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The Foundations of Videogame Authorship

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor
of Philosophy

in

Art History, Theory and Criticism

by

William Humberto Huber

Committee in charge:

      Professor Lev Manovich, Chair
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      Professor Noah Wardrip-Fruin

2013

The Dissertation of William Humberto Huber is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California, San Diego

2013

DEDICATION

With gratitude to friends, family and colleagues.

To Samantha, with deepest devotion, for her friendship, affection and patience.

To Rafael, for whom play is everything.

EPIGRAPH

Art is a game between all people, of all periods. – Marcel Duchamp

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

Chapter 1 includes material from research performed with the Software Studies Initiative at Calit2, under the supervision of Lev Manovich and with the help of Jeremy Douglass. It includes images which have been exhibited elsewhere by the author.

Chapter 2 includes material drawn from long-term research that has appeared in previous work by the author, including a paper presented with Laura Hoeger at the Digital Games Research Association conference in 2007. The material has been extensively re-written; however, her contributions were invaluable. Some of the work from the same project was also published as "Catch and release: ludological dynamics in Fatal Frame II: Crimson Butterfly" in *Loading… The Canadian Journal of Game Studies,* Vol. 4 No. 6, 2010.

Chapter 3 includes material published in *Third Person: Vast Narratives,* edited by Noah Wardrip-Fruin and Pat Harrigan, 2008. Cambridge, MA. The material has been extensively revised and re-written for this dissertation, largely in response to the recommendations of members of the committee.

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"Epic spatialities: the production of space in Final Fantasy games." Book chapter in Third Person: Vast Narratives, ed. by N. Wardrip-Fruin and P. Harrigan. MIT Press, Cambridge, Massachusetts 2009.

"Notes on aesthetics on Japanese videogames." Book chapter in Art and Videogames, ed. by A. Clarke and G. Mitchell. Intellect Books, London 2008. Revised version in press.

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"Mapping Time" exhibit. Calit2 gallery, UC San Diego. 2010

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ABSTRACT OF THE DISSERTATION

The Foundations of Videogame Authorship

by

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Doctor of Philosophy in Art History, Theory and Criticism

University of California, San Diego 2013

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Videogames have an ambiguous status as texts, in their dual nature as objects of play and computer-mediated systems of representation. This has led to an impasse in game studies, making it difficult to identify authorial voice, to make useful distinctions in style of game design, and to account for the varieties of modes of reception.

This dissertation addresses the problem by proposing a model for the interpretation of videogames based on the semiotic theory of Charles S. Peirce. This model is the basis of a series of analyses of a range of videogames and other interactive

work on the dynamics of genre, style and authorship. While most of the research involved the close play of games, using video transcriptions and tools to analyze game footage, it also relies on interviews with game creators, industry reports, and discussions with game players in both North America and Japan.

INTRODUCTION

This dissertation is an attempt to answer certain questions about digital games. How do they "mean" things? What is the locus of their aesthetic effect? How do they refer, in the sense that an image of a thing refers to that thing, or a film or novel refers to that which exists in its diegesis? To what extent can we describe them as "authored," and to what extent "designed?" What does "style" mean for a playable form? What are the conditions in their operation which makes them coherent to players as something which can understand? Can the mechanics of a game produce allegory or metaphor, as per the "allegorithm" or "control allegory" described by Alex Galloway?[1]

Digital games have certain features which make them compelling objects of study. They are highly multimodal, and their production incorporates writing, the design of 3-dimensional objects and spaces, the production of cinematic sequences, animation, sound engineering, and simulation. In the case of large-scaled game development, these activities transpire within production chains chained together by networks, often on a global scale. Lev Manovich describes games as "digitally native;" while music and cinema have been changed through the widespread deployment of software in production and the transcoding of music and film to digital media, the videogame constitutes (arguably) a new form with novel conditions of reception. With origins in the Cold War

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[1] Alexander R Galloway, *Gaming: Essays on Algorithmic Culture* (University of Minnesota Press, 2006), 91.

technologies of simulation and planning, they emerged in the early 1960s from the computer labs of the Massachusetts Institute of Technology, Over the 1970s and 1980s they would appear in the demimonde of entertainment arcades and on consumer electronic platforms made for middle-class homes. Eventually disseminating throughout digital networks, played on mobile devices, the ascendency of digital gaming and its ubiquity in the childhood of many of those born since the 1960s have made the ideas of play and participation in the arts commonplace.[2]

Though still seen, perhaps, as a minor form, they include technologies, tropes and literacies which can be deployed very flexibly. This dissertation is about a wide range of works in different scales and in different registers of cultural activity. What follows applies as much to small, incidental pieces—like Rovio's *Angry Birds* (2008) or Zynga's *Farmville* (2009) which are played "casually," in interstitial time—as to installation-based work which anticipate a reflective or considerative mode of engagement, such as C-Level's 2002 *Waco Resurrection*; from locative works meant for public performance or engagement, such as Blast Theory's *Uncle Roy All Around You*, or Aram Bartholl's

