch on her spouse, who worked at EA and became a lightning rod for discussion of abuses of video game labor.[5] The post eventually led to some successful class action lawsuits, yet the culture of crunch prevailed. In another famous example, in 2010 a group identifying as "Determined Devoted Wives of Rockstar San Diego Employees" published an open letter describing the demoralizing work conditions their spouses endured at Rockstar during the crunch period of *Red Dead Redemption*.[6] The document brought some brief attention to the issue, but exhausting work conditions persist to this day.

In more recent examples, overwork in the video game industry has been addressed in both scholarship and the popular press. In Casey O'Donnell's *Developer's Dilemma: The Secret World of Videogame Creators*, the problem is categorized by an all-too-familiar piece of industry jargon: "crunch," the state of extended daily work hours being declared essential, ostensibly to meet important strict deadlines for trade shows or releases.[7] O'Donnell provides a detailed rationale for how a lack of internal organization and cross-industry information sharing perpetuates crunch, and ultimately concludes, "There exists a culture of overtime that is simultaneously requirement, expectation, and simply a product of passion."[8] More than just creating objectionable working conditions, O'Donnell argues, this culture keeps the game industry in arrested development. While outlining the flaws of perpetual start-up culture, O'Donnell states games studios are willing to "trade sustainable industry for the negligible possibility of making it really big." Outside of academia, *Kotaku* news editor Jason Shreier reported stories of tumultuous video game production in his book *Blood, Sweat, and Pixels: The Triumphant, Turbulent Stories Behind How Video Games Are Made*, and in his accompanying *New York Times* op-ed, "Video Games Are Destroying the People Who Make Them," he concluded simply:

> *Those of us who cover the video game industry can see that the current conditions are unsustainable. Too many of the people who make games have left for more lucrative, less stressful industries. Too many who have stayed have suffered the physical and mental consequences. Game developers need to insist—to their bosses and, most important, to themselves—that health comes first.*[9]

Over this cyclical history, the issue has flare-ups, goes silent, and then is brought back up to popular attention years later with no substantive changes in the labor practices of games studios.

Anxieties over time and the lack thereof concerning video games can be so familiar and normalized for both producer and consumer that the individual stages are seldom articulated together as a broken system: game studios perceive they must release many long games. They don't have enough time to produce them, which takes a direct toll on the health and personal lives of video game laborers. Then games are released and purchased by games consumers who have too many games to play and not enough time to play them. In short, the video games industry is currently designed to produce a great deal of waste in terms of time, money, and human effort. It might seem like a problem of how we spend our labor and leisure time, but if one also considers the energy necessary for powering personal devices and the servers required to sustain the 24/7 availability of game distribution platforms, as well as the materials and fuel required to print and distribute physical media, this is very much a carbon footprint problem as well as a consumer economics and human resources problem. That which feels very normal from within the world of games can easily be seen as volatile and laden with problems of waste from an outside perspective. Furthermore, the fact that two of the most notable examples of the issue being brought to public attention come from whistleblowing spouses—in these cases, predominantly women—concerned for the livelihood of their partners strongly suggests that the problem of human labor hours is kept afloat by gendered, domestic labor that receives no real attention or compensation for the strenuous demands of this field. It's important to remember that video games don't exist in a vacuum and that the problem doesn't stop outside of a perceived niche of "core" gamers. At the core of this problem is an unquestioned premium placed on long gameplay.

I don't have a grand proposal of systemic reform that will curb contemporary capitalist practices that drive these side effects of waste. I also unequivocally do not want to propose the elimination of long-game production, as many enduring and valuable experiences in games media occur in longer titles (even if we see these problems of time waste in the aggregate). However, I would like to propose that we question the unmitigated premium on long games within the creative community that produces, consumes, and writes about video games. We might not need to change video game production practices in the short term at all, but simply have better recognition of other kinds of game production that are already in play. It can be both subtle and critical to focus on what is

commonly known as the "short game" as a cultural category and not simply a designation of a game's length.

The colloquial categories around video games classify titles according to genre, play style, or size of the studio or production budget. When classifying by genre, one is describing games in terms of mechanics, not scope. This creates modularity in which a game of any scale or duration can be compared to any other similar game of different scale or duration. But with extra value ascribed to length, short titles are not often considered worthy release goals for studios and are either overlooked or evaluated out of context by critics and players.

Across other types of media, producers and audiences rely on a common language to describe works and establish expectations. In fiction, the short story and the novel; in painting, studies, diptychs, murals, etc.; in theater, the one-act and the two-act play; in cinema, the short film and the feature film. When used, these shorthand terms can quickly provide a general sense of how much time an author is going to need to invest, how many resources are necessary for resolving the idea, and what kind of norms can be expected by the audience.

There are no such distinctions in video games. To establish a similar term for the field, I propose the adoption of the simple and self-explanatory term "short games." Like shorts versus features in cinema, short games don't necessarily need to be defined theoretically, but instead in practical terms of duration. For the sake of agreement across the film industry, for instance, professional organizations like the Academy of Motion Picture Arts and Sciences and the Screen Actors Guild have provided hard parameters for what is considered a short or feature film.[10] The Academy of Motion Picture Arts and Sciences specifically rates the dividing line between the two categories at forty minutes. The Screen Actors Guild specifies the cutoff at thirty-five minutes.[11] Even when the quantitative boundaries of definition differ, the fact that the same terms are used by different parties in the same discipline codifies the different categories as meaningful and thus creates different cultural conditions for production and reception. While the quantitative cutoff could be considered arbitrary, the shared acknowledgment of terms refines a discipline's idea of itself. I suggest that we consider a short game any game with an average, or intended, playtime of ten hours or less. Conversely, any game with an average, or intended, playtime from ten to possibly hundreds of hours could then be considered a long game. It would be advantageous for a professional video game organization, such as the International Game Developers Association, to codify specific language to this effect. Then that

language could be applied in numerous other contexts, such as the Independent Games Festival and Game Developers Choice Awards categories, which are designations that celebrate excellence in different production departments.

The term makes no claims on mechanics, play style, production budget, or position in the industry. There is no upper limit of how much one could spend on the production of a short game, but as a category it creates a space where low-budget entries are received in an appropriate context. It's also agnostic as to what kind of studio you are: solo, indie, and AAA developers alike can all create short games. In fact, we can already point to mini-games as short games that ship with long games, in a manner similar to short films being distributed with features.

The establishment of the term "short games" doesn't require novel innovation in games production. Instead, it creates a cultural context for so many titles that already fit evenly into it. For titles associated with the "indie" scale of production, examples of short games are numerous. Cardboard Computer's hit *Kentucky Route Zero* began as a single short game released as the first episode in a series in 2013. The main story experience ranges from one to two hours and sets expectations for how a player could likely play future installments in an evening-length play session.[12] Paloma Dawkins' cartoon psychedelia first-person game *Gardenarium* can be completed in under an hour.[13] Each of Robert Yang's self-published games about sexual politics and intimacy can be played through in a matter of hours or less.[14] Outside of the indie space, audiences are already primed for experiencing a whole story arc during one evening of entertainment. Hideo Kojima's *P.T.* is roughly an hour and is now considered a canonical classic. The irony here is in its very title, which stands for "playable teaser," meaning that *P.T.* must try to present itself as only a snapshot, and incomplete, even though it's become a highly influential and beloved title.

Unlike a revolutionary proposal like the Scratchware Manifesto, short games do not demand the deconstruction of any other kind of text or mode of production. But it does change the landscape of dominant notions of taste, which culturally speaking can be a more revolutionary proposal than changing production practices wholesale. However, their recognition does a lot of work toward establishing cultural awareness of the diverse scale of video game production. All stakeholders—from gamer, to indie dev, to AAA executive, to blogger—have something to gain from the recognition of short games, and the language we use will be a clearer reflection of video game production as it already exists.

BIO

Chaz Evans is a media artist, art historian, educator, and curator. His work deals with software, performance, and histories of art and technology and has been exhibited at such venues as ACRE Projects, Hyde Park Art Center, Evanston Art Center, and the Chicago Artists Coalition. Evans' writing has been published by Routledge, the *Journal of Games Criticism*, and the A.V. Club. He is director of exhibitions and programs at the Video Game Art (VGA) Gallery. He has taught courses on creative programming, web art, and games. He is assistant professor of media arts in the School of Visual Arts and Design at the University of South Carolina.

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Artists as Assets: Labor and Capital in the Unity Asset Store

D'An Knowles Ball

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ABSTRACT

The Unity Asset Store sells amateur designers and artists a promise of being able to participate in an idealized, rationalized vision of how the game design industry operates. However, the Unity Asset Store depends on marketing the content created by amateur artists in ways that require the artists to essentially package their work as labor and to mask their role as artists. This essay views labor and capital in the Unity Asset Store through a Marxist lens, informed by Kline, Dyer-Witheford, and de Peuter's (2003) model of technological, cultural, and marketing forces as "three circuits of interactivity" in the mediatized global gaming industry. This analysis lays bare the complex relationships between developer/seller and user/buyer as well as corporate stakeholders. Though the Unity Asset Store markets itself as a democratic playground, its approach to marketing video game assets operates in this present world order as an empire.

INTRODUCTION

Over the past decade, the Unity Asset Store has opened wide the accessibility of virtual commodities to new game development market segments. In game development and production communities, artists and developers are more and more frequently turning to open platforms to buy and sell object-oriented program assets. Unity has captured a substantial global developer customer base over the past decade of multiplatform game creation. Yet, the form and function of the Unity Asset Store as a system in and of itself, and as an ever-growing operator in the gaming industry, is an area that has so far been overlooked. This work advances examinations of labor as performed by asset developers, assets as capital in the gaming industry structure, and use value versus exchange value involving labor on the parts of independent Unity Asset developers.

While the Unity Asset Store markets itself as a democratic playground, its operations emerge as performative masking of a capitalist infrastructure with marginalizing labor practices, reflecting processes of wider gaming infrastructure and digital/cultural politics. The Unity Asset Store sells amateur designers and artists a promise of being able to participate in an idealized, rationalized vision of how the game design industry operates, riffing on a dream to distinguish themselves as artists. Yet in order to sell this vision to aspiring game designers, Unity and the Asset Store depend on marketing the content created by amateur artists in ways that require the artists to essentially package their work as labor and to mask their unique identities as artists.

In viewing labor and capital in the Asset Store through a Marxist lens, this analysis of the ways and means of the Unity Asset Store provides an analysis informed by Kline, Dyer-Witheford and de Peuter's (2003) model of technological, cultural, and marketing forces as "three circuits of interactivity" in the mediatized global gaming industry.[1] The ways in which capital and commodity operate within the Asset Store has allowed Unity to grow as a game engine and a one-stop-shop for digital tools and objects since 2005, as assets are now used across an ever-expanding landscape of global game production.[2] Analyzing the affordances and constraints of the site itself provides effective ways to locate the roles of the Asset Store's artists concerning larger gaming industry practices. A close look at this space of labor and capital also provides perspective on an emergent culture industry that, as Dyer-Witheford and de Peuter argue, "blurs the lines between work and play, production and consumption, voluntary activity and precarious exploitation, in a way that typifies the boundless exercise of biopower."[3] Examining

such blurred boundaries sheds more light on how Unity assets operate as virtual goods within the gaming industry structure. As Marx and Engels emphasize, "These social relations between the producers, and the conditions under which they exchange their activities and share in the total act of production, will naturally vary according to the character of the means of production."[4] We must ask the Marxist question of who suffers and who benefits in this site-specific but ever-expanding scenario.

An examination of activities and transactions in the Unity Asset Store exposes complex relationships between developer/seller and user/buyer as well as corporate shareholders. Knowledge sharing among the site's independent developers feeds into a network of social structures that are hierarchical in their foundation. As amateur artists often post assets to sell to other amateur artists, the Asset Store's emphasis on community participation and its democratizing potential reflects Marxist neoliberal ideals in light of capitalist drivers. Areas of disruption and contention arise from the nature of such structured processes and transactions in the Asset Store, moving the site further away from its image as a democratic free market "indie" system. An asset operates clearly as a commodity, and exploitations and ethical dimensions of labor processes such as those explored by Dyer-Witheford and de Peuter demonstrate the ways that dominant capital influences hold sway in open systems. How are these development tools put to broader uses as cultural capital?[5]

As Marx and Engels point out, "All these components of capital are created by labor, products of labor, accumulated labor. Accumulated labor that serves as a means to new production is capital."[6] If, as Ruggill and McAllister assert, "[p]lay is the engine of human socialization, learning, and sense-making," then accumulated labor is the motor that drives this engine to production, and dominant capital affords the engine's creation.[7] Building on this distinction between work and labor that Ruggill and McAllister highlight about the wider video game landscape, work by artists becomes accumulated and quite literally resold as labor (or the products of labor) in the Asset Store. The Unity Asset Store enables both independent artists and game designers to sell their work as labor in the form of homogenized assets. As a concrete articulation of a distinctly neoliberal form of institutionalization and ideology, the Asset Store channels work into more acceptable or marketable forms of game production. The Asset Store, in fact, positions itself "within a system of global ownership, privatized property, coercive class relations, military operations, and radical struggle," as Dyer-Witheford and de Peuter recognize in their 2009 argument that video games operate in this present world order as an empire, when in fact the

Unity Asset Store would sooner bill itself as a marketplace full of "all types of technical wonders."[8]

EMPOWERMENT OR REPLICATION

A 2014 press release from Unity Technologies points out that one of the Asset Store's main goals is "empowering Unity developers to create games and apps with a more efficient and effective production process, sav[ing] developers 6 million workdays over a 12-month period, which roughly equals a savings of $1.4 billion."[9] Independent artists and amateur developers seeking to step outside of industry crunch and structures played a major part in this successful emergence. The Asset Store rapidly moved from facilitating counter gaming or indie game development to becoming, as McAllister would describe it in broader gaming systems, a "mass culture force" in a quick four-year period, and in turn, producing "globalizing and homogenizing effects" that mimic the wider gaming industry.[10] Specific to its own popularity and growth, the Unity Asset Store's cycle of labor and capital is rhetorically constructed and proceeds *in* the Asset Store, where the interface itself can be decoded as an accumulated labor environment, operating on the consumer and for the asset artists as a framework of capital in social relation to production. Before Unity went through iterations of platform performance enhancements, both GitHub and Unreal engine were competitors, with artists collaborating and sharing digital content creations. Driven largely by the sheer number of assets available in the Unity Asset Store, Unity is presently used to create well over 50 percent of all mobile apps and games and has dramatically increased its presence in the dominant game engines since opening up as a free license platform in 2009.[11] Though Unreal and Unity are both free platforms, strategic business moves by the company allowed Unity Technologies to expand from targeting indie game design markets to making rapid gains with well-established game corporations wherein Unity assets are foundations for building apps on both Google's PlayStore and Apple's App Store, as well as for popular game titles by Sony, XBox, and Nintendo.

In terms of strategic positioning, references to the Asset Store as "a marketplace," an "ecosystem," and "fertile ground" in Unity's 2014 press release invoke neoliberal connections to natural environments, masking apparent systems of labor, use value, and capital at work in this arena—a space where capital is "not only a sum of material products, it is a sum of commodities, of exchange values, of social magnitudes."[12] The Asset Store's front page, driven by a powerful search function, immediately delineates capital and value

by highlighting top paid assets and top free assets. Seemingly all one needs to craft a game is broken down into handy categories—models, animations, shaders, particle systems, scripting, and the like. In addition, social relationships perform a primary function in this exchange framework. The Asset Store is quite literally invested in promoting and reproducing a specific Fordist assembly line model of gameplay. User reviews are active rhetorical components of the site and can often make or break future asset purchases, while also ensuring a standard of quality enforced by the consumer. While providing ease of interaction between developer-buyer and artist-producer, the Asset Store also allows for troubleshooting, further regulating the quality of products available. Main menu items such as "Services," "Learn," and "Community" foreground the effective topological map the Asset Store is constructing by utilizing techno-rhetorical appeals to create, market, and distribute products that will then be reproduced and perhaps even marketed in a wider gaming industry sector.

Employing the gray/green graphics–heavy gaming aesthetic, the Asset Store strategically presents a familiar design to accommodate potential customers' expectations of content and interfaces, replicating in order to reflect larger gaming industry strategies and standards.[13] In addition, compositional arrangement of available gaming components foregrounds the role that both format and content enact in part of a knowledge economy. Labor on the part of the artists-as-sellers comes not only in product development and acceptance of the Asset Store's standards, but also in developing the sales pitch behind the product. Top sellers in the "marketplace" demonstrate the commodity drive for professional display and advertising of asset packages through promotional videos, demo scenes, and package updates. Use of demo videos, if done well, shows potential buyers quickly and effectively what the package or product does.

MUTUALLY BENEFICIAL GOODS?

The artist community's contribution to the Unity Asset Store is huge, and the forums provided on the site allow for greater levels of connectivity and professional development within the community. Complex negotiated relationships also evolve between Unity asset developers and buyers, as well as between independent artists and those in the professional gaming industry. The Asset Store fosters community and collaborative practices on the surface, while the actual assets operate as virtual goods, to the benefit of both amateur and professional developers, allowing mutually beneficial goods to cross multiple gaming production sectors. David Helgason, founder

and executive vice president of Unity Technologies, presents a vision of the Asset Store "as a democratic marketplace that would give developers, especially indies, a way to acquire high quality assets and technology cheaply while also providing a way to make some extra money on the side."[14] The success of this "democratic marketplace," seemingly reliant on cooperative use value, also operates in conjunction with practices of the larger gaming capital infrastructure. As an extension, Ash analyzes the Unity engine to demonstrate "how the objects that make up these environments not only communicate with one another, but also communicate with the player."[15] Similar relationships emerge in the Assets Store's ecologies of objects between the artists, as well as between artists and buyers.

The collaborative communities enacted in the Asset Store reflect those found in the indie game arts community built on neoliberal scaffolds, though capitalist drives of the larger gaming industry complex still lie at the base of these structures and strategies. Joachim Holmér, creator of the incredibly popular Unity asset package *Shader Forge*, emphasizes these areas of mutual assistance in stating, "It's absolutely amazing to see what people create with a tool of your own making and watch how an actively helpful community forms around it. You rarely have a chance to add an extra tool in an application and you rarely have the chance to distribute it to so many people."[16] In this way, artists do effectively work in conjunction with each other in the production process. Community forum threads within the Asset store are a flurry of constant activity, fashioning a real-time creative workforce. Using the communal nature of the Asset Store as an example points to how we can analyze the active roles developers are taking in "constructing their own local norms through community debate and consensus."[17] In replicating forms of social play and creative activity in the production process of game component development, the Asset Store fosters connections between independent developers hoping to break into the game design market and industry scouts seeking the next new talent for their project line, while also growing a space where amateur developers commune with each other to solve real user needs. In Marxist fashion, growing out of necessity for artists and by nature of the Asset Store's structure, developers and artists alike "produce only by working together in a specified manner and reciprocally exchanging their activities," forming social connections and relationships that allow for continued labor production in a space that feels like peak fostering of creative support.[18] Artists work together to maximize time, workflow, and resources. In turn,

by harnessing free community user optimization of products and providing the tools and assets needed to assist those who may not normally have access to the bits and bobs to create a game, Unity Technologies enjoys the generation of sizable revenue streams.

ASSET MANAGEMENT & COMMODIFICATION

Contentions arise in the Unity Asset Store from the issue of exchange value versus use value of assets, as well as from the ethical issues of asset artists' labor being exploited. With this in mind, a space for analysis of exploitation can be located in the Asset Store's power structure. Such relationships underlie Helgason's own words: "Unity's Asset Store is a marketplace designed to give all developers the opportunity to compete in today's crowded gaming market by increasing quality and lowering costs."[19] At the juncture of the gaming industrial complex and amateur productions, capitalist digital networks such as the Asset Store play an important role in the exploitation of immaterial labor and as production cost drivers. A well-designed asset can save game designers time and money, yet assets are only approved for posting to the Asset Store by gatekeepers, with the expectation that the asset, upon sale, can be infinitely altered to buyer/user specifications in a form of planned erasure not of the original artist's labor, but of their authorship. The labor of the people manufacturing the assets becomes congealed into and homogenized into the asset itself, which becomes a commodity.

While those who create the assets sold in the Unity Asset Store are compensated, issues of authorship and inequalities must be approached, given that "the interests of capitals and the interests of wage-labor are diametrically opposed to each other."[20] When an asset package is purchased for a nominal to higher price, the buyer can alter the data sets to their specifications, and the product then has a new author. This new author could be an amateur developer crafting an indie game or it could be a major commercial game design studio, purchasing the Unity asset pack for a small amount considering what may be a substantial return. Unity goes to great lengths "to make sure that these offerings are both affordable and covered by a common, easy-to-use license without legal complexities such as royalties."[21] Ethical profit/wage "complexities" and proportional dimensions of productions and reproduction arise as contentious areas of rights related to capital. This is the fantasy of game design and production that Unity sells to the people who download its engine and turn to the Asset Store—that game design

is a simple matter of piecing together anonymously crafted components to create a product marketed as unique.

More broadly, Unity now replicates the exploitative labor practices of the corporate gaming industry. Indeed, with an increase in company valuation by 2016 came a shift in Unity's use valuation for asset artists. Soon after capturing almost 50 percent share of the global game engine market economy, Unity changed policies to require artists who made over a certain amount of profits on assets in the Asset Store to purchase a "Pro" license and pay a percentage of taxes on profits. If artists do not provide tax information to the company, Unity quits paying the asset artist until tax numbers are filed.[22] The policy of Unity's keeping 30 percent of the profits from each asset sold by artists still stands.

On one hand, the Asset Store works to control the behavior of its artists, and on the other, the artists recognize and develop strategies to, in turn, exploit Unity's networks of control. For developers selling assets, product price points become an area of competition, requiring competitor market research within the site. In this way, Unity can be seen as a competitor in its own arena, given that Unity itself also publishes a great deal of free asset "starter packs," undercutting commodities created by some sellers. In-house competition is also reflected among the sellers within product page elements—four-star reviews, promotional materials, video demos, updated packages, VR accessibility of assets: all productions to entice buyers, thereby creating competition among asset artists. In this way, Unity regulates the inflationary tendencies and price points of the assets, suggesting (but not requiring) asset artists to err on the side of low price points. For example, sellers participate in the Asset Store "flash sales" and compete for top rankings on the site's front page, which the company capitalistically breaks down between "Top Paid," "Top Free," and "Top Grossing" in over the dozen asset categories offered. The site administrators now limit each developer to twelve free asset giveaway coupons per year, because developers have been known to exploit these giveaways in return for favorable reviews, helping them break into the Top 10 slots, thereby increasing visibility on the site. In light of competition, this brand of capital "can multiply itself only by exchanging itself for labor-power, by calling wage-labor into life."[23] The Asset Store is an economic force, both as a presence in the economic sector as an entertainment commodity and as a cultural site whose internal economies and definitions of success represent those found in the world. More specifically, this presents an idealized version of success in the gaming industry itself. Capital can be painted as a creative endeavor, but it

also "perishes if it does not exploit labor-power, which, in order to exploit, it must buy."[24]

MANUFACTURING QUALITY (CONTROLLED) DREAMS

As Unity has grown from a game engine and a one-stop shop for digital tools and objects since 2005, assets are now used across an ever-growing corporate field. So who suffers and who benefits? Artists, developers, and buyers form a system of labor, capital, and cultural influence, negotiating and replicating gaming culture's exchange and reproduction practices across multiple negotiated dynamic networks. The Unity Asset Store has shifted with the company from a place of counter gaming or indie gaming to a rapidly growing cultural industry force that takes advantage of exploitative gig economy practices. Marxist ideals of utility and use value are reified, while artists' agency, authorship, valuation, and ownership erode. Put another way, Unity Technologies sells both the razor (the dream) and the blades (the assets). Unlike other app and game development engines, Unity Technologies has streamlined the game-making process from ideation to production by selling the most desirable shaving kits with the shaving cream included—assets, tools, editors, and code engines—speeding game production for developers while erasing the labor of the asset artists in the process. However, in order to sustain this economic model, quality control on the subcontractors/artists who produce the blades must continue to be enforced. This generates systems of control that the dream predicated on and that perpetuates (and reveals) the underlying systems of economic exploitation that can expose the dream as a lie. Possible democratic fair market solutions or alternatives to these disparities could include creative commons or open-source licenses provided as options for asset artists, more agency over asset reuse in terms of agreements, or optional widgets that add artist credits to games utilizing certain assets. Game studies scholars, while approaching the larger perspectives and roles of game production, have not delved deeply enough into the Unity Asset Store as an environment of study. As the market segments for Unity Technologies and the Unity Asset Store continue to grow more popular and accessible with global reach, the deeper inquiries presented herein will become even more stark in terms of necessitating awareness. Locating rhetorical structures, opportunities, and tensions enacted by the Unity Asset Store on the digital capital of artists reveals how the game engine inducts amateur designers as professional laborers into the gig economy within an immaterial marketplace.

BIO

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Racial Architecture: Building the FGC

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ABSTRACT

The Fighting Game Community is among the largest and most salient groups in discussions of gaming culture but boasts a distinct difference from other gaming communities in its racial diversity and history. The growth of gaming communities is a rapid expansion influenced by transnational, economic, and cultural factors. This essay considers these histories and factors alongside the FGC's ever-growing demand for spectacle, coming to define such spectacle and refinement as additional factors in its growth. I read such demand, and the spectacle it creates, against the history and racial architecture of the Fighting Game Community. With these methods, this essay underscores the sources of the enhanced racial equity felt by members of the FGC and highlights potential pitfalls and shortcomings that appear with such demand for spectacle.

INTRODUCTION

The Evolution Championship Series (Evo), the largest and oldest fighting game tournament in the world, hosted over nine thousand participants across nine games in 2019. This is a far cry from its origins in 1996 when the tournament—then the "Battle of the Bay"—saw only forty players competing on *Street Fighter II* arcade cabinets. The evolution of video game communities and E-sports in the last forty years represents a supercharging of such grassroots origins. Today, they have come to occupy a prominent place in American entertainment culture, evident in their appearance in traditional sports media such as ESPN and the growing culture surrounding these games on- and -offline.[1]

Despite a lack of corporate support, fighting game players followed the pursuit of competition to a logical extreme to create a vast scene for high-level competitive play. But there is a danger to ignoring the roots of such a movement in this moment of increased demand for video game sports.

Race, as it is articulated in the Fighting Game Community (FGC), is a product of the grassroots origins but also the demand for entertainment and spectacle. This essay seeks to trace the historical articulation of Blackness in the FGC against the meritocratic principles of and the demand for hype spectacles. In this, I hope to contribute to understandings of articulations of racial identity and how they are altered in the spaces surrounding fighting games. It is important to understand exactly how Black Americans may engage with fighting games; how gamers and, to a certain extent, games understand racial identity; and how race factors into constructing a competitive space based on a meritocracy. It's my belief that the accelerating demand for hype fighting game spectacles is an artifact of racialized histories that Black Americans brought with them to the foundations of the FGC.

SPECTACLE, HYPE, AND SKILL: WHAT GAMERS WANT

The racial makeup of the Fighting Game Community is widely understood as the "most diverse space under the gaming umbrella."[2] While many of these claims are anecdotal and merit empirical study, the fact remains that there is a striking degree of racial diversity in the FGC compared to other gaming spaces. Some attribute this enhanced racial diversity to the arcade history that forced players into face-to-face encounters with other real people.[3] Others attribute racial diversity in the FGC to the meritocratic principle that skill is

the only barrier to respect.[4] The true source of racial diversity in the FGC is likely a mixture of these factors plus other racialized histories I discuss below, but it is against these conditions that many Black Americans rise to the top of the scene to become some of the most prominent players and voices in the FGC. In 2019 five (Ezra "Samsora" Morris, Paris "Light" Ramirez, Chris "WaDi" Boston, Rasheen "DarkWizzy" Rose, and Brian "Cosmos" Kalu) of the top 25 *Super Smash Bros. Ultimate* players in the world by Panda Global Rankings Ultimate (PGRU) were Black Americans. And those five Black Americans represented half of the American contingent in the top 25.[5]

Prominent Black members of the FGC are looked upon expectantly by fans of all races to bring color to the jargon-laden commentary of fighting games. This mostly functions for fans already adept in the comic language of the FGC, which is replete with anime references and yelling. These spectacles are clipped, shared, and repeated in an object that fighting gamers calls "moments." These moments satisfy a demand for both hype and high-level play.

"Evo Moment 37" is one of these clips, and has achieved legendary status in the FGC. In a bout between Daigo Umehara and Justin Wong at EVO 2004, in a desperate situation, Umehara was able to parry fifteen consecutive hits from Wong's Chun-Li to reverse the match and pull off an upset victory. This clip demonstrates extreme mechanical skill and represents an extremely high level of *Street Fighter III* play.

Compare this to the "Wombo Combo" clip in which the point of attraction is the hype emotional state of the commentators. This clip, of a bout in *Super Smash Bros: Melee*, depicts losers' semifinals at the SCSA West Coast Circuit tournament. During the match, Tang and partner SilentSpectre performed a tandem attack in which they seemed to pass opponent Zhu back and forth before finishing him to secure their spot in the tournament. Throughout the action from the very first grab, Black commentator and smasher Brandon "HomeMadeWaffles" Collier attempted to capture the action. As his excitement grew, he began to yell, "WOMBOCOMBO WOMBOCOMBO." In this moment he defined the very concept of hype, and the clip—captured and circulated—became an internet sensation. Massive circulation of similar hype clips is no rare occurrence in the Fighting Game Community.

In tandem, they represent the high-level play and consumption of spectacle that grow as the FGC evolves. I will demonstrate that this production of hype is the result of the racialized histories that bring Black people to the FGC.

Fighting game tournaments are often lauded as incredibly diverse sites that draw competitors of all races from countries all over the globe.[6] The role of Black Americans in the grassroots evolution of the FGC can be seen in their presence in iconic FGC cultural objects like the "Wombo Combo" video, cast by Brandon "HomeMade-Waffles" Collier and posted in 2008, which now has over 14 million views on YouTube. Before I can answer the question of what place Black Americans hold in the FGC, I must first address how Black Americans came to hold any space and how the racial architecture of the FGC was established.

The flow of martial arts fighting games into the United States began in 1984 with *Karate Champ*, immediately following a decade saturated with martial arts films from Hong Kong. The game featured martial arts aesthetics and movements popularized by these films, now made accessible for Americans in local arcades and their own homes.[7] While all Americans consumed these films, they struck a particular chord with Black Americans. Since *Enter the Dragon* with Bruce Lee in 1973, Black Americans have flocked to theaters to watch martial arts spectacles from the Far East.[8] This is due in no small part to the strategic deployment of these films into cheap theaters that served Black communities. Scholars identify many aspects and sources of this Black affinity for martial arts films, chief among them: the nonwhite heroes, with whom Black audiences could more readily identify than with the slew of white action heroes of the same era[9]; the alternative construction of masculinity, in which martial arts mastery replaced the hardly credible sophistication of (white) spies and hypermasculine (white) bodies of other contemporary action films[10]; or simply the early diffusion of martial arts to Black Americans by soldiers returning from Eastern Asia in the 1940s, '50s, and '60s.[11] With this Black affinity for martial arts aesthetics, and particularly with the idealization of martial arts mastery as a model of masculinity for Black Americans identified by Tasker[12], Black Americans' enthusiastic reception of fighting games can be understood as similar to their embrace of martial arts films.

This view of masculinity lies in contrast to the initial white reception of video games as "nerd" media. Despite the overwhelming image of the "gamer" permeating the public consciousness being one of a heterosexual white man,[13] the association of video games and technology was overwhelmingly stigmatized as childish or feminine.[14] The white nerd saturated the American video game market and became overrepresented in these spaces.[15]

If video games on the whole are a white space, how then do Black Americans carve out a space for themselves and their affinity for fighting games?

In the constructions of the racial architecture of the FGC, then, we see these two communities meet with disparate ways of regarding video games as media. I argue that because of these disparate histories, as the Fighting Game Community developed, Black Americans came—*without shame*—to the meritocratic and celebratory space. The nature of this meritocracy is such that racial difference is ameliorated to allow Black players to appear at the highest level of competition across many games. Players like Dominique "SonicFox" McLean rise to the forefront of gaming's social consciousness through the FGC.

TRANSNATIONALISM OF HYPE

I have touched briefly upon the moment that fighting games entered the United States with *Karate Champ* in 1984—and the word "entered" is very important to the cultural trends that surround this moment. *Karate Champ* is a Japanese game developed by Technōs Japan and the Hampster Corporation, known domestically as *Karate Dō*. This is an instance of American/Japanese transnationalism in which Japanese media is consumed by a dedicated subculture of American fans. This connects the birth of fighting game fandom in the US to the uptake of another tradition of Japanese media consumption in America: *anime.* In this section, I will outline a history of Black and white interactions with anime that proximally affect the cultural receptions of fighting games, how these receptions manifest in the racial architecture of the FGC, and the transnational flow of technology and spectacle that provide the backdrop of racial interactions through fighting games.

The stereotypical image of video games as "nerd media" is/was a consequence of its association with cutting-edge technology.[16] Though in modern times this stigma has largely fallen away, in the early days of American video game culture a set of characteristics became associated with games that drastically influenced the image of the adult male gamer. Firstly, video games were *childish.* For pretty much the entire history of video games, the media object has been regarded and marketed as a toy.[17] Adults who engaged with video game media often suffered the stigma of "being trapped in perpetual adolescence." This is a stigma that was often attached to early adopters of anime in the United States as well. Fred Patten offers an insightful history of moral panics and emasculating stigma that followed early anime fans, explaining how the cultural

associations of manga with comics and anime with cartoons led most Americans to the conclusion that anime was for children. American consumers who were exposed to anime in the early to mid-1970s were an offshoot of sci-fi and fantasy fans of the 1960s, who in their turn had suffered heavy stigmatization as well.[18]

This is in part due to the high level of technical expertise required to operate audiovisual technology. Ron Eglash traces the origins of nerd stereotypes to "wireless enthusiasts" and radio hobbyists of the early twentieth century and argues that such technical experts (and the associated technologies) would eventually come to be considered highly feminine.[19] The image of the nerd as a subject of failed masculinity would eventually influence science fiction, fantasy, anime, and video game fans as well. These dual stigmas of childishness and femininity, combined with the insular nature of anime distribution networks in the United States, led many early anime fans to form self-segregated communities. What is important about these communities, and all of these evolutions of the cultural image of the nerd, is that they are largely *white.*

Eglash and Kendall focus heavily on the racialization of the image of the nerd as white or Asian, and this rings true in the racial makeup of anime clubs and other communities organized around viewing and consuming "nerd media."[20] The self-segregation of these communities occurs in such a way that is historically exclusionary to Black Americans. This is not to say that Black Americans did not engage with computers, anime, or sci-fi, but that what white Americans brought to their burgeoning transnational relationship with Japanese media was a culture of stigma that did not permeate the sphere of Black/Japanese cultural interactions. What Black Americans brought . . . was hype.

The late twentieth and early twenty-first century represents a period during which global definitions of "cool" are increasingly influenced by the culture of two groups: Black American and Japanese youth. About this globalization of the aesthetics of coolness, Thorsten Botz-Bornstein writes, "The new millennium is characterized by an international youth culture dominated by two types of aesthetics: the Afro-American cool, which, propelled by Hip-Hop music, has become 'the world's favorite youth culture'; and the Japanese aesthetics of kawaii or cute, which is distributed internationally by Japan's powerful anime and manga industry."[21] This linking of hip-hop and anime/manga opens the potential for the crossing-over of these cultural aesthetics, as shown by the way Black Americans regard these Japanese aesthetics (and vice versa). From the brief history of Black interactions with Asian media I lay out above, it's clear that the action spectacle of martial arts is important to the development

of traditions surrounding Black consumption of Japanese media. Hip-hop music quickly became a site for celebrating that spectacle, and references to kung fu heroes (and eventually anime heroes) became commonplace. This demonstrates that Japanese (and other East Asian) media, for Black Americans, is historically *cool*. Central to the establishment of this media tradition as cool is a history of communal consumption and celebration.[22] "Hype," then, is an extension of this communal consumption and celebration, and is an artifact of Black engagement with fighting games that supplants the white tradition of stigma.

RACE IN FGC: PERSPECTIVES

It is important to note that the modern FGC is an extension of a tradition that began in the United States with arcades.[23] Arcades served as spaces that were accessible without requiring the massive investment that other video games might. Rather than owning a console or computer, early fighting game players needed only a quarter to engage with their community. This allowed for disenfranchised communities like Black Americans to engage with fighting games from the very start. Arcades also made the early Fighting Game Community a place where opponents of different races were forced to play face-to-face, possibly increasing instances of cross-racial interpersonal connections and accountability. This mode of play, known as "couch-party play," eventually evolved into a larger scene for competitive play without the infusion of funds or other structural support from the companies that made these games.

Travis "Samox" Beauchamp chronicles one such case of this grassroots formation in his documentary *The Smash Brothers* (2013). He traces the rise of a global community dedicated to the high-level play of *Super Smash Bros: Melee* (2001) from disparate local communities in New York, Southern California, and Japan. The nine-part epic separates many of the players interviewed into factions by region to dramatize the development of this community, and persistently throughout the story, one is met with an incredibly diverse cast. In the documentary, white Smasher Kashan "Chillindude" Khan recalls his early encounters with Black player Antoine "Wes" Lewis-Hall, saying, "If I ever told people at school I went to tournaments, they [would say], 'oh that's lame.' I'm like, 'oh yeah? Let me show you this, motherfucker—Wes goes to these tournaments. He's a fucking badass."[24] Khan identifies Wes' and his "Deadly Alliance" crew's as "inner-city" individuals and notes their propensity for smack talk. What is important about this moment is that Khan is assigning Blackness as a characteristic that makes *Super Smash Bros: Melee* cool. This

case is one among many of how the FGC interacted with Blackness in its early days, and of how Blackness served as a force to rejuvenate the "coolness" of the cultural image of gaming in these spaces.

In contrast, a similar documentary following the rise of professional MOBA communities like *League of Legends* or *DOTA* would not prominently feature Black players or the Black faces that appear in almost every tournament room shot. This is not to say that Black Americans do not play MOBAs (I myself am proof that such a claim is false), but in the eleven-year history of the League Champion Series in the United States, only one Black player, Zaqueri "Aphromoo" Black, has ever permeated the barrier of professional play.

Another approach to understanding the relative equity of Blackness in the FGC is through meritocracy. Christopher Paul describes meritocracy in gaming spaces as an abject poison and argues that toxic online gaming culture is the result of a compulsive adherence to meritocratic norms.[25] Still, meritocracy occupies a somewhat sacred place in our society. Meritocracy is the idea that one's place in whatever hierarchy is earned through one's own merit. The breakdown of this concept, what Paul refers to as "the meritocracy myth," comes when merit is considered alongside factors that influence one's place in hierarchies external to merit.

Rather than believing people succeed or fail on their own merit, critical race theorists would argue that certain advantages skew most measures of merit toward dominant groups in society.[26] In sports especially, this perceived meritocracy is used to argue that better players naturally come to the forefront of the scene. Goldsmith posits that meritocracy suffers a breakdown when considered with socioeconomic status and the opportunity to participate, but that because of the relatively even playing field, the meritocracy of high school athletics comes out as a site of greater racial equality.[27] Fair competition then creates a "true meritocracy," which in turn diminishes the importance of race in these spaces. Harper relates the competition of fighting games to that of sports, arguing that the tournament scene represents a community of people organized around a high level of competition.[28] There are obvious differences between the way sports and video games are considered culturally, but the nature of competition represented can be considered similarly fair.[29] This complicates Paul's wholesale rejection of meritocracies in gaming spaces, to the extent that some, like Xavier Johnson, attribute Black equity in the FGC to meritocracy.[30]

SEAMLESS INTEGRATION

Any functional understanding of the seamless integration of Blackness into the FGC must consider the nexus of hype, coolness, meritocracy, and racial accountability described in depth in this essay. I am happy to praise the FGC for its racial diversity and equity. Black Americans have had a huge part in shaping that racial architecture by their very presence and their history of communal and masculinized consumption. The rapid growth of such a community, however, must be tempered with a continued commitment to upholding the standards of meritocracy and organization around the high-level play that stems from the very origins of the community. Those characteristics can be seen as the foundation of any racial equity within the FGC. The centrality of hype to the FGC is, at least in part, the legacy of Black reception of fighting games and Japanese media. Further developments on this topic are necessary to understand the true scope of Blackness in the FGC, including firsthand accounts from Black players of all skill levels, ages, genders, and popularity. But one thing is certain: other communities have a lot to learn from Black Americans and the FGC when it comes to scaling the spectacle of hype to a level demanded of modern spectator gaming.