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[2] See Claire Bishop, *Artificial Hells: Participatory Art and the Politics of Spectatorship* (Verso Books, 2012). Bishop describes the emergence of participation as a utopian lodestone in 20th and 21st century art, and its recuperation in the modern era. She notes that when she began her research in 2003, participation was still a relatively marginal aspect of contemporary art practice, but that by the time her book was ready for press, play and participation had taken a central role in gallery-based art scenes, as well as in public art spaces and museums.

street performances, to small, personal works of personal expression, such as Rod

Humbles *The Marriage* or the community-created role-playing games created by

dedicating amateurs using tools such as Enterbrains's *RPG-Tsukuru* , to commercial titles

created by hundreds of workers, like *Final Fantasy XIII*, and *Civilization V,* each of

which may provide hundreds of hours of play for gamers.

Yet despite this range of effects and features, they are all rule-driven systems,

most of which use software to encode those roles. They are designed and engineered by

creators who implement these systems of rules in software, and then ascribe meaning to

the various elements which instantiate those systems. There is transitivity among the

fields of practice described above: members of C-Level have also released works meant

for internet distribution; Rod Humble has worked on my mainstream, commercial titles;

Aram Bartholl's work plays off of the game industry; the amateurs and hobbyist who

make personal games using *RPG Tsukuru* often respond to and appropriate commercial

games, using a vocabulary of tropes and representations that they learned as fans and

players.

Contemporary authorship is a flexible and distributable function. Recalling

Foucault's idea of an "author-function,"[3] in which the figure of the author is created

within each discourse according to the interests of its participants (and according to the

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[3] Michel Foucault, "What Is an Author?," in *Textual Strategies: Perspectives in Post-Structuralist Criticism*, ed. Josué V. Harari (Ithaca: Cornell University Press, 1969), 141–160.

power and ability to determine that function,) the flexibility is more dynamic when the text's materiality is mostly software-based. The material contribution to and constraints on the dynamics of authorship are one of the themes of this dissertation. Organizations, teams, collectives and corporations can fulfill the functions of authorship, especially when the text is a very large collection of assets and algorithms, which is available from anywhere on the globe during the production process. Audiences, technologies, distribution channels, and legal realities (franchising, intellectual property agreements and constraints) also shape the way that that authorship is conceptually produced and deployed. This dissertation lays a foundation for survey of the ways that authorship can be configured by reflecting on the videogame as a system which produces meaning and makes reference to things outside itself, and which generates experiences that are available for interpretation and reflection.

The first chapter of this dissertation is a foundational exercise, describing how videogames operate as systems of representation. The chapter begins with a review of the important theories of play and games, especially the writing of Roger Caillois and Brian Sutton-Smith, and describes the nature of an impasse which exists in contemporary game studies: the distinction between the video game/computer game as a system of activity and as a system of representation (usually conceived as narrative, due to the healthy representation of literary scholars in games studies.) The chapter suggests a route past this impasse: a model of the game as semiotic in a broad, phenomenological sense. This model is built on the semiotic theories of Charles Sanders Peirce, whose taxonomy of the sign accounts for the breadth of signification across the modalities of human perception.

The Peircean model of semiosis enables us to consider how effect perceived by the player during a game can be understood as (at least possibly) authored.

The second half of the first chapter develops this model by applying it questions of genre and style, understood here as organizing schema for the authored systems which constitute a game. In the first case, genre is understood in terms of nested literacy developed in the ongoing relationship between players and producers, through which themes, topics and images are configured. The history of the use of *D-Day* across various interactive genres is used for illustration. Style is understood in terms of the foregrounding of specific conceptual registers of game experience as the site for aesthetic experience: as the "place" in the game in which meaning occurs.

The second chapter begins with a description of modes as components of the game as a material sign-system. Modes are divisions of the software into different configurations, and different systems of meaning. Players learn to recognize different modes as distinct regimes for interpreting the sign elements at hand. As semi-modular software-driven systems, they can be developed by multiple teams working in parallel with each other. The modes produce a natural point of segmentation for the engineering of the game as a software-based system. The phenomenal experience of play integrates all the conceptual registers of the game as systems of meaning and activity in the real-time decoding of software running in modes. The dissertation focuses on one game, *Fatal Frame II: Crimson Butterfly*, to work out this analysis.

The third chapter focuses on two sites of meaning in different game-design traditions: the creation of spatial experience, and the authoring of relational dynamics. A

framework is drawn from the critical geography of David Harvey in the first case, and the possibility of a relational style of game authorship to the design of multiplayer spaces is invoked in the second. Videogames are located within a broader array of digital media and networks in its ability to provoke different types of spatial cognition, and produce a sense of place. The chapter centers on one game franchise, the *Final Fantasy* games from 1987 to the present, and concludes with a study of the online, massively-multiplayer version of the game.

The dissertation concludes by relating the foundational work in games as meaning-systems to the question of authorship. A sequence of authorial modes, from a non-authorial culture of digital game design in the 1970s to the contemporary model of distributed and delegated authorship on a global scale is laid out. The conditions of authorship are described in terms of the changing material possibilities of game design and collective software development.