BIO

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Multiball and Multiplicity: Suzanne Ciani and The Voice of *Xenon*

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ABSTRACT

Electronic composer and musician Suzanne Ciani created the sound effects and voiced the antagonist for the 1980 pinball machine Xenon, the first talking pinball table by Bally Entertainment. Though often overlooked when assessing the history of electronic games, her compositional approach provided Xenon with much of its identity, and thus, its contemporary status as a classic and historically important game. This essay explores Ciani's precarious position in the 1970s as both a commercial and experimental composer, using her groundbreaking methods on Xenon as a pertinent case study. Ciani speaks through the pinball machine but also embodies it, and the historical and theoretical ramifications of this reveal not only an essential moment in the development of video game sound design, but also a striking example of a cybernetic approach to interactivity and relationality.

Image 1: Concept art for Bally's ***Xenon*** (artist unknown), ca. 1978-1979.

Todd Tuckey, owner of Pennsylvania's TNT Amusements Inc.—the self- proclaimed "largest used game showroom in the world"—has two YouTube videos discussing the technical features of Bally Entertainment's innovative 1980 pinball machine, *Xenon*.[1] In these videos, Tuckey provides insight into vendor distaste for Mylar stickers, hammered-in cabinet serial numbers, and light displays, and *Xenon*'s two separate soundboards, a unique feature built to accommodate prerecorded vocal sounds. "This game used the most words of any game at the time," Tuckey explains. "First game with a woman's voice too. I understand it was a secretary at Bally that does the voice in this."[2]

Despite Tuckey's wealth of knowledge on the inner workings of *Xenon*, he gets one crucial detail incorrect. It was not a Bally secretary who provided the voice of *Xenon*, but electronic composer and musician Suzanne Ciani, who also created all of the sound effects for the game. On her approach to commissioned composing, Ciani stated, "I got to interpret what I saw poetically in sound, so if it was a commercial for a fur coat, I made [what was] to me the sound of a fur coat. If it was a key chain, I made the sound of a key chain, I made the sound of a key chain . . . It wasn't just music; it was some kind of poetic interpretation of the visual that was also included."[3] Not content to simply compose for a product, Ciani aimed to inhabit, conceptually and aurally, the object she was commissioned to

score, whether it was Coca-Cola's "pop and pour" fizz or the *Xenon* robotress' seductive moans.[4]

With Ciani's compositional approach in mind, it is not hyperbole to say that she provided *Xenon* with much of its identity, and thus, its contemporary status as a classic and historically important game. This fact makes Tuckey's misattribution, while most certainly an unintended error, all the more significant, in that it poses some lines of inquiry having to do with the visibility of experimental composition and commercial composers, the need for scholarship on the historical importance of sound design in video games, the role of marketing, and the gender line in all of these. How is it possible that the voice of *Xenon* is heard, that the sonic identity of the machine is all Ciani's, but she can still be forgotten, replaced by a faceless, nameless Bally secretary? This essay works through these questions by exploring Ciani's precarious position in the 1970s as both a commercial and experimental composer, using her groundbreaking work on *Xenon* as a pertinent case study. Ciani speaks through the pinball machine but also embodies it, and the historical and theoretical ramifications of this reveal not only an essential moment in the development of video game sound design, but also a striking example – in its publicness through a popular media like a pinball machine – of a cybernetic approach to interactivity and relationality.

Image 2: Suzanne Ciani in Park Ave. Studio, taken by Riva Freifeld, ca. 1979.

I. SOME HISTORY

In the late 1960s/early 1970s, Ciani largely abandoned her academic work in piano performance at Wellesley College and moved toward experimental composition with the then-cutting-edge modular analog synthesizer. Her synthesizer of choice, inventor Donald Buchla's eponymous Buchla Modular Electronic Music System, was built without any formal musical precedent; it possessed no keyboard, thus eschewing the musical tradition adhered to by the more popular Moog synthesizer. The design, along with its physical heft and unwieldiness, made the Buchla an intimidating instrument to play. Although a commercial failure, those who did engage with the Buchla often found its open parameters and possibilities a boon, both creatively and philosophically.[5] Music historian Mark Brend writes, "[Buchla] is by nature an explorer at the edge of things, not overly concerned with mainstream commercial success, and this inclination found expression in a series of decisions that kept his devices in their natural homes, the *avant-garde* world . . . [it] saw electronic music as a means of going beyond traditional tonal music into unexplored regions."[6]

At the age of twenty, Ciani began working as a solderer at Buchla's studio, described later as a "community of festival freaks and academic acid eaters whose roots in new age lifestyles and the reinvention of art and music replaced the business acumen enjoyed by its like-minded East Coasters."[7] These unconventional attitudes seemed to have comingled with their more conventional brethren, given that Ciani was fired by Buchla on her first day for someone else's soldering error, an accusation she believed was predicated on sexism. Ciani refused to leave, calling Buchla a "chauvinist," and remarked that the inequality she experienced, in this space and elsewhere, "made her work even harder."[8] Though Ciani mastered Buchla's instruments and electronic recording engineering in general, the sexism she faced as a young woman in a predominantly male field followed her. Ciani recalled that she had "traveled to every studio in the San Francisco bay area [but was] stone walled because of prejudice against women in the field."[9] She moved to New York City, where she took up odd composition and sound jobs. While these commissions hindered her aspirations as an avant-garde composer proper, Ciani nonetheless began to perform these jobs with the same conceptual spirit as she performed her experimental solo-composition work.

One notable job during this period was providing the sound effects for the film adaptation of Ira Levin's *The Stepford Wives* in 1975. Ciani's sound design gave the sense of "machinery going awry," an

electronic metaphor for the failing operating systems—the fragile mental states—of the wives in the film.[10] The use of electronic music to indicate a form of madness or human disintegration, and its schlocky use in sci-fi B movies, has a historical precedent in film scores from Louis and Bebe Barron's circuit-bending in the score of *Forbidden Planet* to Dr. Samuel Hoffman's Theremin in Hitchcock's *Spellbound*. Ciani's compositional work in this film is an early example of her identifying human consciousness with a machine counterpart, a conceptual practice that aligns with mathematician and philosopher Norbert Wiener's concept of cybernetics: through forms of feedback, the human brain is analogous to that of a machine. Ciani, however, made this conceptual leap more personal, as evidenced by her work with *The Stepford Wives*, and later, with *Xenon*—the voice of technology skewed unruly, rebellious, and female.

While Ciani's turn to advertising was something of a necessary concession to the systemic reality of paternal resistance toward experimental female composers at the time (as the Buchla incident attests), it was nonetheless a happy medium for her conceptually. Advertising, in which desire for nonhuman objects is sublimated via discreet psychological means, allowed Ciani to take advantage of her commissions to explore further the relationship between sound, machine, and human behavior. By 1980 Ciani had established her own production company, Ciani-Musica, and crafted digital soda sounds for Coca-Cola; captured the anxiety of a literal bull in a china shop for Merrill Lynch; and found the perfect aural balance between play and futurism for Atari. By the time of her late-1980 appearance on *The David Letterman Show*, she had become a go-to force in novel commercial design. When Letterman, in his patented condescending chatter, asked, "You don't go door to door saying, 'I'll make you sound goofy,'" Ciani responded, "No, they call me."[11]

II. THE MACHINE SPEAKS

In 1978, Chicago's Bally Entertainment company, a manufacturer of pinball and tabletop arcade games ever since World War II ended, had the foresight to acquire *Space Invaders* through its subdivision Midway, one of the most popular (and profitable) arcade games of all time. The voracious public appetite for *Space Invaders* and subsequent heavy hitters such as *Pac-Man* and *Ms. Pac-Man* pushed Bally and its contemporaries to reconsider how to innovate—both mechanically and conceptually—pinball's previously limited format. *Xenon*, Bally's first multilevel pinball game, was one such attempt. It featured a microprocessor, sophisticated lighting that required an

Image 3: Trade advertisement for Bally's ***Xenon*** noting "the incredibly alluring Xenon girl" as the "first female voice in the industry," ca. 1980.

auxiliary lamp board driver, and two soundboards for enhanced digital effects to supply both the soundtrack and the vocals. Greg Kmiec, who designed the game, recalled that a Bally marketing director "had heard of a competitors' talking game [assumedly Williams Electronics' 1979 *Gorgar*, the first talking pinball machine]. That's when the decision was made to include speech. The decision was made to one-up the competition by utilizing a female's voice, as dictated by the artwork."[12] It was at this point that Bally marketing contacted Ciani, who was flown out to Chicago to view *Xenon*'s schematics, blueprints, and voice-dictating artwork.

The visual aesthetic of early video game marketing and design, as practiced by Bally, skewed toward *Heavy Metal* magazine and kitsch sci-fi, stunning Ciani with its casual misogyny. She recalled this moment in a later interview: "Up until that time, my concept of art was Renoir and Degas . . . so I was a bit struck by my visit to their 'art' [Ciani's emphasis] department. All those cartoony women with big breasts."[13] *Xenon*'s artwork was done by Bally staple Paul Faris, who often produced unsubtly suggestive imagery.

This matched the concept art by an unknown artist from Bally's stable of designers that featured a bare-breasted, wide-eyed cyborg figure reminiscent of the robot incarnation of Maria in Fritz Lang's 1927 sci-fi film, *Metropolis*. While the final realization of this cyborg would appear slightly more modest on the backglass of *Xenon* after manufacture, it nonetheless prompted Ciani to prudently consider if she was contributing to "denigrating women."[14]

Ultimately, Ciani decided that her cybernetic approach to composition and sound might turn what could have been a more problematic commission into something more layered and complex. Her attempt to apply agency to her role in developing the sound for *Xenon* is featured in a short documentary produced by *Omni* science magazine. In one particular scene, the composer sits in an office (assumedly at Bally in Chicago) with Kmiec and an unnamed Bally representative conceiving the audio for the game. "The artwork has different phases of transformations," Kmiec says, with the other representative chiming in, "It's a place, it's a person, it's a state of being. If we could somehow convey all of this through the use of voice. We've never done that. It's been so functional and dry before." It is perhaps this bait that was irresistible for Ciani, whatever her reservations with the artwork might have been, and she immediately responds: "I just think it would be really nice to use a female voice in the game as a . . ." Before we can get to Ciani's thoughts, the unnamed representative interrupts and says, "A female voice . . . that *would* be unique."[15]

Maximizing the 48,000 bits of information two sound chips could hold in her Synclavier digital synthesizer, Ciani set to work on creating an electronic pinball symphony for one chip, and turned to her "voice box"—a collection of modified synthesizers and vocal processors—for the other. The aim was to create a synthetic relationship between the voice, sound, and pinball machine, one that created the illusion of a single organism. "I was very interested in getting the whole composition to work," Ciani says. "To think of the pinball as actually playing the piece."[16] In this way, while the composition has been prerecorded, it is nonetheless indeterminate, the sounds being dictated by the variable action of the pinball game player.[17] One immediate way this becomes apparent is through the rising pitch of the soundtrack the longer the pinball remains in play, giving the sense that not only are the stakes of the game increasing but that the player is undeniably responsible for them, creating a sense of accomplishment as well as anxiety.

When it came to recording the voice, Ciani was determined to maximize the potential of the voice chip. She recounted the technological limitations of the voice recording: "It [the chip] requires less

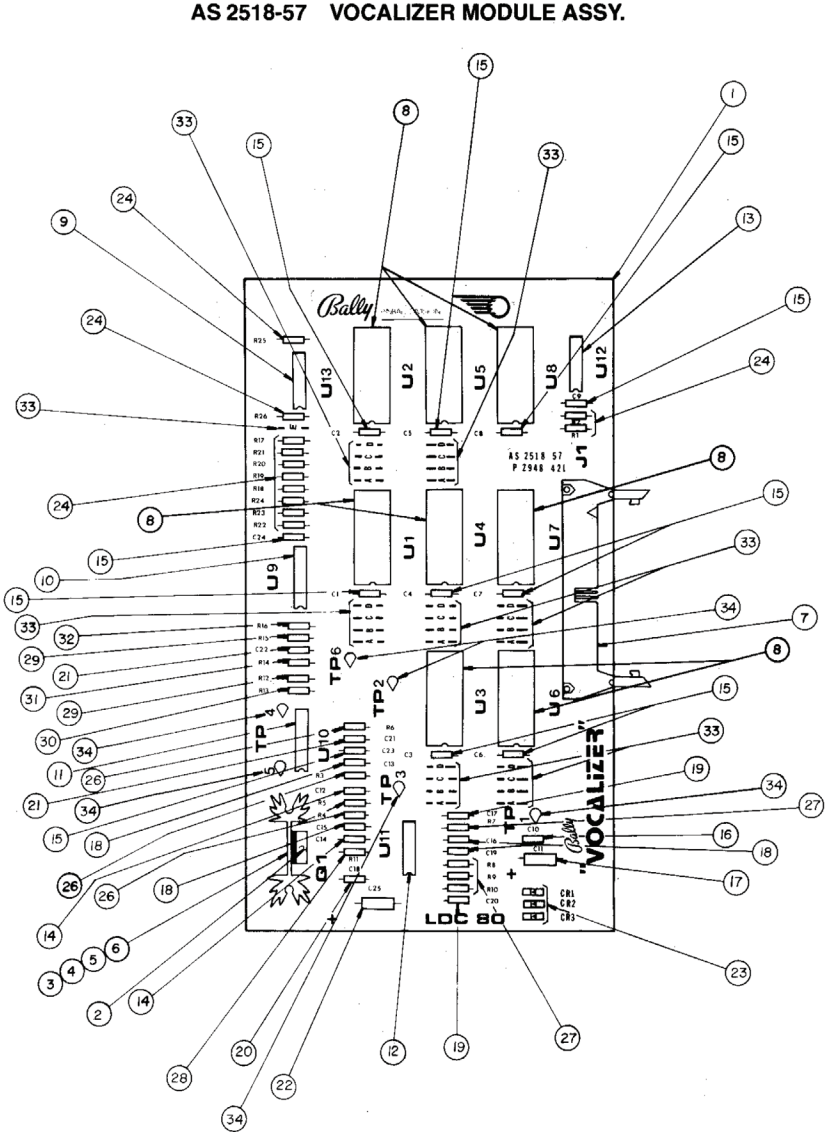

Image 4: Vocalizer Module diagram from Bally's *Xenon* Installation and General Game Operations Manual, 1979.

information and lower-grade technology to do a lower-pitched male voice. It's much easier and cheaper. Once chips got more powerful with higher sampling rates, they could handle a female voice—the higher the frequency, the more bits you need."[18] Once again pushing technological boundaries, Ciani took advantage of new higher sampling rates that allowed for female voices and recorded her own

voice to "[go] the whole gamut . . . to male and female and everything in between," reflecting the "phases and transformations" that Kmiec saw represented in the artwork.[19] Further, in line with her conceptual approach to give the objects she was commissioned to score a kind of agency, Ciani wanted the machine, and particularly the pinball itself, to speak to the game's player.[20] The voice of the pinball, presented as vocal grunts and "ow," came to Ciani while observing people play pinball games. She wanted to reflect "the way that people expressed their frustrations or involvement with the game, and I wanted the game to do that back."[21]

By giving *Xenon* an aural form of address to the game player that crafts a relationship between the two, Ciani moved the pinball machine from a static working machine to something seemingly much more "alive." Playing *Xenon* meant inflicting pain on a pinball and hearing the machine make grunting sounds that might mirror your own. This experience was a far different one from the standard musical cues or celebratory sound effects found in other pinball machines at the time. Further, *Xenon*, in its power as a disembodied and ambiguous female voice, became an important precursor to the cyborg in relation to the posthumanist feminism Donna Haraway theorized in her "Cyborg Manifesto" in 1984.

III. THE MACHINE DOES

N. Katherine Hayles describes the posthuman view as "thinking of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born," and believes that the human being can be "seamlessly articulated with intelligent machines."[22] Ciani describes her relationship with the Buchla synthesizer in this way:

> *When I finally bought one, the Buchla was my only piece of furniture. I lived with that thing; it was on all the time. It was my boyfriend! I thought there was something wrong with me, because I was in love with a machine. Then I went to one of those consciousness–raising classes and the big revelation at the end of the training was that humans are just machines. So, I thought, "Oh, I'm okay then."*[23]

The exclamation that might be registered on the oscilloscope in Ciani's ecstatic declaration of human-machine partnership gets to the sensuous relationship between the embodied and disembodied, the liveness and presence of *Xenon*. For Ciani, like Haraway, the liberation of consciousness is a constructed feat, imperative for

an experience of social reality. In the case of *Xenon*, the sexual relationship between the game and gamer, whether Bally was "ready for it" or not, is de-sublimated, moved away from simply canny representation. The physical dimensions of a pinball machine—which discourage children from play, which locate the coin slot at hip height, and which require full body attention—have a clear psychological dimension. It would perhaps be disingenuous to assume that the sexualized nature of this relationship between human and machine would end at the "big breasts" of the backglass Maria, that the only layer of sublimation falls strictly on the visual and not the physical act of gameplay. Ciani, who stated, "I want to talk back to the player," explicates and reveals this reality, through the act of taking the machine, and her position around it, as a "simulation of politics, a much more potent field of operations."[24]

This solicitation, bound up as it is in libidinal capital, presents Ciani's circumstances—to borrow a line from cultural theorist Fred Moten, "the imagined composure of the composer"—as an almost tactical ethic for the female composer and musician at this time.[25] While Bally's hiring of an innovative female composer to voice and score its machine was certainly a progressive choice (although we should be reminded of Kmiec's notion of "one-upping the competition" as a factor in this choice), *Xenon*'s sexual politics (with which Ciani was initially hesitant to engage) were fairly standard. Instead of seeing Ciani's acquiescence as a betrayal or a concession made in order to survive as a marginalized composer, we should instead look to how she took advantage of this commission, arranged her voice as its central attribute, and made it a discreet, but potent, position. To resist domination requires the creation of circumstances that outwit the dominator, something we see Ciani, a master and maestro of seldom-understood technology, repeatedly construct and convey.

Ciani's five seconds of voice for a pinball machine as a form of resistance might be as "minor" a minor tactic as one could get. But minor gestures, as theorist Erin Manning suggests, alter the time and rhythms of everyday life, "create conditions not for slowness exactly, but for the opening of the everyday to degrees and shades of experience that resist formation long enough to allow us to see the potentials of worlds in the making."[26] To push this point further, in *Gorgar*, the recorded voice responded to game player mistakes with a taunt of "Me got you." In short, the relationship between the machine of *Gorgar* and the player is that of simple competition and antagonism. By utilizing sound as a tool for human-machine feedback, Ciani turns *Xenon*, not dissimilar from *Gorgar* in terms of play, into a much more complex arrangement; the female voice of Xenon

positions the machine-player relationship in a matrix of complicity and domination, a conceptual twist that displays an affective shift in power.

IV. THE VOICE SAYS

When we think of the ways that Ciani works with a kind of "feminist science" in *Xenon* via embodied but disembodied, prudent but sensual, human and cyborg, dominant and permissive—which is to say, a subjective displacement predicated on a tripartite of capital commission, canny survival skills, and cybernetic affinity—we can return to the sound: what Peter Ustinov intoned in the *Omni* feature as Ciani's "capturing the indefinable and turning it into music." Of course, this is not what Ciani does—not really. This is not to split hairs about what constitutes music (a dull and tired debate), but to instead get a sense of the social reality of Ciani's situation. Ciani's voice in *Xenon* resists totality, is both musical and non, is part of the machine *and* identifies as the machine itself, is the pinball and a sonic mirror (stage) of the grunts and groans of (an imagined and) an observed game player. The reflective relation in the latter brings to mind Theodor Adorno's famous assertion regarding listening to phonographic records, that "what the gramophone listener actually wants to hear is himself, and the artist merely offers him a substitute for the sounding image of his own person, which he would like to safeguard as his possession."[27]

Adorno goes on to say that the female voice, when tethered to the apparatus, sounds "needy" and "incomplete" without the presence of its body. It is exactly this splitting that we might argue gives Ciani's presence in *Xenon* its potency, this disembodiedness that Haraway finds capable of historical and social reformation:

> *The split and contradictory self is the one who can interrogate positionings and be accountable, the one who can construct and join rational conversations and fantastic imaginings that change history. Splitting, not being, is the privileged image for feminist epistemologies of scientific knowledge. "Splitting" in this context should be about heterogeneous multiplicities that are simultaneously salient and incapable of being squashed into isomorphic slots or cumulative lists. This geometry pertains within and among subjects. Subjectivity is multidimensional; so, therefore, is vision. The knowing self is partial in all its guises, never finished, whole, simply there and original; it is always constructed and stitched together imperfectly, and therefore able to join with another, to see together without claiming to be another. Here is the promise*

> *of objectivity: a scientific knower seeks the subject position, not of identity, but of objectivity, that is, partial connection. There is no way to "be" simultaneously in all, or wholly in any, of the privileged (i.e., subjugated) positions structured by gender, race, nation, and class. And that is a short list of critical positions. The search for such a "full" and total position is the search for the fetishized perfect subject of oppositional history, sometimes appearing in feminist theory as the essentialized Third World Woman. Subjugation is not grounds for an ontology; it might be a visual clue.*[28]

What then might we say about Ciani's voice, recoded, and recorded, as voices—not her real voice, but still all her voice, disembodied and dissociative and bound up in a point of sale that is "the first machine to feature a female voice"? Back in 1968, with student political protests hitting a fever pitch across the USA and Europe, Ciani encountered an (unnamed) MIT professor who "spent the entire physics budget trying to synthesize the sound of a violin by separating its different elements and reconstructing them on a computer."[29] She credits this encounter as the galvanizing moment in which she moved from acoustic composition to electronic concerns, the pivot defining her life's work. I would like to imagine that the act of reassembling for Ciani is no different in *Xenon* in 1980 as it was watching a violin be electro-acoustically reconstructed in 1968. There is something inherently political in her gesture, one that can take a commercial assignment and embed it as aspirations that can be read as hopeful for reassembling not just a sonic palette, but a broken social order.

This returns us to the questions posed at the beginning of this essay, and how Ciani's electronic compositional work, of which *Xenon* is perhaps the most ideal theoretical realization, might answer them. "All of the **voices** are mine," she says, "except for one obvious opening voice that someone at Bally added after the fact."[30] This opening voice appears right as the ball is launched and says, "Enter Xenon." It is indisputably male. Ironically, there is no information on this voice, and yet it cuts to the threat that Ciani's multiplicity raises. To inexplicably add a male voice "after the fact" affirms the rupture that Ciani's voice presents, the one that Tuckey heard in a faceless female secretary, the voice that isn't just a market first object, but is in a history of resistant objecthood.

While the commodity form might have been Ciani's temporary locus—she currently enjoys something of a renaissance for her once ignored early electronic music—the miniature compositions and cybernetic extensions covertly animated and helped bring weight

and theoretical possibilities to what could have been standard commissions. A part of Ciani is in *Xenon*, and this contribution to the machine was not a haphazard concession for a steady paycheck, but a carefully considered and discreet subversion, turning the standard act of pinball gameplay into a meditation on the bonds we might feel, both theoretically and physically, with the seemingly nonhuman.

BIO

Chris is an artist and art historian specializing in twentieth-century and contemporary art in the United States and Europe. His dissertation, "Playing Music Badly in Public: Brian Eno, Experimentalism, and the Limits of the Non-Musician," examines a widespread trend among artists in the 1970s of starting musical acts, and the lasting effects of such efforts. More broadly, his research interests include art and technology, internet art, artists' books, Fluxus, performance art, punk and DIY, and localized collaboration. His work has been published in various forms and shapes—as a vinyl LP, a large cardboard mountain, a didactic wall text, an arts journal, and a whoopee cushion—as a means to consider the dialogue between text, content, and material. He has presented work at the CAA, MLA, SLSA, MACAA, and various other acronymed organizations. In early 2020, he released *The World's Worst: A Guide to the Portsmouth Sinfonia*, edited with Aaron Walker, through Soberscove Press.

NOTES

1. Though this claim—featured prominently on the home page of TNT Amusements' website—is debatable, Tuckey nonetheless has a notable internet presence for used games on the internet. Accessed April 8, 2021, http://tntamusements.com/.
2. Todd Tuckey, *#209 Bally XENON Pinball Machine – First Machine to Use a Woman's Voice!,* TNT Amusements, accessed April 8, 2021, https://www.youtube.com/watch?v=aSAQMKJd4xE.
3. Trevo Pinch and Karen Bijsterveld, eds., *The Oxford Handbook of Sound Studies* (London: Oxford University Press, 2012), 401.
4. Kate Hutchinson, "Making Sounds with Suzanne Ciani, America's First Female Synth Hero," *The Guardian,* May 20, 2017, accessed April 8, 2021, https://www.theguardian.com/music/2017/may/20/suzanne-ciani-america-female-synth-hero.
5. The first customer to purchase a Buchla was David Tudor, a piano virtuoso who most notably worked in the experimental milieu with John Cage.

6. Mark Brend, *The Sound of Tomorrow: How Electronic Music Was Smuggled into the Mainstream* (London: Bloomsbury, 2012), 170.
7. Finders Keepers Records, "Suzanne Ciani: Buchlah Concerts, 1975," accessed April 8, 2021, https://web.archive.org/web/20170307223955/https://www.finderskeepersrecords.com/shop/suzanne-ciani-buchla-concerts-1975-limited-edition.
8. Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States* (Burlington, VT: Ashgate, 2006); Suzanne Ciani in Brett Whitcomb, dir. *A Life in Waves*. 2017; Austin, TX: Window Pictures. It should be noted that Ciani remained a friend and admirer of Buchla throughout his life.
9. Hinkle-Turner, 216.
10. Ciani in *A Life in Waves.*
11. *The David Letterman Show*, Episode 39. Airdate: 8/14/1980.
12. Nick Bennett, "Pinball Heroes: Greg Kmiec," The Pinball Blog, last modified May 30, 2009, accessed April 8, 2021, http://www.thepinballblog.com/2009/05/pinball-heroes-greg-kmiec.html.
13. Bill Baverstock, "Xenon Speaks (Again)," Suzanne Ciani, accessed April 8, 2021, https://web.archive.org/web/20040224144358/http://sevwave.com/early_ciani/ciani_xenon/xfiles/xenonQA.html.
14. Ciani in *A Life in Waves*.
15. In 1981, a year after the public release of *Xenon*, the short-lived television spin-off of *Penthouse* magazine founder Bob Guccione's *Omni* science magazine featured a short documentary on Ciani's role in recording the sound for *Xenon*. What makes this exchange fascinating is knowing that Kmiec had already planned a female speaking voice before getting in touch with Ciani. Which means that either (a) the *Omni* documentary is a reenactment, attempting to convince the viewer that Ciani had the idea for the first female-voiced pinball machine; (b) Kmiec and the Bally rep are giving Ciani the impression that she's coming up with the idea on her own; (c) Kmiec is not giving Ciani credit for the idea in his 2009 recollection (which would be strange, given his dubbing her the "goddess of pinball"); or (d) Kmiec is simply remembering the sequence of events wrong. *Omni: The New Frontier,* directed by Riva Freifeld, 1981, accessed April 8, 2021, https://www.youtube.com/watch?v=Cb2W75VbYCM.
16. Ciani in *Omni: The New Frontier.*
17. Space prohibits a further examination of Ciani's interpretation here, but I am reminded of Mack Enns' brilliant notion that

gaming music remains "always inherently aleatoric," in his dissertation, "Game Scoring: The Broader Theory," accessed April 8, 2021, https://ir.lib.uwo.ca/etd/2852. Where we might debate his point is on the question of whether the gamer is something of a conductor, realizing the score via their gameplay, or if the music is indeed a kind of aleatoric response to the gameplay. Where Ciani troubles this debate is in her supplying a type of agency to objects, something that someone like John Cage left a (literal) space for but could never entirely subscribe to. See: Benjamin Piekut, "Chance and Certainty: John Cage's Politics of Nature" *Cultural Critique* 84 (Spring, 2013): 134–163.

18. In Dave Tompkins, "Suzanne Ciani and the Subliminal Property of Being Human" *The Paris Review,* August 7, 2017, accessed April 8, 2021, https://www.theparisreview.org/blog/2017/08/07/as-heard-on-tv.
19. *Omni* documentary.
20. This is most clearly realized in her 1984 commercial work for the "talking" GE 2800 Dishwasher. See the commercial here: https://www.youtube.com/watch?v=6NuXh-VJaM8. A featurette on the recording here: https://www.youtube.com/watch?v=sxUTtUue5RQ. Both accessed April 8, 2021.
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22. N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999). 3.
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24. Ciani in *Omni.* Donna Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 163.
25. Fred Moten, "The Phonographic Mise-en-Scéne," *Cambridge Opera Journal* 16:3, Nov. 2004, 276.
26. Erin Manning, *The Minor Gesture* (Durham, NC: Duke University Press, 2016), 15.
27. Theodor Adorno, "The Curves of the Needle," trans. Thomas Y. Levin, reprinted in Richard Leppert, ed., Theodor W.Adorno, *Essays On Music* (Berkeley/Los Angeles: University of California Press, 2002), 271.
28. Haraway, 193.
29. Ciani in Noakes.
30. Ciani in Baverstock.

Creating Game History: Intertextuality and the Formation of a Collective Memory of Games

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ABSTRACT

Some video games have had a lasting impact on games that followed, either through their gameplay, graphics, or world-creation processes or through the sociocultural structures they helped to establish. If game makers incorporate these games within other games, their importance and legacy are emphasized. This appreciation, which is frequently presented in a very nostalgic way, has the effect of creating a collective memory of games, inscribing them in game history. This essay analyzes various modes of intertextual links between games and their impact on the creation of a collective memory of games in the context of the arcade game culture, the Game Boy as an icon of gaming detached from a predefined space, and self-references by game makers to their own games.

1. INTRODUCTION: OF INTERTEXTUALITY, COLLECTIVE MEMORY, AND NOSTALGIA

Video games underlie rapid changes due to permanent technological innovations, which allow game makers to present games to their players in novel ways, such as new gameplay modalities, innovative world-creation processes, or an increased potential for interactivity. Simultaneously, some video games are designed in a mode that draws on older games, either in the form of allusions to or explicit discussions of them. They thereby create a critical discourse about the history of video games while keeping specific genres, types, or modes of video games, as well as particular platforms or devices, in the consciousness of video game makers, players, and anyone else connected to video games, such as critics, reviewers, and academics. There are some games that appear to timelessly stay in our collective memory of games. *Tetris* (1984)[1] is such a game. Even people who have never played it might maintain some form of connection with its gameplay mode, graphics, or music; it has become part of our collective memory. But how do some games achieve this continuity of presence while others are more or less forgotten? In some cases—*Tetris* again is an example—popular culture takes up the game and incorporates it in other media. In less frequent cases, game history is created through in-game references, meaning that one video game incorporates another game, focusing on specific gameplay modes, familiar graphics, or a whole genre. Some video games even incorporate playable versions of older games within themselves, which allows players to experience them through playing them. This essay focuses on playable games-within-games and analyzes their influence on the creation of a collective memory of games and game history.

Video games consist of interlinked networks of individual elements, such as graphics, a story, characters, or gameplay modalities. In this regard, video games are similar to texts, defined by Jorge J. E. Gracia as "a group of entities, used as signs, which are selected, arranged, and intended by an author in a certain context to convey some specific meaning to an audience."[2] Text is nonrandom, intentional, and fabricated, taking on various forms—such as video games. As texts, video games can potentially be intertextual, which is understood, in Norman Fairclough's words, as "a matter of recontextualization."[3] For games-within-games, it is helpful to depart from Julia Kristeva's original understanding of intertextuality and instead adopt Gérard Genette's definition, namely that of "a relationship of copresence between two texts or among several texts: that is to say, eidetically and typically as the actual presence

of one text within another."[4] Within the framework of game studies, Genette's idea can be linked to Mia Consalvo's argument that intertextuality in video games is characterized as a "sophisticated understanding of the 'text' and its place in the greater marketplace."[5] In this sense, intertextuality is the (posterior) incorporation of other forms in a new context, such as a game within another game, which tells us something about the relationship between this past game and present ones. This deduction from Fairclough's and Consalvo's definitions already implies intertextuality's practical functions, characterized by Mary Orr as the "(re)evaluation by means of comparison, counter-position and contrast."[6] Through incorporating games-within-games, intertextual links help to establish the collective memory of video games, which influences the creation of game history.

Intertextual links to earlier games created by game makers through consciously referencing older titles in the games they produce evoke in players an awareness of the presence of specific games in the collective game memory and game history. James V. Wertsch and Henry L. Roediger III define collective memory as "a form of memory that transcends individuals and is shared by a group."[7] In this, it differs from history, which, according to Nathan Rotenstreich, is "a course of events taking place in the course of time," with the question being "whether and where in the course of events the conjunction between occurrences and significance is most prominent."[8] A historical account is a retelling of the past from multiple perspectives in order to generate a more or less objective account validated by some form of evidence, such as historical documents, data, or interviews with contemporary witnesses. Writing history is, therefore, an official practice, while creating a collective memory is formed out of private, and often subconscious, endeavors. In the context of video games, however, a neat distinction between collective memory and history cannot be drawn, because through embedding specific games within other games, game creators make conscious decisions regarding the formation of game history. Therefore, I propose that game history is heavily influenced by collective game memory, while game history spans beyond collective memory to also include other historical game elements, such as game engine innovations, gamer demographics, or industry developments.

This process of generating a collective game memory also differs from a game canon, because the latter is created by some form of authority. A canon is, in Matthew Arnold's words, "the best that has been thought and said,"[9] hence a collection of cultural artifacts that are worth preserving for the after-world. Games inscribed into

collective memory, however, need not be "good" games but can be exceptional precisely because they are "bad." The characteristic of a canon as a collection of games considered good by a jury of some kind is evident when looking at examples of game canons. One formally developed list of essential games one should play was presented by Henry Lowood, Matteo Bittanti, Christopher Grant, Steve Meretzky, and Warren Spector in "Ten Games You Need to Play: The Digital Game Canon."[10] Semi or nonofficial game canons are "The best games of [the year]" lists, which are published online by game critics on platforms such as *Polygon* or *Metacritic*, and ratings by players found in online discussion forums such as *NeoGAF*, *GameFAQS*, and *IGN*. Similarly, rankings of the most-sold games per platform, often within a predefined time frame, such as Steam's "Top Sellers" list[11] or the "Top Selling Title Sales Unit" published for the Nintendo Switch,[12] function as canons. These game canons are created through conscious efforts either by people or through algorithms, and the games found on them need to possess characteristics that make them superior to other games based on the aspect(s) the canon creators focus on. The collective memory created through the intertextual links discussed below, however, works on a different level, because the status of games included in other games does not tell us anything about their exceptional quality but simply asserts their presence and inscribes them in the consciousness of players, game makers, and game critics, and thus, game history.

The incorporation of older games within new ones can be understood as a form of homage, one that mirrors the game makers' nostalgia and is communicated to the players of the new game. The original meaning of nostalgia as specified by Johannes Hofer, however, has been that of a pathological symptom linked to a pernicious longing for a place, particularly home.[13] Since its shift from a pathology to an emotion toward the end of the nineteenth century, nostalgia has been associated with a positive longing for the past rather than a corrupting compulsion. Additionally, questions have been raised regarding the concept that is being longed for. Svetlana Boym has phrased this discussion as follows:

> *At first glance, nostalgia is a longing for a place, but actually it is a yearning for a different time—the time of our childhood, the slower rhythms of our dreams. In a broader sense, nostalgia is rebellion against the modern idea of time, the time of history and progress. The nostalgic desire to obliterate history and turn it into private or collective mythology, to revisit time like space, refusing to surrender to the irreversibility of time that plagues the human condition.*[14]

This shift from place to time, however, is problematic in Linda Hutcheon's view, because "[t]ime, unlike space, cannot be returned to—ever; time is irreversible."[15] The feeling of nostalgia thus cannot be satisfied; in reality, it is impossible to go back in time. For video games (and other media utilizing nonreal temporal conceptions), however, it is possible to go back in time and replay the games we know from our past—we can play *Tetris* on a Game Boy or the original *Pong* (1972)[16] on an arcade machine, and can also play them on new devices. This allows us to actively experience game history through replaying older titles on new devices. The emphasis here is on the temporal distance between individual experiences with the game. This differs from what Christopher Hansen has defined as the "centrality of replay and repetition to game temporality"[17] in general, meaning that we replay parts of a game over and over again in one sitting (or several sittings temporally close to each other) to overcome an obstacle or improve our skills, or for grinding purposes. The interactivity of video games makes game history livable, which allows for a deeper connection with the past space and time. Replaying a video game is different from other kinds of media engagement that allow for repetition, such as rewatching a film or rereading a novel. The activities we fulfill in these replays create a different experience from our previous play encounter because the interactivity of video games results in individual modes of how a game is played, which can never be repeated. That is, while a film or a novel generally exists in exactly the same format, a game is different in every single playthrough because of the interactivity it offers to its player.

In order to better understand the formation of a collective memory of games, the discussion below only considers games, genres, or devices that existed in the past or, if modified, are recognized as existent in reality. The reason for this is that my interest lies in the relationship between intertextual links between games and their presence in the collective memory of games to generate game history. These games allow players to play their embedded games, and this high level of engagement with these games-within-games influences the awareness of their place in game history. Very often, these connections to older games are presented by the game makers in a very nostalgic mode. This invokes the player's personal experience with the referenced game, either directly by having played it in the past or indirectly by having encountered it secondhand—for example, in other media. The following section presents discussions of video games incorporating intertextual links to the arcade game culture, the Game Boy, and self-references to games within their own franchise, and uncovers the various modes through

which this supports the presence of some older video games in game history.

2. GAMES-WITHIN-GAMES AND THE FORMATION OF A COLLECTIVE MEMORY OF GAMES

Video games can intertextually reference other games through various mechanisms. In the analysis that follows, video games containing playable versions of other, older video games are discussed. These games are divided into larger groups, namely arcade games, games of one particular device, and games of the same franchise. For the individual analyses, the central question is how intertextual references help to create a collective memory of games, often by pointing to the origins of games and gaming from a highly nostalgic perspective. As will be evidenced below, the kind of reference made to older forms—i.e., if the intertextual link is made toward an individual game, specific gameplay mechanisms, a genre, or a gaming subculture— does not have an impact on the creation of collective memory. The reason for this is that frequently, the game alluded to represents a whole group of games, making it impossible to draw a line between these individual modes.

A large group of intertextual links established within video games are those made to arcade games and the arcade gaming subculture. Games accessed through coin-operated machines, such as *Pong*, were a great success due to their simple gameplay mechanics and because they could be played on a low budget.[18] One of the first arcade games that has reached a widespread audience and thus helped to initiate the "Golden Age" of arcade gaming in the 1970s and 1980s was Taito's *Space Invaders* (1978).[19] Early arcade games like this one still feature prominently in later and even present-day video games, to the effect that the association with a specific time (and place) continues to have an impact today.

There are various modes through which these intertextual links can be established. One is to have physical arcade machines in the game world on which the avatar can play games. Examples are arcades featuring the *Grand Theft Auto* (1997–2013)[20] games. Arcade machines are found in public places, including restaurants, bars, launderettes, or shops, evoking similarities to real-life arcade culture. Although these playable games do not exist in reality, they resemble known games based on their graphics, gameplay, or story. *Grand Theft Auto San Andreas* (2004)[21] features a game called *Let's Get Ready to Bumble*, in which the player navigates a bee collecting flowers. This 2-D platform game is allusive of Tehkan's arcade game *Bomb Jack* (1984)[22], utilizing the same gameplay modalities.[23] Since

players can access this game through their avatar playing it, the intertextual link asserts the place of *Bomb Jack* in the collective game memory.