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CHAPTER 1. THE SEMIOTIC ELEMENTS OF VIDEOGAMES

In this chapter, I will argue for a model of digital game-play[4] as a player's dynamic interpretation of the signs produced by a game: an inquiry into the conditions of authorship, particularly in the case of games, needs to rest on a sound model of the conditions of reception. This model draws from Peircean semiotics, genre theory, and theories of software culture. Existing models of game-play—those which are based on a primary distinction between the game as a representational systems and the game as a system of activity—have limited our understanding of the nature of authorship for these games and related forms, and do not account for the dynamism and variety of games which are being produced and consumed. They are also ill-equipped to explain genre evolution in interactive media. I will use this model to clarify genre in games, and to analyze one game in depth.

The key contributions of this chapter are, first, a model of gameplay meant to address problems which occur when the distinction between game-play and content is presumed. This model takes a semiotic approach to the study of games. It suggests a

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[4] The model proposed here applies to works which would lie outside of many definitions of "games," "digital games," "video games," and such. and would also fit simulations, interactive art works, and interactive fiction. It may even apply to interfaces for social media and web applications, although to the extent that they are generally designed to be transparent, rather than to be encountered as texts as such, would dilute the usefulness of this kind of analysis to those kinds of software-based objects.

concept of game modes and their relationship to registers of game-interpretation (developed in chapter two.) It also presents a research methodology which allows detailed visualization of hundreds of gameplay.

These theories of play are interpreted and discussed as theories of signification, and describes how contemporary debates in game studies are a result of an incomplete model of game semiotics. The next section reviews Peircean semiotic theory and introduces the concepts of game *modes*, which are software-based configurations of signifying elements, and game *registers*, which are conceptual models of the game system interpreted by the player working their way through the game. The interplay between mode and register, and the dynamics of signifiers within games, is worked out in a discussion of game genre.

My larger project is to investigate the relationship between *authorship* and playable artifacts. Authorship, in a conventional sense, is a circular concept: it defines some objects (written texts, films, computer games) as products of the creative activity which bring them into being (writing, filming, programming, etc.), and then determines the authorial nature of that activity in terms of our assumptions about the producer's relationship (such as intentionality, dialogue, development of style, intra-discursivity) to these products. To break apart this circularity, I start with a formal model of playable artifacts (games, simulations and related work) as authored systems by describing their operations as sign-systems. A semiotic model for videogames and playable media allows

us to account for the range of configurations of the "author function[5]"—those aspects of the work singled out, for various reasons, as being the basis for an attribution of authorship—that are found in videogame production.

Videogames and other playable software-based media have come into being only in the latter half of the previous century. It is thus easier to answer certain ontological questions, because we have access to most of the forms which that thing has taken, and it is easier to recover older senses of what that thing was than it might if it dated before living memory: we are spared from strenuous hermeneutics, because we have the arrival of these objects in living memory. Yet it is surprising how quickly habits of thinking set in: how we naturalize one mode of reception over another, how we describe our

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[5] Foucault, "What Is an Author?," 108. Foucault's investigation into the (conceptual) history of the idea of the author is useful but limited, in that it is still based on a privileging an idea of authorship as related to the written word, even as the question of the *auteur* was being revisited in cinema: Francois Truffaut's essay on the auteur appeared in the pages of *Cahier du Cinema* only a few years before Foucault's. Foucault himself observes, "Up to this point, I have unjustifiably limited my subject. Certainly the author function in painting, music and other arts should have been discussed, but even supposing that we remain within the world of discourse, as I want to do, I seem to have given the term "author" much too narrow a meaning. I have discussed the author only in the limited sense of a person to whom the production of a text, a book, or a work can be legitimately attributed." The useful components of Foucault's model is the observation of the flexibility of the idea of authorship to different aspects of the text and for different deployments of it; while he mentions collective authorship—e.g., "the Church fathers"—he does not address asymmetrical authorship, authorship within a production system, or the possibility of isolating different aspects of the text and determining them as authorial.

experiences of these things in encapsulating terms. If someone were to say, "last night, I played a game on my computer for three hours," what do we imagine they've done? What kind of time was spent in that activity? What sort of person—what sort of subject— were they at the time they were playing? We can produce accounts of what it means to read a book, especially a novel, an understanding based not simply on a social account of reading, but of some engagement with a kind of text. We can do the same for someone who goes to see a film, or even views a painting. These things aren't stable or universal: a contemporary schoolchild viewing a painting by Titian in a public museum is in a different process of interpretation than that within the encounter by a 16th century Austrian noblewoman with a portrait of Emperor Charles V hung in his own home for the benefit of visitors in Augsburg. There may even be differences in the viewer's management of their own visual apparatus in each case: nonetheless, there is much that connects the two experiences. Both are likely to understand the portrait as indexical, even if they perceive different codes in each case.