Another example of a playable arcade game is found in *Grand Theft Auto IV* (2008),[24] namely *QUB³D*. Players need to match up at least four blocks of the same color to remove them before the screen fills up. This game bears a strong similarity to *Puyo Puyo* (1991)[25] and *Tetris*, which are identified with the youthful subculture associated with arcade machines. Similar to these two games, *QUB³D* is a 2-D game presented in a retro style that follows simple objectives.[26] What is interesting about *QUB³D* (and *Let's Get Ready to Bumble*) is that the player's scores are logged in a highscore list, which can be accessed on any arcade machine of the same style within the game world. This feature further contributes to the nostalgic association with the arcade gaming subculture, namely in the battle for first place. These allusions to older video games evoke associations with them and recall characteristics of arcade gaming, symbolizing leisure time, youth, positive distraction, and insouciance. A look at a YouTube video, for example, in which a player of *Grand Theft Auto San Andreas* reaches 6,204 points in *Let's Get Ready to Bumble*, illustrates this connection to arcade game nostalgia. In the comments on the video, viewers compare and challenge each other's highscores, mimicking the arcade highscore rivalry.[27] The "*Grand Theft Auto San Andreas* Record Book"[28] even allows players to log their points, thus creating its own highscore list beyond the one found within *San Andreas*.

Games of the *Grand Theft Auto* series are not the only ones referencing arcade games. *Shenmue* (1999)[29] and *Shenmue II* (2001)[30] feature two playable arcade games that have an existence outside their game worlds. The first game, *Hang-On* (1985),[31] is a motorcycle racing game originally produced by Sega. Ryo Hazuki, the protagonist of the *Shenmue* game universe, can play it by jumping onto a motorbike model with the Sega logo imprinted on it, featuring a screen showing the game. In addition, the Tomato Convenience Store and the Harbor Lounge raffle a copy of the game, which Ryo can play on his Sega Saturn. The same is true for the second arcade game incorporated within the *Shenmue* games, *Space Harrier* (1985).[32] This game, also produced by Sega, is a third-person shoot 'em up. The player needs to navigate the protagonist, Harrier, with a flight stick and shoot various targets, such as Chinese dragons or prehistoric mammals, as well as several bosses. *Hang-On* and *Space Harrier* both possess remarkable places in the history of game development: They were among the first arcade games to utilize 16-bit graphics and the Super Scaler arcade system board, which helped

to mimic 3D effects.[33] Both games have been co-developed by Yu Suzuki, the pioneer of arcade gaming, who has had a lasting influence on video games to date.[34] Incorporating two of his co-authored games in another game world developed by him inscribe his legacy into a group of games with a significant impact on game history.

Moving on chronologically from arcade machines, one device has clearly revolutionized the gaming experience and thus has a special place in game history: the Game Boy. Developed by Nintendo and first released in 1989, the Game Boy has quickly become a cult object, one with symbolic value for an emerging gaming culture.[35] Its detachedness from any notion of place due to its portability transformed the gaming experience for a whole generation (and beyond). It is therefore not surprising that contemporary games allude to the Game Boy either through apparatuses akin to it or even through the actual device. *Fallout 4* (2015)[36] and *Fallout 76* (2018)[37] feature a game called *Red Menace*, which can be played on a Pip-Boy. Although the primary function of this device is storing information about its wearer, it also allows the avatar to play games. However, this is only possible through inserting a cartridge, which first has to be found in the game world. The physicality through which *Red Menace* is accessed already implies its link to the Game Boy, a conclusion further supported by looking at the game itself: The aim is to avoid bombs and barrels in order to rescue Vault Girl. In its gameplay, story, and graphics, the game is highly allusive of Nintendo's original *Donkey Kong* (1981),[38] which was released for Game Boy in 1994.[39] Jennifer deWinter has observed that it "was the first game to require jumping to traverse gaps and spring over enemies, and this development provided the core game mechanic of the platformer game."[40] *Donkey Kong* thus has had a lasting impact on the evolution of game mechanics, by introducing gameplay elements that are still in use today, hence initiating two new genres, namely platform and jump'n'run games.

Games developed by the Nintendo franchise seem to receive a lot of appreciation through their appearance in other games, most notably those of the Nintendo family. In this sense, the collective game memory and game history are initiated and established by the game developers themselves. Examples are *Donkey Kong 64* (1999),[41] in which the player can play the original *Donkey Kong* as well as the arcade shooter *Jetpac* (1983);[42] and *Super Mario RPG* (1996),[43] which allows players to play *Beetle Mania* on a Game Boy—a game that is allusive of the second-level Yoshi's Island 2 in *Super Mario World* (1990).[44] *Animal Crossing* (2001)[45] even contains a large selection of Nintendo Entertainment System (NES) games, such as *Balloon Fight* (1984),[46] *Clu Clu Land* (1984),[47] and *Wario's Woods* (1994).[48] Further

games can be obtained through cheating devices, such as *Super Mario Bros.* (1985)[49] and *The Legend of Zelda* (1986).[50] Through incorporating other games of the franchise in their later titles, Nintendo achieves several effects at once. First, the older games are not forgotten but are, within their new game world, positioned as games that are fun to play. Second, through establishing links to these older titles, players can recall their personal gaming experience if they have played the original games. This has the effect that, third, a sense of nostalgia is potentially created through these intertextual links, meaning that positive associations with the games are generated. Finally, this functions as cross-advertisement between individual titles, based on their everlasting presence in other games, without constituting copyright issues.

The inclusion of games by the same developer and/or publisher within other games thus has several positive impacts on the originals and the new titles. This is probably the reason Nintendo is not the only company that has practiced this method.[51] Lucasfilm Games' graphic adventure game *Maniac Mansion* (1987)[52] received major critical acclaim for its gameplay, design, and story creation elements upon its release. Most notably, its Script Creation Utility for Maniac Mansion (SCUMM) engine, developed by Robert Gilbert and Aric Wilmunder in 1987 for the Commodore 64 version of *Maniac Mansion*, has had a lasting influence on graphic adventure games.[53] Michael L. Black has argued that games utilizing it "would distinguish themselves from others in the graphical adventure genre more for the narratives presented onscreen than for any aspect of their gameplay."[54] This means that *Maniac Mansion* was among the first games that drew on forms of cinematic storytelling, including nonlinear narration and cutscenes, which would become devices frequently used in narrative video games that followed. Due to the novelty the SCUMM engine brought to the gaming experience, the legacy of *Maniac Mansion* is apparent. To enforce its importance further, LucasArts has presented a homage to it in the second part of *Maniac Mansion*, entitled *Day of the Tentacle* (1993).[55] One of the Commodore-style computers contains a fully playable version of *Maniac Mansion*. This intertextual link not only evokes nostalgia but encourages an understanding of the heritage of the game the player is currently playing, thus emphasizing the original title's importance to game history due to the development of the SCUMM engine that created it.

The games discussed in the first three parts of this chapter—arcade games, Game Boy games, and games of the Nintendo, the Sega, and the Lucasfilm/LucasArts franchises—are early examples of visualized game worlds through which the player navigates an

avatar. A different kind of game that has had a lasting impact on many video games that followed is the text-based adventure game *Zork* (1980).[56] The game manages to create a rich story-world, in which players can change elements by typing in verb-noun commands and combining them with conjunctions and prepositions. *Zork* thus uses language to create its rich and complex universe. Later narrative games aim at combining a graphic world depiction with a story to support the avatar's actions. One such example is Activision's first-person shooter *Call of Duty: Black Ops* (2010).[57] Remarkably, this game contains a playable version of *Zork* as an Easter egg. Players enter the game by typing the command "zork" into a computer in the questioning room, which starts a fully playable version of *Zork.* Due to the lack of graphics utilized in creating the game world, this embedded game creates a powerful contrast to the detailed world of *Black Ops.* The discrepancy between the two games forming the intertextual link has the effect that a strong sense of nostalgia for the early days of computer gaming is created, which most gamers probably have only experienced secondhand. This shows that *Zork* is still seen as a key game in game history, which is evident in Activision's incorporating it in *Black Ops*, thus emphasizing its legacy.

3. CONCLUSION AND OUTLOOK

Intertextual links established between more recent and past video games exert a strong influence on the creation of a collective game memory and game history, particularly if the games are playable. The three modes discussed here—inclusions of arcade games, allusions to the Game Boy, and self-references to games by the same gaming franchise—assert the presence of past titles in the consciousness of players engaging with the new games that incorporate these games-within-games. The games alluded to are generally characterized by a distinguished component or attribute that has had a lasting influence on game history. For the discussed games, these features have mainly concerned gameplay, graphics, world-creation processes, and the sociocultural structures created by them. It has to be reiterated, however, that the incorporation of games-within-games does not establish a canon of video games, because the intertextual links do not tell us anything about the value or importance of these games. Arguably, through the conscious choices made by game makers to include another game within the ludic realm of their new title, a sense of authority over the presence of certain games is generated; however, its purpose is not to form a canon but to function as an homage to previous works.

BIO

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NOTES

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Stealth Algorithms: Hito Steyerl's Encoding of Metal Gear into her *Factory of the Sun*

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ABSTRACT

This essay will examine how Hito Steyerl's video art installation *Factory of the Sun* (2015) intertextually references Hideo Kojima's Metal Gear games as a way to discuss how computational algorithms function as tools of control within the contexts of World War II, the Cold War, and the contemporary stock market. First shown in the German Pavilion at the 2015 Venice Biennale, this immersive piece makes reference to the Metal Gear series in order to explore the history of wartime surveillance networks and the present existence of automated stock exchange software. The work's textual references to the popular espionage-action games are used to help create a satirical near-future narrative focused on a group of game designers fighting against a tyrannical

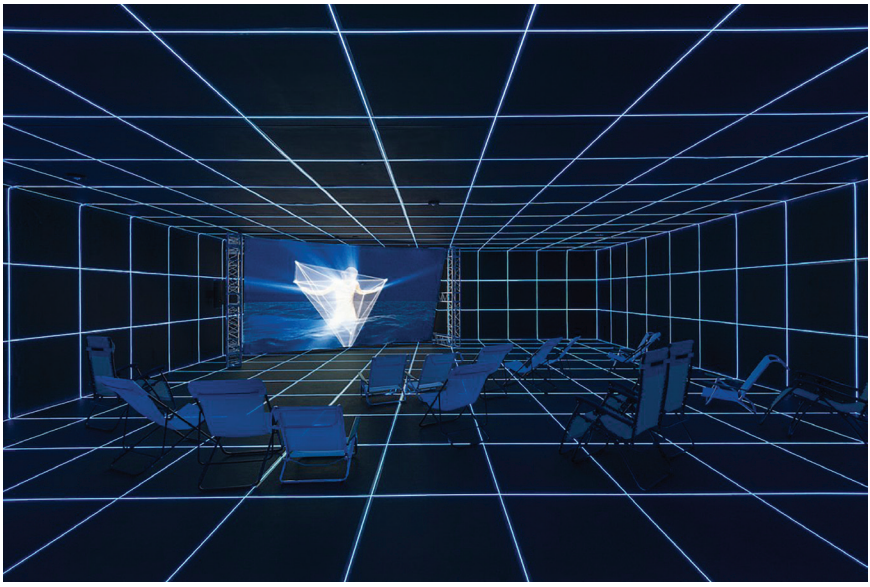

Figure 1: Installation view of Hito Steyerl: Factory of the Sun, February 21–September 12, 2016 at MOCA Grand Avenue, courtesy of the Museum of Contemporary Art, Los Angeles, photo by Justin Lubliner.

corporatized government. By closely examining Steyerl's focus on Metal Gear (and stealth games more broadly), this essay will question the implications of the unknown or the unseen within global digital networks. How might visibility impact the efficiency of an algorithm? And to what extent does the invisible work as a force of power when engaging with the digital?

INTRODUCTION: WARGAMES

In her 2015 video installation work *Factory of the Sun* (hereafter referred to as *FOTS*), Hito Steyerl aesthetically draws from the genres of science fiction and cyberpunk in order to comment on the relationship between the military, the entertainment industry, and financial technology. More specifically, within this piece Steyerl demonstrates the growing interest she has had within her practice to theoretically explore the simulation, VR, and video game media. Looking at this same intersection of technology, economics, and culture, Tim Lenoir and Henry Lowood argue that it is an extension of the military-industrial complex that has been slowly and invisibly permeating our daily lives since the end of the Cold War: "The entertainment industry is both a major source of innovative

ideas and technology, and the training ground for what might be called post-human warfare."[1] To this point I argue that through *FOTS*, Steyerl is attempting to tease out some of the intricacies of the posthuman warfare that Lenoir and Lowood warn of.

First shown in the German Pavilion at the 2015 Venice Biennale, the video installation is simultaneously seductive, spectacular, and overwhelming in both its levels of immersion and delivery of narrative. Attempting to efficiently summarize the video component of *FOTS* is a challenging task, as the work disjointedly employs multiple styles of narrative and aesthetics that together form a Gordian knot with no single easy solution. To create this puzzling combination, Steyerl employs well- known visual formats and tropes, such as news reports, Youtube videos, 3D animation, documentary narration, first-person perspective, third-person perspective, drone camera footage, and musical montage, as well as both appropriated and simulated video game gameplay.

A very simplified version of the story being told by Steyerl is that a game designer named Yulia recounts her childhood growing up in Russia before subsequently moving to Israel with her parents. Yulia goes on to work for (or potentially becomes enslaved by, depending on how the work is read) a video game development company specializing in light and motion capture technology. Within the sci-fi dystopia that Steyerl is constructing, the Deutsche Bank—which owns the motion capture studio Yulia labors for—has invented a method to use sunlight to process highly profitable algorithms that allow for faster-than-light trading and stock exchange. Yulia and her fellow game developers are shown throughout the video performing within the motion capture studio in highly reflective gold skinsuits that allow for easy light capture. Between these segments of the studio, there are also a number of fictionalized news clips and propagandistic advertisements interwoven, all related to Steyerl's tyrannical version of the Deutsche Bank. Here, Steyerl is depicting how in her science-fiction narrative the financial institution is becoming increasingly powerful and domineering as it spreads its fiber-optic solar network across the globe.

HOLODECKS AND DISCO GRIDS

In addition to the substantial video component, the other vital aspect of *FOTS* is the immersive and encompassing environment that Steyerl has constructed for the video to be situated within. This housing is quite elaborate, consisting of a three-dimensional floor and wall-covering grid of glowing neon blue LED lights that extends over all surfaces of the darkened room within which the work

is exhibited. Also, haphazardly arranged on the floor are an array of white lawn chairs for viewers to recline in while watching the large projection screen at the rear of the room, which is framed by an industrial stage lighting truss. The enveloping scale of this darkened grid is impossible to ignore, and has thus become one of the most common entry points for critical interpretations of the work. Many critics and scholars who have examined the work have relied on a small pool of film references in their attempts to decipher the meaning behind Steyerl's dark geometry. For example, Travis Diehl claims that the gridwork is a deliberate citation of the famous holodeck of the Star Trek franchise: "[A] room, gridded in orange, in which a starbound crew might manifest highly convincing projections of their (often animal) fantasies—Earthly biomes, combat simulations, lost lovers."[2] Alternatively, Cameron Hu sees the grid as being reminiscent of Disney's *Tron* (1982), "suggesting nothing so much as the lurid cyberspace where a young Jeff Bridges—having been sucked from the "real world" into the interior of an arcade game—battles for his freedom against a misanthropic machine intelligence."[3]

In addition to providing a cinematic backdrop for the immersive qualities of *FOTS*' physical installation, pop cultural interpretations such as these provide a broader theoretical framework with which to examine and find meaning in *FOTS*' multimodal assemblage of digital aesthetics. I also argue that by speculatively framing Steyerl's many intertextual references as a set of encoded messages, a set of more thematically resonant meanings can be decrypted. Examining *FOTS* through the lens of digital encoding and decryption enables a method not only to build critically upon these previous readings of the work, but also to theoretically explore *FOTS*' dual focus on video games and espionage by way of Steyerl's repeated allusions to the Metal Gear series.

Although both *Star Trek*'s holodeck and *Tron*'s mainframe function as valid decodings of the installation component of *FOTS*, when examined in combination with the substantial video content of the piece, as well as Steyerl's own essay work, another, deeper vein of decipherment presents itself. Within the video's narrative, Steyerl makes a number of very specific references to the Metal Gear series, including names of characters, directly appropriated character avatars, plotlines, and chapter titles, as well as a short section in which Yulia explicitly talks about a character from the series itself while practicing at a gun range. Using these references as a method for decoding, the cyan gridding of *FOTS*' installation reveals itself to also be a solid reflection of the level design of some of the games

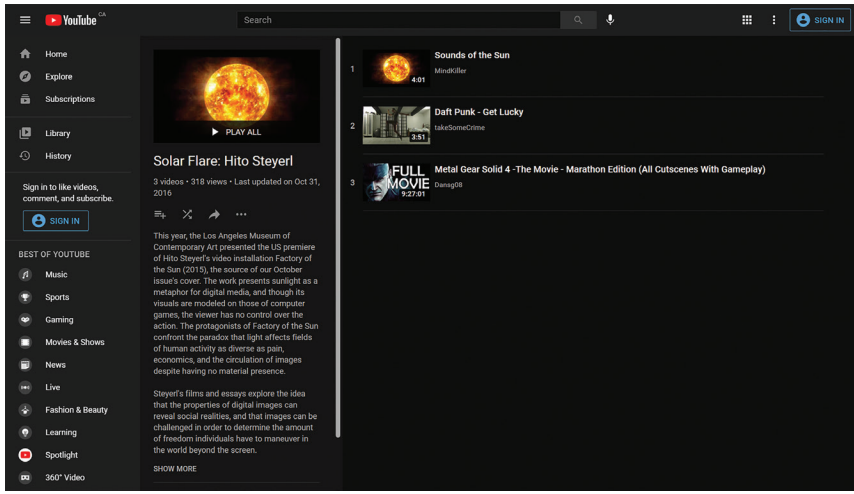

Figure 2: Screenshot of Hito Steyerl's "Solar Flare" video playlist that she made for the Art in America YouTube channel in connection with an article the magazine published on Factory of the Sun. Screenshot courtesy of the author.

Link to YouTube playlist: https://www.youtube.com/playlist?list=PLEkVY6p7Ye9q1ewDckHrT4P3eF6ZlKv0q

within the Metal Gear series, especially the PS1 side game *Metal Gear Solid: Special Missions* (Konami 1999).

In combination with these architectural and intertextual references to Metal Gear, Steyerl also alludes to the series repeatedly in her own essay-writing practice and some of her artist's statements on the work. The first of these instances is in a paper she wrote for *eflux* journal on the work of Harun Farocki shortly after his death in 2014: "Today, workers are leaving the factory to play Metal Gear Solid in the parking lot. They got confused because the disco grid installed for office raves was hacked and now shows ISIS fashion week ads. Today workers are players, proxies, pitchers, soldiers, dancers, spammers, bots, and refugees. Ballistics is upgraded with arse physics. TVs are built with Minecraft blocks. Reality is still missing in action."[4] Before his passing, Farocki had also been in the process of turning a critical eye to the topic of how video games and military technologies were related, through works like *Serious Games* (2011) and *Parallel IIV* (2012–2014), and given the two artists' close relationship it is not difficult to see how this might have inspired Steyerl to focus on similar themes within her *FOTS* piece.

Another example of Steyerl's pointing to the Metal Gear Solid series is inarguably the most explicit clue that these games were

vital components in how she planned and structured *FOTS*. In an article published for *Art in America*, Steyerl provided a link to a Youtube playlist she had composed that was meant to provide readers with insight into her research process for *FOTS*. These three videos consist of a four-minute video that plays NASA sound recordings of solar flares on the sun, a four-minute video of Yulia's brother takeSomeCrime dancing to the Daft Punk song "Get Lucky," and a nine-hour playthrough of the game *Metal Gear Solid 4: Guns of the Patriots* (Konami 2008).[5]

I argue that within this array of references to Metal Gear, this essay's speculative theorization of encoding and decoding gains additional resonance through the series' semiotic connections to the notions of espionage, military procedure, and digital culture—all of which are themes, I also argue, that Steyerl has deliberately embedded into her cryptic factory. In the next section, these themes will be further explained within the specific context of the Metal Gear series' narrative to help contextualize them in relation to the other references Steyerl makes to the real- world history of war and spycraft.