It is less simple for our game player. We understood that they were doing something we obliged them to be active somehow, but we also understand that they may have experienced a narrative. If we ask them "what happened," we could be told many things: "I won," "the villain was hiding in the castle," "I got a high score," "I unlocked a level," "nothing," "I made some new friends and joined a clan," "Dave cheated again," "I cried when my (the main character's) child died," "I played as Yoshi," "the police framed my friends for the murder, but I'm trying to find evidence that clears them," "it turned out I was responsible for the massacre," "I helped some friends farm gold." We could, in the

course of conversation, quickly establish the contexts of such explanations and induce just what aspect of the activity was being presented in the recount, but it is striking how many possible summaries of the outcome of the session of play could emerge—and all the examples described can be described as originating in an encounter with the game as a text. The transition from "what did you do?" to "what happened?" when asked of someone who played a video game is the crossing of a chasm.

Game play—and the creation of games—is as old as anything human, and older. Should we restrict ourselves to those games known from contemporary texts, and the play of which is well understood, then the forerunners of the modern game of chess date back at least to the Sassanid Empire (in modern-day Iran) in the beginning of the 7th century CE, and possibly to the Gupta Empire (in modern-day northern India) at the end of the 6th. The earliest reference to the game we call Go is from the 4th century B.C.E., and refers to an event in the year 548 B.C.E. A handful of physical artifacts or images of them have been identified as ur-games older than these references: the Egyptian game of Senet (c. 3100 BCE) and Mehen (c. 3000 BCE), the Mesopotamian Game of Ur (c. 2600 BCE), Weiqi, Luobo and Chupu in China are interpreted as games with playable rules of one sort or another. Even these conventional historical references are for systems of activities that could be named, described and recorded: playful activity precedes human historical memory: many animals recognizably play and cavort particularly in their juvenile stages, and human play begins in infants before the production of speech.

Despite this hoary legacy, a premise of this chapter is that an important discontinuity[6] occurs when a spectatorial media form becomes playable, when rules are encoded into software to be executed in a computing platform[7], and games become discrete commodities or saleable services and experiences. The above description of the antiquity of games is not meant to place the project of understanding the conditions under which digital games are currently authored and interpreted within a universalized history

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[6] Although this dissertation privileges software-based game creation on the basis of the material and ontological discontinuities that I describe, there are non-digital and hybrid-digital practices which are historically and practically related. I will be discussing the complicated relationship between fiction and mechanics in table-top role-playing games, and the relational-design elements of pervasive and alternative reality games, in later chapters. In many cases, they prove the rule: the nature of inscription and the productive systems of these forms are starkly different from the software-based variants. At the same time, they also are influenced by the history of digital game design, and have similar issues regarding intellectual property, incorporation of diegesis into game mechanics, participation in trans-media narrative franchises, distributions of authorial labor, etc.

[7] The question of "what is a computer" and "what is a platform" is a technical one. The latter question is addressed in the formation of platform studies, esp. in Nick Montfort and Ian Bogost, *Racing the Beam: The Atari Video Computer System* (Cambridge MA: The MIT Press, 2009). See also Nick Montfort, "Combat in Context," *Game Studies* 6, no. 1 (2006), http://gamestudies.org/0601/articles/montfort/. A computer need not be physical: it can be emulated in software. It also need not be electronic nor digital: the earliest games created for the computer were written for analog computers, and Charles Babbage conceived of games of skill playable on his Analytical Engine: see H. P Babbage, "Babbage's Analytical Engine," *Monthly Notices of the Royal Astronomical Society* 70 (1910): 517–526.

of game design. There is, nonetheless, a precedent for describing the design of any game—a board game, a team sport—as one involving authorship, particularly for games with distinctive rhetorical heft. That a game have a designer or origins in a specific place is an idea we can find in Herodotus, who attributed to Atys, king of the Lydians, a game designed to help the populace cope with a famine, and to select a fraction of the kingdom to emigrate and colonize the region of Tyresenia (later Etruria, center of the Etruscan culture[8].) In 16th century Spain, Alonso de Barros' *Filosofia cortesana*, a moral treatise for courtiers, included the design of a board game which illustrates the finer points of navigating the complex patronage system of Phillip II as the navigation through the sea of suffering to the riches of the new world[9]. The popular board game *Monopoly* was an iteration of a game designed by Elizabeth Maggie as an illustration of the land tax theory of Henry George[10], and 20th and 21st century artists have created "playable rule-sets" and board games[11]. There are many examples of the design of games and sports being attributed to authors, artists and designers: the possibility of designing them in software

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[8] Herodotus and George Rawlinson, *The Histories* (Digireads.com Publishing, 2009), 31; described in Jane McGonigal, *Reality Is Broken: Why Games Make Us Better and How They Can Change the World* (Penguin, 2011), 5–9.

[9] Harry Sieber, "The Magnificent Fountain: Literary Patronage in the Court of Philip III," *Cervantes: Bulletin of the Cervantes Society of America* 18, no. 2 (1998): 93.

[10] Elizabeth Magie, "Game-Board (The Landlord Game)" (Brentwood, MD, January 5, 1904).

[11] See especially Mary Flanagan, *Critical Play: Radical Game Design* (Cambridge, MA: MIT Press, 2009), 63–116. I discuss some artist-designed games in chapter 3.

did not, in itself, create the possibility of an attributive relationship between a producer and a game.

Yet the encoding of games into software is more than a simple translation, or even a remediation, in the sense described by Grusin and Bolter[12], by which current mediating practice takes up and redeploys the work of the past, of a pre-digital form. Play forms did not generally circulate as discrete mediated objects before they were captured into software. Non-digital games are rule-driven practices managed socially and institutionally: even the written rules of a game are more like a musical notation meant to give guidance to a negotiation than they the rules themselves. In many games, the rules are transmitted orally and by imitation and participation. The management of the rules, their modification, suspension or augmentation becomes part of practice of a community that plays.[13] A digital game moves those processes into software: the creation of behaviors and design of representations to index those behaviors occurs when the "representation" of a rule becomes the mechanism by which a rule is made actual as the outcome of the working software (or when the operation produces its own representation

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[12] J David Bolter and Richard A Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999).

[13]See, for example, Linda Hughes, "Beyond the Rules of the Game: Why Are Rooie Rules Nice?," in *The World of Play: Proceedings of the 7th Annual Meeting of the Association of the Anthropological Study of Play*, ed. Frank E. Manning (West Point, NY: Leisure Press, 1983), 188–199. Hughes describes how children play and adapt different rules of the playground game "Foursquare" depending on shifting social and environmental conditions.

from within itself, as an effect of its computation.) There are borderline cases: e.g. table-top war-gaming and simulation. What can be said of these cases is that other processes are brought together in these liminal cases to roughly approximate what a digital game implementation does easily: assembling material systems of representation (charts, markers, figurines, landscape elements) to produce a visual system of playable fiction that can maintain the state of the play and provide a basis for a system of calculation for modifying it.

The determination of the category of "the game" has been a challenge for ontology. Wittgenstein's reflections on the nature of categorization, as not being a matter of necessary and sufficient conditions (the Aristotelian definition of definition and model of categorical membership) arose from the observation that there is no single feature which all members which were element of the intuitively-understood set of "games" in the English language shared; rather, categorical membership was a function of "family resemblances," a collection of features no one of which was either necessary or sufficient, but which in aggregate would cause someone to recognize an activity or artifact as a game.[14] Within game studies, a surprising amount of attention has continued to be paid toward ontological questions (e.g, questions of "what is a game", "what is a

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[14] Ludwig Wittgenstein et al., *Philosophical Investigations* (London: Wiley-Blackwell, 2009).

rule", "what is a game fiction")[15,16] often to establish a pedigree for the study of videogames that would ground them in a much older "history of games."

My motivation for revisiting these ontological questions is to reveal the conditions of authorship for games and playable media[17], and to do so in a manner that does not privilege those genres and styles which clearly resemble forms for which those conditions are already well-understood (i.e., those games which are at least superficially similar to film, literature, etc.) Many conventional observations about videogames favor one genre over another: presuming the existence, for example of an avatar or a narrative, and implicitly exclude many games which are important to popular and critical discourses of gaming. For a number of reasons, we cannot allow ourselves the luxury of a theory of game authorship which arbitrarily deigns some works as ephemeral, especially when the field of game production itself does not figure them as ephemeral.

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[15] Jesper Juul, *Half-Real: Video Games Between Real Rules and Fictional Worlds* (Cambridge, MA: MIT Press, 2005).

[16] Ian Bogost, *Unit Operations: An Approach to Videogame Criticism* (Cambridge, MA: MIT Press, 2006).

[17]This phrase drawn from the name of UC Santa Cruz's department dedicated to research and education in game design and game studies.

Play as signification and interpretation.

Play, including the play of animals, has already been described as an act of meaning-making. The mid-century cultural historian Johan Huizinga[18] describes play as a significant function, occurring within a "magic circle[19]," a demarcated space-time separate from and partially autonomous of daily life. Within this magic circle, things are assigned new interpretations: a mound of dirt becomes a pitcher's mound in baseball, a stick becomes a wicket in cricket, fifteen minutes constitutes a quarter of play in hockey, touching an individual transfers the designation of being "it" in a game of tag. For Huizinga, this creation of provisional meaning is the foundation of culture; the interpretation of phenomena, the creation of new units of meaning and structures of signification, is prefigured by the play-function.

Huizinga describes the unstable relationship between play and seriousness: the former referring simultaneously to the realization of the "pretend" nature of the act of play and to the levity that accompanies that realization, the latter to the suspense of that realization and the gravity of commitment to the "as-if" of play. This unstable relationship associates "play" with ritual and theater, as forms of play with varying levels and moments of self-awareness of the fictive nature of pretending. In distancing himself

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[18] *Homo Ludens: A Study of the Play-Element in Culture [1933]* (Kansas City, MO: Beacon Press, 1955).