THIS IS ALL A GAME

Metal Gear is a series of action-adventure stealth video games, created by auteur Japanese game director Hideo Kojima. The first game was released in 1987, and since then there have been eight sequels. Originally created as a spoof on Cold War, Reagan-era American action movies, the general plot that unites the series centers on a special forces operative named Solid Snake who is assigned to find the titular super weapon "Metal Gear," a bipedal walking tank with the ability to launch nuclear weapons. However, as the series progressed, Kojima moved from doing simple film satire to implementing an increasing number of postmodern narrative techniques that directly questioned the potential of the video game as a creative medium, as well as the relationship of control and agency between the game and the player. As Kojima began to further utilize these unconventional structures within more recent games, where the stories are told through a combination of overtly long cutscenes, text documents, and radio communications, many have criticized him for too closely attempting to parrot the cinematic form. However, Tanner Higgin claims that this is one of the greatest misunderstandings of the Metal Gear series and that these games are meaningful and noteworthy precisely *because* players are deliberately placed within the nexus of a frustration in which control is being taken away from them. When the enjoyable stealth

action gameplay is taken away and players are forced to watch a forty-minute cutscene, or when the game simulates glitches on their television screen and tells them to turn the console off, players are *supposed* to be confused and frustrated by the narrative's delivery. They are not only being told they are being controlled by the game, but they are also meant to feel and intuit it.[6]

In addition to the initial Cold War narrative of the series, and the eventual themes of biotechnology, infopolitics, and posthumanism in later sequels, it is this deliberate engagement with limited control and enforced passivity that allows for the Metal Gear series to act as such a strong tool for decoding Steyerl's work. Although *FOTS* may simulate a number of game interfaces and reference virtual reality, there is no way for the viewers to directly interact with or affect the outcome of the video. Instead, the appropriation of VR and video game aesthetics does more to promote the kind of immersive interaction associated with film and expanded cinema. Viewers are encouraged by the presence of the lawn chairs to leisurely lie down and embrace the spectacular qualities of the work. As the video begins, the projection screen tells you that this is in fact all a game, but that you will not be the one playing this game, that this is a game that will play *you*.

DARK LIQUIDITY

In addition to its subversion of typical video game control, there are also many ways in which the Metal Gear series has attempted to tackle the notion of the military-entertainment complex that Steyerl has picked up on and encoded into *FOTS*' narrative. The first example of this is the main premise of *FOTS*' plot: a fictional technology that the Deutsche Bank has developed allows Yulia and her fellow game developers to use sunlight to fuel their ever-growing information networks. The work they do allows the Deutsche Bank to make stock exchanges faster than the speed of light and thus gives them a substantial amount of economic leverage and power over the rest of the world. As they grow more and more powerful, the Deutsche Bank begins to use military drones to fire upon those who would protest against them and their increasingly corporate version of fascism. The technological monopoly that the Deutsche Bank has within *FOTS* functions as an intentional and humorous inversion of a type of real-world economic exchange known as "dark liquidity" or "dark pool trading." This particular kind of high-frequency, liquidity-seeking trading is run by artificial intelligence and used by institutions that do not wish the public markets to know or be impacted by any information on their intended trades before they

are fully completed. Karen Archey comments on Steyerl's encoding of dark liquidity, emphasizing that the real-life Deutsche Bank has its own branded version of this type of secretive trading technology, which comes with the hyperbolic title of Stealth SuperX Plus. This exaggerated title contributes to the wordplay already present between the bright sunlight of the fictional Deutsche Bank's solar-optic network and that of the secretive dark liquidity of real life.[7] That this linguistic layering of light and dark works especially well in terms of the work's relation with the Metal Gear games is due to the heavy focus on espionage, with mechanics that predominantly revolve around stealthily moving throughout levels and avoiding being detected by the enemy AI.

This connection point between how Metal Gear and dark liquidity are united through the concept of an algorithm that creates connections between light and darkness (and also, by extension, between visibility and secrecy) works to reveal why Steyerl may have chosen to so heavily encode her references to video game culture. Alexander Galloway discusses how algorithms within video games function in a way unique from most other software, in which complete visibility is encouraged. He states: "Video games don't attempt to hide informatic control; they flaunt it. Look to the auteur work of game designers like Hideo Kojima . . . The gamer is . . . learning, internalizing, and becoming intimate with a . . . multipart . . . algorithm. To play the game means to play the code of the game. To win means to know the system. And thus to *interpret* a game means to interpret its algorithm."[8] Lev Manovich also argues that games operate in such a way that their internal algorithms are available for open discovery and examination, stating "[Games] demand that a player can execute an algorithm in order to win. As the player proceeds through the game, she gradually discovers the rules that operate in the universe constructed by this game. She learns its hidden logic—in short, its algorithm."[9] Lastly, Tremblay, Andrade Torres, and Verbrugge argue how stealth games such as Metal Gear are uniquely situated to allow for algorithm-driven testing of artificial intelligence software, in that they are often heavily systems-driven games with a variety of branching paths that can be used to finish a level.[10] This positioning of stealth games as a kind of training ground for AI has strong resonance with trading software such as Stealth SuperX Plus that must discreetly and efficiently navigate through its own set of complex systems.

Through her playful nod to stealth video games and trading software, Steyerl is communicating a speculative future in which what Safiya Umoja Noble refers to as the "algorithms of oppression" are further obfuscated and subsequently strengthened by

this additional lack of visibility. In her definition of the term, Noble argues, "The near-ubiquitous use of algorithmically driven software, both visible and invisible to everyday people, demands a closer inspection of what values are prioritized in such automated decision-making systems." Noble's focus on "bringing to light" the way algorithms of oppression often work to mask their presence while also "deepening social inequality" is particularly resonant when looking at Steyerl's satirical portrayal of the Deutsche Bank.[11]

Within the work's narrative, the relationship between the company, its employees, and the general public is clearly an oppressive one. The labor of the sunlight-harvesting game developers is hidden away by the bank in a dimly lit, enclosed studio space (which, interestingly, shares many visual relations to the physical installation of *FOTS*). Additionally, in many of the interstitial news clips that are presented through the video, shots of the public protesting against the Deutsche Bank for its unethical and oppressive practices are also quite frequent. Steyerl's portrayal of the laborers and the protesters works to solidify the Deutsche Bank as a kind of tyrannical force that must be opposed and defeated, bringing to mind the way a boss enemy might function within a video game narrative. Further emphasizing this reading of the Deutsche Bank as a game-like enemy are a set of sequences found in the latter half of the video, during which the game developers eventually rise up against the bank and use its light-harvesting technology as a weapon against it to destroy its flying drones. Like many of the other sections of *FOTS*, this battle between the drones and the developers is framed using a visual interface meant to aesthetically reference video games, with information such as the current level displayed along the top of the screen.

Considering Steyerl's choice to gamify the developers' revolution against their employer in relation to her broader treatment of dark pool trading, it is no coincidence that the close examination of algorithms is a predominant component of game theory, a line of study that is based on the prediction of outcomes using statistical data, especially those that are tied to war and economics. In this way the algorithms of oppression that financial institutions such as the Deutsche Bank rely on to generate profit function as rules in a game in which winning means further inequality. In an essay on neoliberalism, labor, and video games, Steyerl provides further evidence for this reading of the financial world as a kind of oppressive game:

> *It is in this sense that we live in "gamespace," where digital video games are more than just an emergent form of cultural narrative. Instead, specific forms of games—especially those that feature self-interested players in war or business—in many cases embody*

> *ideal variations of what came to be realized in more random, sometimes catastrophic, ways. This may also explain why so many video games are located at the intersection of military action and economic profit, and why they model destruction as opportunity. If we think of them not only as Platonic ideals but as training grounds and behavioral schools—as "serious games," in Harun Farocki's formulation—it's easy to see that generations of players were rewarded if they behaved in ways that were considered rationally self-interested.*[12]

Through her playful references to the stealth mechanics of Metal Gear and the secretive methods of dark liquidity, Steyerl is revealing the imbalances of power that can arise through the selective control of algorithms and information networks. Within the fragmented narrative that *FOTS* tells, this imbalance of power is represented primarily by the combative relationship between the Deutsche Bank and its employees. Aligning with the passage above, this aspect of the narrative—in which military conflict arises over economic tensions—provides thematic and theoretical connections to many popular video games. In the next two sections, these militaristic connections will be explored from a historical perspective, which will help to further cement my argument that Steyerl is using Metal Gear as a way to playfully encrypt her perspective on the military-industrial complex.

PUTTING ON A *WOLFENSTEIN* ACCENT

The second major example of how Steyerl uses Metal Gear to help her encode the multilayered structure of *FOTS* can be found in the ways that she chooses to invoke images of Hitler and Stalin. The first time she does this is in the scene outlined earlier in which Yulia is depicted shooting a pistol at a gun range. Yulia is firing at floating, golden busts of Stalin as she is heard describing her gun as a Sig Sauer, the favorite gun of Metal Gear's protagonist, Solid Snake. While all of this is happening, a simulated user interface is overlaid on the screen, revealing data that might be shown in a typical shooter game, such as available ammo, the health of the enemy Stalins on the screen, and total points acquired. This interface is used a number of other times throughout the video before being revealed as a direct reference to *Wolfenstein 3D* (id Software 1992), one of the first games to use a first-person perspective, in which users play spies sent to Germany to infiltrate a castle and assassinate Hitler. This is revealed in a scene that functions as a behind-the-scenes clip of a Deutsche Bank advertisement in which

the actor representing the corporation jokingly asks the director if he wants him to act like a "German twat" and put on a "Wolfenstein accent." While this scene is shown, a clip from *Wolfenstein 3D* at the top right of the screen reveals the player bloodily shooting some Nazi soldiers.

This reference to the Wolfenstein series, in addition to its relevance to a broader cultural history of espionage, also has significance through its connections to Metal Gear and the lineage of stealth games. *Wolfenstein 3D* is often thought to be the first game within the long-running first-person action series, but was actually made as a spiritual successor to the decade-older, Apple II stealth-adventure game *Castle Wolfenstein* (Muse Software 1981). Like the rest of the games that would be released under the Wolfenstein name, *Castle Wolfenstein* also positions the player as a Nazi-fighting spy; however, unlike its more action-heavy 3D successors, *Castle Wolfenstein* was designed as a two-dimensional, top-down perspective game in which players must strategically sneak past, or even impersonate, enemy guards. This combination of stealth mechanics and a two-dimensional, top-down perspective would later be used as the basis for the framework of the first *Metal Gear* (Konami 1987) game for the NES, which in turn helped inform the stealth genre as it is known today. The circuitous relationship that Steyerl sets up here between the history of twentieth-century warfare and the history of the stealth video game winds itself tighter and tighter as more of her interwoven references are unpacked and decoded. Not only does Steyerl's intense referential encoding provide a vast amount of interpretative depth to *FOTS*, but the combination of these specific elements also helps shed light on how strongly the history of video games is embedded in the technocultural histories of World War II and the Cold War.

INFORMATION WARFARE

In addition to Steyerl's use of the Wolfenstein series, another instance of how she references the recent history of war can be found in the architecture of the German Pavilion, in which *FOTS* was originally exhibited. The pavilion has been a center of controversy ever since 1938 when it was architecturally renovated and curated by the Nazi Party. Nicolas Linnert points to how Steyerl has remarked that the German Pavilion's fascist architecture represented to her a structure that was meant to awe and overwhelm people, and that this process was something she desired to produce within the context of the information age. As outlined above, the overwhelming architecture of the *FOTS* grid environment has ties to a number

of different science-fiction, pop cultural sources. However, Linnert argues for a much darker intention behind Steyerl's neon grid, stating: "*Factory of the Sun* enacts the pavilion's historically totalizing architecture to produce a kind of contemporary media fascism, one that references a condition totally enveloped by technical apparatus to the extent that what is recognized as artifice might as well be called 'reality,' given its lived effects."[13]

Like her textual references to the Metal Gear and Wolfenstein series, here Steyerl's architectural choices act as a form of multitiered encoding that speaks to the history of fascism, the ability for technology to overwhelm, and lastly how spies are perceived through popular culture. When all of this is decoded, these references collectively work to satirize various aspects of how espionage functioned within and was transformed by World War II and the Cold War. Friedrich Kittler outlines a history of how the traditional role of the spy, someone who infiltrated enemy lines and retrieved secret information, became obsolete with the invention of the computation machines of Bletchley Park, stating that "World War II had been decided not so much by blood, sweat, tears, and similar things, but rather by eleven unassuming devices that were able to imitate other such unassuming devices perfectly."[14] Kittler goes on to explain how the British government, in an attempt to keep the existence of such devices a secret from the Russians, felt the need to invent a fictionalized heroic superspy (not unlike Solid Snake) whom they could pin all of their successes against Germany on instead of admitting to the existence of their computational technologies. Reflecting on this closure on the age of traditional espionage, Kittler invokes postmodern novelist Thomas Pynchon, stating "*Gravity's Rainbow* anticipated this as well: good old espionage is at its end. Under computing conditions, HumInt or human intelligence is only a cover for SigInt or signal intelligence. Slothrop's complaint that the spy's tradecraft depended too much on legwork is met with Semyavin's wry comment: 'It will get easier. One day machines will do it. Information machines. You are the bow wave of the future.'"[15] This connection between an obsolete spy and a future of machine war, besides having historical ties to the defeat of the Germans in the Second World War, also resonates very strongly with the specific entry of the Metal Gear Solid series that Steyerl chose for her Youtube playlist. Within *Metal Gear Solid 4*, Solid Snake (who is now referred to as Old Snake) begins to rapidly age due to a nanotechnological infection and throughout the course of the game's narrative becomes decreasingly physically able.

Kittler also goes on to document the effect computers and information networks had on espionage throughout the duration of the Cold War, before pointing out something especially significant when examined in relation to *FOTS*. He explains that fiber-optic cable and the electromagnetic spectrum are two of the only forms of technology that would be unaffected by the electromagnetic pulse that comes with the detonation of any nuclear technology. I do not think that this is a coincidence, then, that these are the two components that form the network of sunlight the Deutsche Bank uses for its super-optic trading within *FOTS*. Kittler continues by making a statement that seems especially foreboding when looking at Steyerl's work, claiming that if someone were to create a technology that harnessed the electromagnetic spectrum, "it would spell the end of the Pax Americana, for the entire military-industrial complex of silicon glow . . . and net topologies and end users, is only one side of the system, the side we can see. On the other side is still poverty and darkness."[16]

So again we return to a relationship between darkness and light that Steyerl is mediating through technology. In this case, it is in relation to the concealment and encoding of information and how this was increasingly used as a form of military force throughout the latter half of the last century. Steyerl is again making a complicated and playful series of references in order to show her audiences the

Figure 3: Berlin views from Radio Tower at the Trade Fair. © Alexander Savin, WikiCommons.

potential ways that video games can be connected to much more insidious parts of global culture through as seemingly innocent routes as a heroic spy within popular culture, or the invention of computation machines. However, as we move forward and various technologies proliferate and in turn are superseded, will our contemporary evils also become no more than kitschy targets on the screens of future generations, villains to be laughed at as they become outmoded by unforeseen or unaccounted-for innovations? Or does the expansion into new technological spectrums potentially precede a new kind of darkened, invisible warfare?

A NETWORK OF ORPHANS AND SUNS

The final element of *FOTS* that has strong connections to Metal Gear, as well as to the themes of military surveillance and information networks outlined above, is the ruined building that the latter portion of the video takes place within. In these segments, Yulia and her co-workers are shown on the roof of a dilapidated structure using the same motion capture technology they were previously forced to work with to fight a group of militarized laser-shooting drones sent from the Deutsche Bank. The simulated user interface that is on the screen while this is happening is identical to that which was on screen while Yulia was targeting the golden Stalin busts in the shooting range scene I mentioned earlier. In addition to simulated gameplay information, this interface also reveals that the building where this battle is taking place is in fact an old listening station abandoned by the United States, located on Teufelsberg, a man-made hill in Berlin. The hill itself is made from the piled rubble of the bombed-out buildings of the Second World War, and covers an old Nazi military-technical college that was still under construction before it was buried over. In 1963 the NSA built one of its largest listening stations atop the hill, as it was the best local vantage point for listening to Soviet, East German, and other Warsaw Pact nations' military traffic. The station continued to operate until the fall of East Germany and the Berlin Wall, after which it was closed and the equipment removed—though as the video depicts, the buildings and radar domes are still in place. This was all very publicly available knowledge; however, there were also longstanding rumors that the listening station functioned as a node within a secret global surveillance network called ECHELON that was run by the Five Eyes Alliance, a group formed during the Cold War and consisting of America, Canada, the United Kingdom, Australia, and New Zealand. The network was for most only a rumor

until a series of small revelations that began in the 1990s, and that was recently confirmed more broadly in the Snowden leaks, showed that the ECHELON network is still functioning and has been steadily using satellite information to surveil records, such as tax, bank, and phone information, of millions of people around the globe.[17]

This type of globalized network has obvious ties to the sunlight network that the Deutsche Bank is forcefully trying to extend across the globe in *FOTS*. However, it also has narrative links to a similar military network that presents one of the main forces of conflict in *Metal Gear Solid 4*. Within the plot of the game, this network uses nanotechnology to monitor and, if necessary, directly control the soldiers in a vast private military company. Again, Steyerl uses wordplay to make this allusion, as the name of the game's network is Sons of the Patriots, and the collective name that Yulia and her co-workers choose for themselves when battling the Deutsche Bank is Orphans of the Enemy.

In an article on how networks and algorithms can be used as tools by those in power to both prevent and create crises, Wendy Hui Kyong Chun outlines how new communication technologies are becoming increasingly tied to the concept of freedom. Chun uses Twitter movements such as Black Lives Matter, the alleged role of Facebook in the 2011 protests in Tunisia and Egypt, and the steady flow of information from WikiLeaks as prime examples of her argument.[18] However, she also warns against placing too much trust in these algorithmically run global networks, especially in times of crisis, as "Codes/habits and crises together produce (the illusion of) mythical and mystical human and machine sovereign subjects who weld together word with action, norm with reality. Exceptional crises justify states of exception that undo the traditional democratic separation of the executive branch from the legislative one."[19] With her encoded references to the ECHELON network and the Second World War, Steyerl is attempting to show us instances where the fear of crisis has allowed sovereign powers to implement restrictive or unethical algorithms and networks. These are especially troublesome within the realm of technology, as the control they inflict is often invisible or hard to detect and thus easily internalized by whole populations. When navigating these networks of crisis, like the soldiers of the Sons of the Patriots or the game developers working for the Deutsche Bank studio, "what we experience is arguably not a real decision but rather one already decided in a perhaps unforeseen manner: increasingly, our decisions are like actions in a video game. They are immediately felt, affective, and based on our actions, and yet at the same time programmed."[20]

With the creation of *FOTS*, Hito Steyerl is encoding the complex history of how information and algorithms can be leveraged to great effect in both the economic and military spheres. She does this in a crafty and indirect manner, playing the role of a double, or perhaps even triple agent, working through the lens of both the fine-art world and the video game industry with no easily discernible allegiance to either camp. By connecting the Cold War with a contemporary espionage game, Steyerl has constructed an intricate and multilayered conceptual structure for her audiences to investigate, one that she has disguised using the sleek outfitting of a commercial entertainment product. Through all of this playful subterfuge, Steyerl has provided an amusing, yet also terrifying, potential future that shows us exactly what can happen if we leave the military-entertainment complex to spread its web of influence. By oscillating between scenes of ludic freedom and fascist control; archived history and speculative futures; nation-state and global corporation; and lastly the increasingly trepidatious relationship between truth and fiction, *FOTS* manages to both pacify and provoke its audiences. And Steyerl does all of this without providing any easy or singular answers, but instead creates a heavily coded system of textual reference and visual pleasure for us to immerse ourselves within and decrypt, using whatever Enigma machines we might have available. Although there are many secrets Steyerl has hidden, she has also provided us with a vital cipher in the form of Metal Gear Solid, a referential and playful passkey that can be used to gain access to the deeper, darker levels of her constructed factory of virtual light.