[19] The term "magic circle" has become a term of art in game design to describe both an imagined autonomy for play-activity and the system of rules and operations which constitute the basis of play. These two senses are sometimes conflated.

from models of play which are explained in terms of human development, whether phenotypical or cultural, he argues for an autonomous compulsion for play that makes it always prior to any utility or purpose. The magic circle's separation from the spatial practices and marked times of everyday life can be taken to be over-stated: in game studies, the figure of the "magic circle" is often targeted for criticism, construed as excluding the contingencies which produce play and playful subjects. Despite this, he never describes the relationship between play and its contexts as arbitrary.

Huizinga emphasized the spatial aspect of play, but the "magic circle" is a conceptual space of signification (reminiscent of David Harvey's idea of spaces of representation, discussed later) in which the "separateness" that Huizinga claims is essential to play is produced. The creation of a rule of play is a kind of speech-act: the claim that a mound of dirt is "second base" as part of determining a region of space as a baseball field is not expository or propositional, but as a perlocutionary and declarative act: the production of the grounds for playing baseball. The provisional sign-creation calls for an interpretation-creation, which is fulfilled by the activity of playing the game, not in the establishment of an imaginary about "second base."

While embracing Huizinga's focus on play insisted on placing the play-experience (as an aspect of the aesthetic) in the center of its own research project, Roger Caillois[20] sought to create a taxonomy of games: he includes a range of practices which

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[20] *Man, Play, and Games* (New York: Free Press of Glencoe, 1961).

are "played" at, including lotteries, theater, ritual, skiing, (as a pleasurable activity) and twirling. Caillois' four-by-two matrix of game categories is an early case of an object-centric perspective, treating particular games as cultural texts, rather describing play as such in undifferentiated terms. Caillois proposed four categories of games: those of *agon*, or competition and mastery; of *alea*, chance; of *mimicry*, or imitation, and of *ilinx*, or vertigo.[21] Additionally, he places play along a graded axis between *paidea* and *ludus:* the former is unstructured, spontaneous play in the manner associated with small children, the latter being structured by explicit rules, restraint, institutions, and the regulation of play. Spontaneous wrestling/tumbling matches between children is paidean agon, a relatively unstructured, free-form play in which children establish who is stronger; a state-run lottery is ludic alea, a highly regulated game-of-chance to select those who are fortunate by no real effort on their own part.

Caillois' categories continue to inform game studies work and theories of game design. However, he is sometimes misunderstood as writing simply about games in themselves, as if simply describing the rules of a game would be be enough to determine its category. Instead, he is describing game-play as cultural performance, not games-as-rules in the abstract. They could be better described as categories for cultural logics of play. Caillois' taxonomy fulfills a promise to Huizinga in this sense: each of these

[21]Caillois does not exploit the distinctiveness of the English world "game," and the object of the predicate best translating "play" is *jouer à un jeu* - to play a played-thing: it can also be interpreted as meaning "to act" (in a theatrical sense.)

categories is prior in play, at least conceptually, to the forms that the logics of these categories assume in social and personal spheres, but the relationship between the game as a formal system of rules and the game as the frame of *play*, as an interpreted and interpreting cultural practice, is not well easily distinguished and requires us to observe how the game is being used by its players.

As an example, the game of poker's characterization as a game in Caillois' system is ambiguous. A description of the rules seems to make it difficult to interpret as a game of *mimicry*—that is, as a game in which problems of identity and performance are being worked. Nor is one likely to interpret the game of poker as one of *ilinx*, involving the disorientation of the senses, playing with the ambiguity of senses and troubling the phenomenological border between self and world. However, the two remaining categories - *agon* and *alea* – are more viable candidates. While the mechanics of a game can include elements from other categories, there is something exclusive about the logic of play itself: the play of a game can by read as being underpinned by the need to resolve one or another question. *Agon* occupies itself with mastery, with distinguishing the virtuous player against rivals. The outcome of a game of agon reflects on the skill, strength and cunning of the agonist. *Alea*, on the other hand, refers to chance; in Caillois' interpretation, the chance elements of such games stand as synecdoche for the vagaries of fate and the whims of deities; for the universe of realities, which are outside of human effect or agency. If in playing a game of *agon*, a player is asking, "which one is the best? Where is mastery? What is the value of my best efforts?" then a game of *alea* asks, "What is my fate, my destiny? Do I enjoy divine favor?" To identify what cultural logic

is at work, one must see how the rules of the game are being interpreted by its players in the context of play.

Many games, like poker, include elements both of chance and skill: the chance in the fickleness of the cards as dealt; the skill in the exchange of bets to communicate and to bluff, in the scrutiny of the player to discern the real situation of their opponents by reading the signs of their countenances and bets. Its practitioners interpret poker as a game of skill, over the course of a career, even if a single hand or series of hands may be determined by chance. This is suggested by its professionalization, by the public spectacles of televised poker matches, by a thriving niche of poker literature, by the representations of poker players in film, television, and literature.