BIO

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Life as We Don't Know It: Cyclical Time and Collectives in *Horizon: Zero Dawn*

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ABSTRACT

Taking cues from both posthuman studies and video game studies, this essay dives into the narrative of the video game *Horizon: Zero Dawn* (2017) to examine the ways in which entanglements of different forms of life (such as the coexistence of humans, nonhumans, and technology) as planetary collectives are tied to reinterpretations of linear and cyclical time. More specifically, I argue that the reconfiguration of collectives beyond the human as a radical challenge to conventional human-nonhuman relationships requires an equally significant reconfiguration of time. To do so, I examine the narrative and gameplay of *Horizon: Zero Dawn* as a theoretical endeavor in thinking about collectives in terms of entanglements between life-forms made possible through a reimagining of linear and cyclical time.

Collectives can be understood in a myriad of ways; there is no strict definition. While a collective is generally conceived of as a number of persons (and/or things) coming together to form a group as a whole, who-what-where-when-how they come together remains undefined as such. With the growing realization that conventional notions of collectives—say, a nation—are poorly equipped to tackle some of the most prominent contemporary problems, such as inequality amidst global capitalism and climate change, there is a need to reconsider what collectives mean, how they are formed, who is included, etc. This paper is an effort to address this problem of collectives and to provide some alternative conceptualizations, with the hope of treading new and promising ground.

In the following pages, I dive into the narrative of the video game *Horizon: Zero Dawn* (2017) to examine the ways in which entanglements of different forms of life (such as the coexistence of humans, nonhumans, and technology) as planetary collectives are tied to reinterpretations of linear and cyclical time. More specifically, I argue that the reconfiguration of collectives beyond the human, as a radical challenge to conventional human-nonhuman relationships, requires an equally significant reconfiguration of time. To do so, I examine the narrative and gameplay of *Horizon: Zero Dawn* as a theoretical endeavor in thinking about collectives in terms of entanglements between life-forms made possible through a reimagining of linear and cyclical time.

Developed by Guerilla Games, *Horizon: Zero Dawn* (hereafter referred to as *HZD*) is the first new intellectual property of the studio since the first-person shooter *Killzone* (which spawned four mainline games from 2004 to 2011), and also marks its first foray into the role-playing action adventure genre. Director Mathijs de Jonge described the pitch for *HZD* as "by far the most risky one [among forty or so pitches presented by the studio's staff] because it was so different and so ambitious."[1] The story is set in the thirty-first century, on what is seemingly Earth, now equally populated by tribal human communities,[2] lush flora, plentiful fauna, and dinosaur-like machines. From this limited information, we can assume that some unknown cataclysmic incident has transformed Earth's landscape and the life inhabiting it. The player takes control of main protagonist Aloy, an outcast member of the Nora tribe, whose members live in snowy, mountainous areas. While the aforementioned life-forms coexist relatively peacefully, a phenomenon known as "derangement" is causing an increasingly large number of machines to attack human settlements. When the Nora are attacked by a group of "cultists" who could be linked to the derangement, Aloy begins her quest to uncover the mysteries of the world. Through its

conceptualization of new entanglements of humans, nonhumans, nature, and technology, *HZD* not only rethinks how this web of relationships needs to be considered on a planetary scale and in the long term, but, more importantly, reconfigures the meaning of thinking about "the end" through creative cyclicality. The first section of this essay introduces the main theoretical foundations, such as Donna Haraway's Chthulucene and Marxist notions of cyclical time within capitalism. The second section explores the complexity of the human-nonhuman coexistence as portrayed in *HZD* and the relationship between narrative and gameplay. The third and final section engages with how these newly conceived entanglements is based on challenging notions of time, by allowing for productive ways to transform our understanding of endings and providing the potential for a new approach to cyclicality to emerge.

TIME AND COLLECTIVES BEYOND THE HUMAN

There is perhaps no more radical scholar engaged in the reconfiguration of the relationships between humans and nonhumans than Donna Haraway. In *Staying with the Trouble*, she coins a new term to formulate a "timeplace for learning to stay with the trouble of living and dying in response-ability on a damaged earth"[3]—the Chthulucene. By focusing on the necessity of rethinking ongoingness and learning to be "truly present" through all sorts of temporalities and materialities, she establishes a method that counters what she describes as a "comic faith in technofixes"—that is, the belief that technology can somehow come to the rescue to solve the problems of our world—in favor of "making oddkin" through unexpected collaborations and combinations, or "copresence."[4] Haraway began this move toward thinking about collective formation in new ways in her seminal *Cyborg Manifesto* when she suggested that the cyborg challenges notions of genesis and ends, as it is unconcerned with origin stories and original unity. Haraway eloquently phrases the potential of cyborgs as such: "The main trouble with cyborgs, of course, is that they are the illegitimate offspring of militarism and patriarchal capitalism, not to mention state socialism. But illegitimate offspring are often exceedingly unfaithful to their origins."[5] Haraway's conceptualization of the cyborg is very much about collectives, about creating new ways of being together and forming bonds that challenge existing categories upon which these bonds have been created. The Chthulucene builds on this foundation and goes a step further. The Chthulucene should be understood in terms of building relationships between forms of life (human, plant, animal, etc.) that might not be obviously interconnected, yet

can exist only in relation to one another. The Chthulucene is thus a much-needed alternative story, emphasizing the fundamentality of thinking in terms of "ongoing multispecies stories and practices of becoming-with,"[6] appropriately situating humans as beings "with and from" the Earth, which occupies the center of the system of relationships. In the words of Donna Haraway: "The unfinished Chthulucene must collect up the trash of the Anthropocene, the exterminism of the Capitalocene, and chipping and shredding and layering like a mad gardener, make a much hotter compost pile for still possible pasts, presents, and futures."[7] Her reconfiguration of human-nonhuman relationships, in an attempt to think about collectives beyond the boundaries of the human, is thus also reliant on a reconceptualization of time—one that does away with linear progression in favor of a more unpredictable ongoingness.

Because Haraway positions herself as a firm critic of the Anthropocene discourse, as well as the Capitalocene, it seems appropriate to address the two, albeit briefly. The term "Anthropocene" was coined in the early 1980s by ecologist Eugene Stoermer to refer to the growing evidence of the transformative effects of human activities on Earth.[8] The term became more globally used once atmospheric chemist Paul Crutzen (2000 Nobel Prize winner) proposed that human activities "had been of such a kind and magnitude as to merit the use of a new geological term for a new epoch,"[9] replacing the Holocene, which dated from the end of the last ice age. Introduced to capture the "quantitative shift in the relationship between humans and the global environment,"[10] the term "Anthropocene" recognizes that what is now global human activity is the cause of most contemporary climate change, the impacts of which will most likely be observable "for millions of years into the future,"[11] making human actions the Earth's most important evolutionary pressure. While it contains within it a certain potential, many scholars are quick to point out the problems that come with this loaded term.

Jason Moore, for example, is quick to criticize the "Two Cultures" of the natural and human, and the dualism therein. As Moore puts it: "the Anthropocene is a comforting story with uncomfortable facts."[12] It is a story of humans doing terrible things to nature—as if the two were originally separate and then connected—a story emphasizing the Industrial Revolution and conventional narratives of modernity in which the human resides on one side, exploiting the nature that sits on the other. What Moore suggests is a reconfiguration of the discourse on periodization that recognizes the patterns of power capital and nature established long before the Industrial Revolution.[13] Going against the reluctance within the discourse of the Anthropocene to consider human organizations, such as

capitalism, as also being an integral part of "nature," he suggests that we consider historical capitalism as a world-ecology of power (capital and nature). By shifting the focus to capital in what becomes the Capitalocene, Moore challenges the human/nature dualism that too often "prevents us from seeing the accumulation of capital as a powerful web of interspecies dependencies,"[14] which are both shaped by capital and shaping it simultaneously.

A primary figure in these discussions, Donna Haraway responds to the Anthropocene and the Capitalocene alike. In her critique of the Anthropocene, which she calls "an almost laughable rerun of the great phallic humanizing and modernizing Adventure,"[15] she criticizes its focus on Species Man to the detriment of the Earth and its multiplicity of life, its tendency for top-heavy bureaucracy, and its overreliance on "Modern Synthesis" theories, among other things.[16] The answer, however, is not the Capitalocene, which, according to Haraway, is all too often restricted by its trappings of Modernity, Progress, and History and would require that the Anthropocene be "relationally unmade."[17] In other words, the discourse of the Capitalocene, while challenging the human-nature dualism of the Anthropocene, is restricted by a linear temporality informed by historical trappings of progress and the forward orientation toward modernity. This tendency is indeed present in Moore's analysis as he emphasizes the need to identify the origins of the Capitolocene even while attempting to disrupt traditional discourses of modernity. This kind of linearity apparent in Moore's analysis is the result of his not addressing quite as extensively as necessary some of the fundamental ways in which time functions within capitalism.

Beyond the human-nature relationship emphasized by Moore, the Capitalocene also strongly suggests a reconfiguration of time, which warrants a brief consideration of how time operates within capitalism, and especially in terms of its cyclicality. Cyclical time, understood through the Marxist critique of capitalist time, highlights the fundamental role of crisis. While this is not the place for a lengthy examination of the complex inner workings of crisis, what I want to highlight is the particular relationship between crisis and time that informs the current understanding of cyclical time. Building on Marx's seminal work and the foundations he established in *Capital* about crisis and the Prosperity-Crisis-Depression cycle at the very center of capitalism, Japanese Marxist Uno Kōzō elaborated in *Kyōkōron (The Theory of Crisis*) what is arguably the most thorough theorization of the workings of crises in capitalist economy as "fundamental principles." He warned against the tendency to focus on individual crises in favor of a principle—that is, a specific form of society on the basis of which

this principle develops through repetition (albeit not a mere repetition)[18], as if it were an eternal movement.[19] He thus points to the "built-in" nature of crisis in capitalism as a contradiction and, even more important, its crucial role in conceptualizing cyclical time through repetition. In the words of Eric Cazdyn: "Crisis is not what happens when we go wrong; crisis is what happens when we go right."[20] The point made here is that crisis is built into the system itself. A prime example is how the inequalities of capitalism are not the result of particular individuals with bad intentions, but stem rather from the natural operation of capitalism when it functions as it should.[21] Cyclicality through crisis is therefore at the very core of capitalism.

The bind of capitalism, of course, is that there is seemingly no way out of this cyclicality; yet there are scholars who challenge it in productive ways, and as it so happens, the process goes hand in hand with thinking beyond the human. Anna Tsing is one such scholar, exploring the possibilities—or "imaginative challenges" as she would put it—which arise in conditions of precarity when there is no promise of stability. In doing so, she focuses her attention on the matsutake, a mushroom that thrives in human-disturbed forests, as a guide on the possibilities of "coexistence within environmental disturbance"[22]—that is, the possibilities of life within the ruins of capitalism. Presenting "a mosaic of open-ended assemblages of entangled ways of life,"[23] she explores how the matsutake makes apparent the cracks in the global political economy. Focusing on the unpredictability of our current condition in a hopeful manner, she points out the need to "reopen our imagination" through original theories of heterogeneity. Tsing recognizes the constraints and possibilities of capitalism without giving in to the "crippling assumption" of progress therein, and instead emphasizes capitalism's "patches" and the need to look for life within its ruins.[24] What is important to the present discussion is not only the potential of thinking about life beyond the human paradigm, but also the fundamental challenge to capitalism's cyclical time therein. By suggesting the possibilities of the reemergence of life among the ruins of capitalism, Tsing disrupts the logic by which capitalism only reproduces itself through crisis. While that may be true to some extent, the ruins of capitalism also provide the space for the manifestation of unexpected possibilities that don't necessarily simply reinforce the inner logic of capitalism. Combined with Haraway's notion of "staying with the trouble" and its inherent ongoingness, the potential for rethinking human-nonhuman relationships through a reconfiguration of time not simply as linear or cyclical but as ever-changing begins to take shape.

That is not quite all there is to say about time, however. Because the present paper, after all, is primarily an analysis of *HZD*, I would be remiss not to address for a moment *time*, specifically in the context of video games. As many scholars of game studies have already pointed out, video games as a medium provide their own distinct engagement with time, as compared to cinema or literature, for example. Jesper Juul framed game time as the duality between "play time" (the time it takes the player to play the game) and "event time" (the time spent in the game world), with its multifaceted variations across genres, gameplay mechanics, and so on.[25] Others, such as José P. Zagal and Michael Mateas, have developed conceptual tools for analyzing video game temporality. Through "temporal frames" (which include real world, game world, coordination, and fictive), the two authors analyze the relationships between the different flows of time found in video games and the different frames that can be associated with them.[26] A more extensive study of game time, however, is Christopher Hanson's aptly titled *Game Time*, in which he argues that video games enable players to experience and manipulate time in ways that are simply not possible in other media. Looking at multiple features of video games (such as pause, slow, rewind, and replay, among others), he suggests that the temporal experiences of video games are simultaneously malleable in their possibilities for navigation and manipulation, and "chimerical" in their apparent freedom, characterized by replay and repetition.[27] With that being said, *HZD* may provide some of the types of engagements with time mentioned above, but its core gameplay mechanics are not particularly transformative in their relation to time. It is rather the narrative of the game that stands out in this regard. The present analysis, therefore, follows the work of others who have prioritized the game's narrative over its other components, such as Lars de Wildt, Stef Aupers, Cindy Krassen, and Iulia Coanda, who explore representations of "techno-religion" in game narratives[28] while only addressing the question of time in passing. Even Janine Tobeck and Donald Jellerson, who are immediately concerned with time when they compare *HZD* to William Gibson's *Pattern Recognition* and when they analyze participatory aesthetics as formulated and structured by a "set of temporal concerns."[29] Primarily concerned with exploring Gibson's work, the authors also consider the ways in which *HZD*, through its technologically saturated narrative, "encodes" the value of care in a similar fashion that Gibson does. They do so by comparing the game's temporal disposition toward past, present, and future to Gibson's *Pattern Recognition*. Once again, it is the game's narrative and not its gameplay that serves to make the argument. Notwithstanding

these potential shortcomings, gameplay does have a significant role in contributing to the games' narrative engagement with notions of human-nonhuman relationships, as we shall see.

HUMAN-NONHUMAN COEXISTENCE

HZD depicts a world inhabited by some familiar forms of life, such as humans, plentiful flora, and a variety of animals, but also more "alien" ones, in the form of dinosaur-resembling mechanical organisms that similarly populate the land. While humans attempt to reinforce the spatial boundary between themselves and the wilderness, there are not only direct and constant interactions between these various living organisms, but there also appears to be a mostly stable balance in place. Humans are grouped in settlements resembling tribal communities of premodern origin—such is the case with the first group introduced to the player, the Nora, to which the main protagonist is related, though she was branded an outcast at birth. These settlements, characterized by their own cultural specificities and internal politics, engage in hunting and gathering practices as the inhabitants venture into the wildlife surroundings to obtain their means of subsistence with very limited agriculture, cattle raising, etc. This initial tribe is not the only example of human community, however, as the game eventually introduces a much larger-scale city that clashes with the "primitive" aspects of the smaller settlements.

The world of *HZD* immediately stands out for its mix of premodern (sometimes even prehistoric in its aesthetic) and futuristic aspects. The varied landscapes, composed of lush forests, harsh deserts, tall mountains, wide plains, and so on, define the environment in which the aforementioned life-forms exist. From a game design perspective, these varied landscapes offer many possibilities, allowing the developers to create an open-world game comprising all sorts of variations in visual design and gameplay opportunities for the player—for example, desert sandstorms are hostile toward the player and reduce visibility; plains, by their open nature, make it difficult to hide from enemies; mountains are ripe for ambushes, etc. Furthermore, the variations in ecosystems allow the developers to include all sorts of wildlife while maintaining what is often understood as coherence and realism for the experience of the play within the game. This also provides the player the opportunity to engage in hunting activities to acquire components to craft various gear, enhancing the abilities of their character. Much of open-world game design is about discovery, and uncovering all sorts of new areas with different possibilities is highly important. Unlike survival

games that emphasize the difficulty of staying alive in itself through a number of menial tasks – often consisting of managing hunger level, building appropriate shelter, etc. – *HZD*, categorizing itself as an adventure action game, emphasizes instead the exploration of the surroundings and the ways in which the player traverses these different environments and approaches encounters with wildlife and humans alike. From a narrative standpoint, this diversity helps create an unpredictable world with all sorts of people, traditions, and cultures, while depicting the implications of the ways in which the environment shapes the communities of people.

As previously hinted at, the world of *HZD* is populated with what could be considered fairly expected wildlife on one hand, but unexpected nonhuman, nonorganic life-forms on the other, most important of which are the dinosaur-like, robotic life-forms that roam the world. They are primarily based on a variety of dinosaurs, and their behavioral patterns reflect this influence, yet they seem to coexist with organic fauna and each other "peacefully." While not revealed to the player until a series of events unfolds deeper in the game's narrative, they seem to occupy their own place in the world—that is, they have a purpose of their own. In terms of game design, these machines are implemented as hostiles to confront the player and offer a challenge in traversing the world. They provide countless opportunities to engage in interesting combat scenarios and contribute to world-building and narrative. Discovering the origin of these machinic creatures is part of the player's quest, raising some questions of interest. From the player's perspective: why are there mechanical dinosaurs roaming this world? This questioning is originally only that of the player, because from the characters' perspective, these machines have always been part of life and the landscape—the inhabitants of this world only need to learn how to survive despite these dangerous robotic creatures. Yet the questions about the origin and purpose of these machines also influence player interpretations of the narrative and the actions of its characters, most specifically those of the main protagonist, Aloy.

The coexistence of mechanical creatures with organic wildlife on one hand and humans on the other suggests a long history and complex system of relationships in *HZD*. As for the "natural" world, the presence of these obviously technologically advanced creatures does not seem to be a disturbance as they cohabit with fauna and flora harmoniously. In terms of the relationship between humans and technology, the player is first introduced to Aloy and her tribe. What immediately stands out, of course, is the mixture of premodern ways of life in tribal communities and the advanced

technology reflected in the weaponry on display. For example, the primary weapon in the game is a bow, yet it is far from the traditional wooden bow of premodern warfare. It is rather a highly enhanced mechanical bow specifically designed to fight against massive mechanical dinosaurs, and thus combine premodern and futuristic components and design. Notwithstanding the significant presence of technology, the humans of the Nora tribe are fearful of technology in general and avoid digging too deep into its origins and what they call the "Old World." This overall skepticism toward technology is embodied by the tribespeople's unwillingness to explore the ruins across the land that harbors the remnants of this seemingly ancient technology, and by their discouragement of Aloy's curiosity. Yet she still manages to put her hands on a highly technologically advanced device called the "Focus," which enhances her perception and allows her to obtain a wide variety of valuable information and visual cues about her surroundings.

The player is introduced to Aloy as a child and without any of the UI (user interface) elements players are used to seeing populate the screen. This is rather uncommon, as UIs are the primary way players can see important information about their character and the world. It is worth noting that in many games there is a growing trend to offer the option to minimize UI displays to reinforce immersion. As soon as Aloy starts using the Focus, new information appears on the screen, such as the characters' health, a compass and a map, as well as various markers and weapon information. The device found by Aloy thus acts in two fundamental ways: first, it serves the narrative, as this device will prove central to the development of the plot itself; plus the device justifies the existence of the UI, for the player now sees the world just the way Aloy does. It is immediately clear that Aloy is somewhat rebellious, as she possesses a deep curiosity about technology not shared by other members of her tribe. Following events that mark her as the chosen one to find out what happened to the world, she leaves her tribe to explore the rest of the world and find some answers. It then becomes evident that other tribes have different kinds of relationships with technology, some embracing technology much more openly. Humans live in different settlements and are parts of different tribes, and as such engage with their environment in a number of different ways, reinforcing the idea that humans are very much plural, and thus hinting at the diversity also characterizing the world surrounding them. Through its emphasis on human-nonhuman entanglements, *HZD* comfortably situates itself within the aforementioned Anthropocene discourse. However, the fundamental role of technology as an actor in its own right, rather than

simply something used by humans, hints at a system of relations going beyond the human-nature dualism of the Anthropocene in favor of a more complex one that imagines the role of an inclusive collective that incorporates various forms of life, including a complex involvement of technology.

Before moving on, I do want to briefly address how these entanglements of human, nature, and technology also operate outside of the game's narrative per se, and move into the creative and productive process of game design. The process of re-creating environmental landscapes is particularly interesting, as it involves a vast number of interrelated steps. At a primary level, digitally rendered natural landscapes do not come out of thin air, and must be meticulously created by programmers after being broadly conceived by designers. This often involves on-site research whereby game designers travel to various locations to observe landscapes and acquire an understanding of different environments and the types of flora and fauna inhabiting those spaces. Because "realism" is highly praised in the gaming industry, this kind of attention to detail is fundamental when re-creating varied landscapes in large open-world games the likes of *HZD*. This perceived nature then needs to be channeled through technology—that is, the advanced creative programming tools used by developers to create these environments within the game. Once again, this is not as simple as it sounds. For one, technology comes with its own limitations—what kind of graphical fidelity can the hardware handle? Additionally, the developers need to consider the gameplay practicality of the environments in which the player will control the character. For example, too many trees make it difficult to move around and limit visibility, which can negatively impact playability. Specific game mechanics can also require certain types of terrain or flora—in *HZD*, the player can use stealth to approach enemies, which necessitates the presence of bushes in which to hide, and so on. As such, not only is nature filtered through technology, but the two are considered in tandem through the lens of game design. This, of course, requires an almost unbelievable amount of work, and the labor power that goes into the creation of games' worlds, such as *HZD*'s, should be considered as part of this entanglement of life. While this particular system of relationships is not at the center of the present analysis, and would require its own complete research project, the ways in which human-nonhuman technology is intricately intertwined at the level of design and production should not be entirely put by the wayside and ignored.

The focus of our investigation into *HZD* and its potential for thinking about cyclical time is, however, primarily based on the

game's narrative and gameplay—not that there aren't interesting ways to think about cyclical time through the production cycle of making games and so on. As such, this argument is rather interested in how the game provides the ground for reimagining human-nonhuman entanglements as a form of collective, something that is possible only through an equally important reconfiguration of time. Without a fundamental challenge to notions of linear time, there would be no possibility for reimagining the relation between the different forms of life. In order to explore this potential, the following section dives deep into the most significant narrative threads of *HZD* to expose how the game fundamentally alters our understanding of time by suggesting the possibility of transforming fixed endings into new beginnings as part of cyclical time.

MACHINIC CYCLE OF LIFE: PLANTING THE SEEDS OF RENEWAL

While the game is clearly set in the future, many characteristics of its human civilization suggest premodern elements, and the presence of dinosaur-like machines reinforces a prehistoric sense of time. The developers at Guerrilla Games describe the setting as post-post-apocalyptic, which suggests an apocalypse, followed by a post-apocalypse, and finally another period in which the events of the game take place. One can immediately imagine that the world as we know it somehow crumbled due to some catastrophic incident, that it was followed by a period of stagnation during which the consequences of the cataclysm dominated the landscape, and that finally there was a renewal of sorts. Considering the lush and lively world in which the player is dropped at the beginning of the game, there are obvious signs of renewed life. Typically, post-apocalyptic games (such as the Fallout, Metro, and Wasteland series, to name just a few) portray massive deserted and devastated areas that are fundamentally harsh and threaten the player's survival, but *HZD*'s post-post-apocalyptic backdrop highlights an approach to time that suggests a cyclicality in the *longue durée*. While "*longue durée*" was originally introduced as a concept in opposition of sorts to cyclical history,[30] the two actually go hand in hand in the case of *HZD*. There is first the history of humankind as we know it through evolution, then a catastrophic crisis of some kind, and then a renewal in which humans undergo growth once again. Through this narrative thread, *HZD* theorizes a form of cyclicality that is directly correlated to the *longue durée*—not the *longue durée* with a single course from beginning to end, but rather the *longue durée* that follows cycles of life. In this sense, the concept of Prosperity-Crisis-Depression is once again relevant to understanding the engagement of *HZD* with

time. Instead of the more familiar cyclicality of capitalism that can be observed in decades, *HZD* theorizes a cyclicality of time that operates on a much longer register and a much bigger scale. This cyclicality is directly related to the all-encompassing nature of the system of relationship (human-nonhuman) at the core of the game posited in the second section of this essay.

Uncovering the mystery of the world, of course, is the player's quest, and as the narrative unfolds the player learns that the tech giant Faro of the "Old World" has lost control of the automated military robots (known as "peacekeepers") they created. The robots, which can self-replicate and operate *ad vitam aeternam* by consuming biomass as fuel, have overrun the planet and consumed the biosphere, stripping Earth of all life. One of the lead scientists at Faro, Dr. Elisabet Sobeck, spearheads a top-secret project known as Zero Dawn, which consists of a plan to create an automated terraforming system to eventually shut the robots down and restore life to Earth; we also learn that Aloy is a clone based on the DNA of Sobeck. Zero Dawn is designed as a vast underground system of databases, factories, and cloning facilities under the control of a highly advanced artificial intelligence personally "trained" by Dr. Sobeck and known as GAIA. The plan is to have GAIA wait for all life to become extinct before putting into practice a countermeasure to deactivate all of the rogue robots, and then proceed to build a new line of mechanical beings to work toward the restoration of the Earth's biosphere. GAIA has been programmed to, once the planet becomes habitable again, "reseed" life on Earth based on the vast database of stored DNA and act as a "teacher" of sorts to the first human clones to avoid having this new breed of humans repeat the same mistakes their predecessors made in the past. Unsurprisingly, things do not go as planned. It is revealed that an employee of Faro has sabotaged the specific system (APOLLO) designed to teach these new humans, causing the newly born humans to follow a much slower path toward "civilization," which explains the hunter-gatherer culture of the tribal communities introduced at the beginning of the game. Furthermore, a subsystem (HADES) designed to enact a "controlled extinction" in the event that Zero Dawn turned out to be a failure unfavorable for human existence is activated through a signal of unknown origin. HADES thus starts to seize control of GAIA's functions, forcing the latter to engage its self-destruction function as a last resort. As a result of the absence of GAIA to monitor the aforementioned terraforming process, the entire system begins to break down. GAIA has enacted a contingency plan, however, which shapes the player's main quest: it has created a clone of Dr. Sobeck in the form of Aloy, with the hope that

she will eventually find GAIA's message (which is only responsive to a DNA check matching that of Sobeck), destroy HADES, and restore GAIA's functions.

Putting aside the unforeseen events, the twists and turns at the core of the game's narrative, what *HZD* achieves is an elaboration of cyclicality on a whole other level. On one hand, the cycle depicted through the use of Project Zero Dawn goes well beyond the kind we are used to—it is a cycle of birth-death-rebirth of humanity as a whole. On the other hand, the cycle is not one simply imposed; rather, humans foresee the inevitability of the devastating crisis ahead and turn what could be an "end" into a new cycle. In doing so, they recognize the necessity of thinking beyond the human and to consider the vast system of relations that exist across all forms of life in order to cyclically renew all life on Earth. What was originally never considered to be a cycle, human life, or even just life on Earth—how many times have scientists considered the linear evolution of humankind and attempted to predict how long life on Earth can be maintained?—can thus be reinterpreted through the lens of cyclical time. Although unforeseen events prevent the planned development to follow the expected protocol, a vast database of knowledge (from all fields and disciplines) is accumulated to pass on to the "next generation." It would actually be quite interesting to explore the specifics of the selection process, but the fairly limited information at the disposal of the player prevents a thorough analysis. Oftentimes, life on Earth has been thought of in terms of progressive linear history, with a beginning and an ever-approaching, definite end, the planet's resources being limited and all life bound to become extinct at a certain point. *HZD* takes the "cycle of life" as we know it and incorporates it into a structure of history, I argue, based on the *longue durée* that challenges notions of "the end" in favor of cyclical time. This process is made possible only through the reconsideration of the relationship between various forms of life in the game, including preexisting and newly created ones, and their work in forming a much broader collective than what is typically imagined.

As is already clear, the delineated series of events suggested by Project Zero Dawn does not go according to plan. Through this narrative twist, the game tackles the relationship between predetermined planning and unforeseen developments, recognizing the potential of both. This kind of unpredictability within the ruins of a wider system of relations is reminiscent of previously mentioned anthropologist Anna Tsing's work, who examines the potential of new life within the ruins of capitalism. According to Tsing, alienation plays a central role in producing these "spaces of abandonment" within

ruins. The logic that turns people and things into assets ignores the importance of "living-space entanglement[s]," and in the process leaves behind these kinds of ruins across global landscapes.[31] However, Tsing notes how forests, for example, sometimes manage to grow back even after they have been destroyed. She thinks of this process as resurgence, "the force of the life of the forest" working in tandem with human forces through "multispecies assemblages" to generate unexpected results.[32] She suggests an approach that tracks the "shifting patches of ruination" in terms of their global connections, while also recognizing difference despite convergence.[33] By engaging with the destruction of capitalism, but also with the hidden potential within the unpredictable ruins it creates, Tsing's work sets up and engages with a whole new array of unexpected entanglements between humans, nonhumans, nature, capitalism, and so on, all the while challenging preconceived notions of the categories of existence and the structures of power surrounding them.

The conceptualization of ruins in Tsing's work implies unexpected development as a consequence of capitalism, and this renewal of life amidst the ruins is important because it demonstrates the potential for accidental growth of all kinds. This unpredictability, however, raises questions as to whether there is the possibility to enact this sort of renewal more purposefully? That is, maybe the devastation or ruination is inevitable, but maybe there is also the possibility of planting within this destruction the seed of renewed life-to-be. *HZD* conceptualizes in its narrative of Project Zero Dawn this very scenario, while also recognizing the unexpected in its consequences and possibilities. As briefly mentioned, ruins are scattered across the world of *HZD*, begging to be explored by the player. In some ways, these ruins are both very different and somewhat similar to the ruins discussed by Tsing. While there are a variety of ruins present in *HZD*, most of which contain technology and knowledge from the Old World, the most interesting ones are called "Cauldron." On one hand, they are absolutely related to industrial capitalism. On the other, they are ruins that may have been abandoned by human life, but they remain operational automated factories, continuously manufacturing machines. The player can explore these ruins and acquire the ability to control (through a process similar to hacking, consisting of turning antagonistic machines friendly) different types of machines as a reward for completing them. Other ruins act more like long-lost archives with vast amounts of knowledge stored within, some of which contain the "secrets" of cloning and so on. These ruins are not accidental, in the sense that they were purposefully built infrastructure, but they became ruins through unforeseen events. They thus need to

be explored and discovered once more in order to bring about any unexpected possibilities. They are in many ways seeds planted a thousand years prior. These ruins undeniably contain the possibility to rebuild life, or bring about new forms of life—they are key to the cyclicality of life in *HZD*. As will become increasingly clear, the machines that have gone haywire are central to perpetuating the cycle of life, which then explains the essential role played by the manufacture-like ruins across the world. Ultimately this story arc exemplifies the complexity of the relationship between technology, nature, and humankind as cyclicality, only possible through this entanglement.

What becomes progressively clearer is that the entanglement of technology with nature is fundamental to the implementation of a planetary cycle of sorts, and with it a new collective that includes forms of life of all kinds—without technology or nature, Project Zero Dawn is impossible. It is thus also a tale of repurposing technology for very different ends, because if we remember, the machines that eventually lost control and brought about the "end" of life on Earth were created by Faro for military "peacekeeping" purposes. The project of Project Zero Dawn is to repurpose the ability of these machines to reproduce themselves so that they can continue to exist on a lifeless planet and eventually contribute to reinstituting life at large. To do so, the machines need to work in collaboration with forces of nature, which explains the absence of hostility witnessed by the player between these mechanical beings and other organic life-forms. They coexist peacefully, and should have accepted human presence in a similarly peaceful fashion. The narrative develops, however, in such a way that a progressively larger number of machines are "infected" so as to reject human presence—these artificial life-forms that were supposed to contribute to the survival of the planet and human life accidentally become a threat. Notwithstanding the specific complications of the narrative, the story arc describes an intertwined relationship between humans and nonhumans (organic and mechanical) that eventually comes to fruition despite (or maybe because of?) unforeseen developments. The elaboration and implementation of a new cyclicality fundamentally depends on this relationship.

Project Zero Dawn thus recognizes the different registers on which human time and machine time need to operate in order for its plan to come to fruition. The time of humans is inevitably coming to an "end" with the consumption of Earth's biomass by the machine, causing human life to go completely extinct. The reality of the inability of humans to adapt to this new scenario is acknowledged and accepted up front, but instead of imagining the "end,"

Dr. Sobeck and her team conceptualize a cycle for humankind to be reintroduced to the world once the right conditions are met. Life beyond the already understood human existence has to be conceived and put into practice in order to preserve the possibility of reintegrating human life on Earth. This is most certainly not only about human life, as the whole set of conditions have to be imagined, requiring one to recognize the place humans occupy amongst *all* life and how nonhuman life can be re-created in tandem. This is possible only through the implementation of a third element: technology, which becomes a form of life itself. While humans face extinction, machines engage very differently with time. Machines are created so that they can infinitely reproduce themselves no matter the conditions of Earth—the cycle of their life span is unbroken, in a sense. The facilities that function as automated manufacture continuously replace broken machines so that they can continue to serve their purpose to prepare the Earth's environmental renewal. As regular fauna would never survive the harsh conditions of the planet, robotic life-forms essentially replace them (to a certain extent) to ensure the continuation of life until organic life can be fully reintroduced. Within the "end of the world" and the destruction caused by the machines, Project Zero Dawn has to find the seeds of renewed life. This is achieved through the creation of the aforementioned hyper-powerful artificial intelligence system called GAIA, which is programmed to both shut down the "swarm" of rogue machines and restore Earth through a complex automated terraforming system. This involves a complicated thousand-year sequence consisting of reintroducing elements that comprise the Earth's ecosystem.

Through this narrative, *HZD* raises the possibility of changing linear time into cyclical time. What is particularly important is the central idea that time is more malleable than one might think. Time is not an immovable, uncontrollable thing as such. Time can be tinkered with, so to speak. The game engages with this idea of the malleability of time by challenging the notion of "ending" in itself, and creating the conditions for an ending to become a new beginning through cyclicality. What should be the logical endpoint of a linear progression actually becomes the starting point of another. Linear time is thus incorporated into cyclical time. This process of planetary scale enables and relies on a conception of life that goes beyond the simple dualism of humans and nature, in favor of one that recognizes the complex ways in which human and nonhuman life are intertwined interdependently through and through as one collective—the survival of each is fundamentally related to the survival of the other. While the game's narrative highlights some of

the unexpected developments and challenges that alter the original plan, humans and nonhumans are meant to work together for the benefit of the planet and the life that inhabits it. The key resides in rethinking the organization, or grouping, of life on Earth. Because time is reconfigured in such a way, based on a long cycle of renewal, forms of life of all kinds (human, nonhuman, mechanical, etc.) come together as a coherent collective. The only possibility to maintain life at all is to consider all forms of life as one intricate web of relationships in which they all function together. Thinking of time as neither inherently linear nor cyclical, but transformative and transformable, is what unlocks the possibility to approach life in such a way and reimagine the relationships and entanglements between life-forms, human and nonhuman.

CONCLUSION

Horizon: Zero Dawn provides a profound engagement with the ever-changing entanglements of life in which humans, nonhumans, and technology are intricately intertwined as the basis of new collectives coexisting at the planetary level. Each element plays a different role while also contributing to the whole. This reimagining of collective formation beyond the human, however, is possible only through a reconfiguration of time, and as such, the game challenges conventional notions of linear and cyclical time alike. Thinking within the confines of cyclical time can propagate the misconception that time is only passively experienced through its repetitions and cycles, rather than actively malleable. *Horizon: Zero Dawn* is a work that challenges the former conception in favor of exploring the latter. The game does so by reinterpreting the finality of life on Earth, the ultimate "end" of linear time, into a cyclical renewal of life. With the planet's destruction, or at least the termination of most life-forms, a seeming inevitability, a plan is set in motion to take advantage of this destruction to plant the seeds of renewal, similarly to the phoenix rising from its ashes. This process accomplishes nothing short of transforming an end into a beginning. More important, this reconfiguration of time as cyclical in the *longue durée* is essential to conceiving new approaches to collectives. This new form of cyclicality enables various life-forms—represented in the game by the technological machines, the natural fauna and flora, as well as the humans—to work together for the survival of life as a whole on Earth. *Horizon: Zero Dawn* thus builds on the complex relationship between time and collectivity, reinforcing the transformative potential of alternative collectives, the malleability of time, and the possibilities that lie therein.

BIO

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NOTES

1. Danny O'Dwyer, dir. *The Making of Horizon Zero Dawn*. Noclip, 2017.
2. One should note that Guerilla Games was criticized for its portrayal of such communities and the use of words such as "tribal," "savage," and so on, most particularly by video game writer Dia Lacina, who voiced a pointed critique at the appropriation of Natives in the game. For more, see Dia Lacina, "What We Talk About, When We Don't Talk About Natives," *Medium*, February 27, 2017, https://medium.com/@dialacina/what-we-talk-about-when-we-dont-talk-about-natives-60f4af9ef675.
3. Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016), 49.
4. Ibid., 50.
5. Donna J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 151.
6. Donna J. Haraway, *loc. cit*., 2.
7. Ibid., 3–4.
8. Ibid., 44.
9. Ibid., 44–45.
10. Will Steffen, Jacques Grinevald, Paul Crutzen, and John McNeill, "The Anthropocene: Conceptual and Historical Perspectives," *Philosophical Transactions: Mathematical, Physical and Engineering Sciences*, 369.1938 (3/2011): 842.
11. Simon L. Lewis and Mark A. Maslin, "Defining the Anthropocene," *Nature* Volume 519.7542 (03/2015): 171.
12. Jason W. Moore, "The Capitalocene, Part I: On the Nature and Origins of our Ecological Crisis," *The Journal of Peasant Studies* 44.3 (2017): 595.
13. Ibid., 596.
14. Ibid., 598.
15. Donna J. Haraway, *loc. cit*., 47.
16. Ibid., 55.

17. Ibid., 57.
18. Uno Kōzō, *Kyōkōron* (Tokyo: Iwanami Shoten, 1974), 138.
19. Ibid., 16.
20. Eric Cazdyn, *The Already Dead: The New Time of Politics, Culture, and Illness* (Durham, NC: Duke University Press, 2012), 2.
21. Ibid.
22. Anna L. Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015), 3–4.
23. Ibid., 4.
24. Ibid., 6.
25. Jesper Juul. "Introduction to Game Time," in *First Person: New Media as Story, Performance and Game,* edited by Pat Harrigan and Noah Wardrip-Fruin (Cambridge, MA: The MIT Press, 2004), 131.
26. José P. Zagal and Michael Mateas. "Time in Video Games: A Survey and Analysis," in *Simulation and Gaming* 46.6 (2010): 846.
27. Christopher Hanson. *Game Time: Understanding Temporality in Video Games* (Bloomington: Indiana University Press, 2018), 2.
28. Lars de Wildt, Stef Aupers, Cindy Krassen, and Iulia Coanda, "'Things Greater than Thou': Post-Apocalyptic Religion in Games," *Religions* 9.6 (June 2018): 169.
29. Janine Tobeck and Donald Jellerson, "Caring About the Past, Present, and Future in William Gibson's Pattern Recognition and Guerrilla Games' *Horizon: Zero Dawn*," *Arts* 7.4 (September 2018): 53.
30. Fernand Braudel, who formally defined the concept of the "*longue durée*" within the discipline of history in "Histoire et Sciences Sociales: La longue durée," critiques the tendency among historians to emphasize the cyclical in tandem with a traditional "short history" based on events rather than moving ahead toward the unknown. It is in opposition to this structural approach to history that Braudel suggests instead considering history in the long term—thus the appellation "*longue durée*." See Fernand Braudel, "Histoire et Sciences Sociales: La longue durée," *Réseaux* 5.27 (1987): 7–37.
31. Anna L. Tsing, *loc. cit*., 5–6.
32. Ibid., 179, 181.
33. Ibid., 205–206.