The professionalization of the sport notwithstanding, the legal status of poker in the United States is often based on an interpretation of it as a game of chance. The regulation of gaming (i.e., gambling) is generally left as a matter to state governments, and without exception, the codes which regulate them distinguish between games of chance and games of skill - essentially, between alea and agon - and restricts waging on the former more aggressively than waging on the latter. The interpretation of the phrase "game of chance" varies among jurisdictions: in some states, any element of chance is enough to provide a basis for such a finding; in others, it is when chance is material to the

outcome of the game (which would, by most accounts, include poker.) In others, it is a question of predominance[22] of the chance element.

A casual game of poker among amateurs - or against a computer system that bets consistently based on ruled parameters - is a game of *alea*, as one simply hopes that the cards which are distributed are favorable. Over time, the player's relationship to the game evolves: the cultivation of the player is a kind of apprenticeship in the relevant signs of play, as the possible interpretations of signs *within* play expand to include signaling behaviors, bluffs, etc. The player who learns these signs and how to produce (and avoid producing) them no longer plays a game of chance, even if one hand or another's denouement is subject to the chance element. Such a player is an *agonist,* involved in a competition to master the vocabulary of signs produced by the shuffle and deal of cars, the bets, gestures and intonations of players, and their own affect and countenance. The question, which is resolved by each hand of poker, for such a player, is about their own abilities, not on their appointed destinies.

What this suggests is that the categorization of games proposed by Caillois—agon, alea, mimicry and ilinx—are cultural logics of play, rather than simple categories

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[22] Information on legal status of poker from attorney Melinda Sarafan. The difference in legal status between games of chance and of skill seems to be widespread; a Dutch court recently found online poker to be a game of skill. It is interesting that Dutch law, as in many American states, reserves the right to wager in games of chance to state-sponsored gambling, while wagering in games of skill is allowed to the private sphere. See *The Poker Law Bulletin* for more.

for types of games. These logics are stances toward the interpretation of those signs

which are the basis of the play experience. The novice poker player plays a game of *alea*

because the signs to which he/she attends are those generated by stochastic processes;

they may bet literally, based on an appraisal of the value of the hand, hoping that others

have been less fortunate than he/she. The experienced player both attends to other signs

(the bets of other players and other cues about their intentions and beliefs) and interprets

the same signs[23] as the novice with a more deeply entrained system of interpretation (e.g.,

statistics based on known cards, etc.) Nonetheless, both players are playing the same

game; both adhere to the same rules of poker. Thus, the rules of poker themselves do not

determine the character of the play of poker in and of themselves.

That play is signification, and signification at the heart of play, was explored by

Gregory Bateson[24], summarized in his oft-quoted observation, when considering the play

of young monkeys at a zoo, that "[t]he playful nip denotes the bite, but it does not denote

what would be denoted by the bite."[25] For Bateson, play is predicated on meta-

communication: the session of play begins with the creation of an understanding among

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[23] In the Piercean sense of the material sign: some ambiguities regarding the application of Piercean semiotics to games will be addressed later in this article.

[24] Gregory Bateson, "A Theory of Play and Fantasy; a Report on Theoretical Aspects of the Project of Study of the Role of the Paradoxes of Abstraction in Communication," in *Steps to an Ecology of Mind*, by Gregory Bateson (Chicago: University of Chicago Press, 1972), 177–193.

[25] Ibid., 180.

its participants that the elements of play (the nip of monkeys) is not to be interpreted in the same sense as usual: that they would become part of another articulation, referring to the conventional interpretation of the bite, which denotes hostility, without denoting the hostility itself. In playing, a fantasy world—a subjunctive world, in a way, suggesting the "mental spaces" described by Gilles Fauconnier[26]—is co-produced by those who accept the authority of the rules, for as long as they do. The collapse of the fantasy—the evacuation of this provisional surplus signification—occurs when a player becomes a spoil-sport, who, Huizinga says,

> . . . shatters the play-world itself. By withdrawing from the game he reveals the relativity and fragility of the play-world in which he had temporarily shut himself with others. He robs the play of its *illusion*—a pregnant word which means literally "in-play: (from *inulsio, illudere* or *inludere*).[27]

Both Huizinga and Bateson emphasize the priority of playful signification over its mature forms: each sees juvenile play as the pre-condition for reference, for the production of metaphor, for fiction, for ritual, and for abstraction.

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[26] Gilles Fauconnier, *Mental Spaces: Aspects of Meaning Construction in Natural Language* (Cambridge, UK: Cambridge University Press, 1994).

[27] Huizinga, *Homo Ludens: A Study of the Play-Element in Culture [1933]*, 11.

Ludology and narratology

The study of games generally took place under the guise of cultural anthropology and cultural history (e.g. Huizinga, Sutton-Smith[28]) sociology (Caillois) or psychology (Bateson). Despite some early attempts to consider games themselves as material sign-systems available for interpretation[29] (which, tellingly, began only after the digitization of games) the play-activity has been the object of study for the social sciences, rather than the humanities, Roland Barthes memorable interpretation of the cultural semiology of professional wrestling notwithstanding.[30]

The production and circulation of digital games afforded a new perception of games as meaning-bearing, authored and received artifacts, and disciplines and methods from other fields have taken them in as objects for study, interpretation and criticism. A computer game is not simply the material complement to a game system, like a chessboard or a football field or a deck of cars. It is even more than a documentation of the rules of a game: it does not simply record the rules of a game in the way that a rule-

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[28] Sutton-Smith's approach has been multidisciplinary: he has held important positions in the American Psychological Association and has chaired the Anthropological Association for the study of play. His initial work (B. Sutton-Smith and B. G. Rosenberg, "Sixty Years of Historical Change in the Game Preferences of American Children," *The Journal of American Folklore* 74, no. 291 (1961): 17–46.) was in the field of cultural history.

[29] Mary Ann Buckles, "Interactive Fiction: The Computer Storygame Adventure..." (Ph. D. dissertation, University of California, San Diego, 1985).

[30] *Mythologies* (New York: Hill and Wang, 1972), 15–27.

book might, but enacts at least some, and often most or close to all, in software.[31] When games are software, it is simple to see the game as a *Ding-an-sich,* at least conceptually autonomous from any instance of play, even if they are seldom encountered except through play. Digital games include systems of signs and representations set into material, circulated, and archived. If software has dematerialized practices of image making, sound making, and the written word, it has in contrast materialized the production and execution of game rules.[32]

The discipline of game studies developed over the 1990s and early 2000s. Starting with monographs by Brenda Laurel[33], Janet Murray[34] and Espen Aarseth[35], journals like *Game Studies – the International Journal of Computer Game Research* (2001—present), *the Games and Culture Journal* (2005—present) *Loading… The Journal of the Canadian*

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[31] The question of which rules are not enforced by software has been addressed elsewhere, especially in Stephen Sniderman, "Unwritten Rules," in *The Game Design Reader : a Rules of Play Anthology*, ed. Katie Salen and Eric Zimmerman (Cambridge, MA: MIT Press, 2005), 476–502.

[32] One can observe the long precedent of a material cultural of games – the design of boards and tokens and cards and dice, the architecture of sports arenas and play areas, and the publication of rule books, while recognizing the substantial discontinuity introduced by digital games.

[33] Brenda Laurel, *Computers as Theatre* (Addison-Wesley Professional, 1993).

[34] Janet Horowitz Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (Simon and Schuster, 1997).

[35] Espen Aarseth, *Cybertext: Perspectives on Ergodic Literature* (Baltimore: Johns Hopkins University Press, 1997).

Game Studies Association (2007—present), and *Eludamos — Journal for Computer Game Culture* (2007—present) published articles about games, media and culture by scholars from a range of home disciplines. The *Digital Games Research Association* formed in 2003 has become the major international body for games design research and games studies, producing a biannual international conference since then. Other conferences important in game studies include Digital Arts and Culture, Meaningful Play, the International Conference on Entertainment Computing, the Foundations of Digital Gaming, the Philosophy of Computer Games Conference and the State of Play conference series (which deals with the relationship between games and law.) Game programs at the undergraduate and graduate level have been created at hundreds of universities and colleges: some of the most notable include Masters and PhD programs at the IT University of Copenhagen, The Georgia Institute of Technology, and the University of California, Santa Cruz.

Within this emergent discipline, a series of formal and informal discussions grew into a divide between *ludologists*, researchers who focused on the study of games as such and called for the creation of a family of conceptual frameworks and interpretative methodologies unique to the study of games, and supposed *narratologists*. The latter term was applied by those who self-identified as ludologists to characterize those theorists whose disciplinary approaches drew from literary studies or film theory, and more specifically for those whose interpretation of videogames foregrounded narrative, fiction and representation over the behaviors of games as formal systems. While the gap between the positions of its participants was perhaps exaggerated for rhetorical effect, the debate

provided much of the energy for the early years of the field.[36] The *soi-disant* ludologists included Gonzalo Frasca, Jesper Juul (both of whom distanced themselves from the more dramatic formulations of the distinction,) Marrku Eskelinen and Espen Aarseth. Aarseth may have set the tone of the debate when describing the work of Murray and Laurel:

> 'Games are always stories,' Janet Murray claims. If this really were true, perhaps professional baseball and football teams would do well to hire narratologists as coaches. And does she also mean that stories are always games, or are games simply a subcategory of stories? There were games long before stories (among animals, long before human verbal culture), so to privilege stories over games as a 'core human activity,' as Murray does, may not be a good strategy if we want to understand games and make them better.[37]

This often-cited debate illustrates the ill-fitting attempts to understand digital games in the context of the humanities. Early writing on interactive entertainment and its possibilities, noting the performativity of the medium, often understood these forms within the context of theater or film, yet the residence of meaning within digital games never seemed straightforward. The vicissitudes of the debate are less relevant than their apparent denouement; game studies seem, superficially, to have dispensed with the need to reduce the object of its analysis to one of its features. Nonetheless, the apparent

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[36] "Narratology is a category of interest to the computer game formalists. It represents the authority against which they have rebelled." - Gonzalo Frasca, "Ludologists Love Stories, Too: Notes from a Debate That Never Took Place," in *Level Up Conference Proceedings* (presented at the DiGRA 2003, Utrecht: University of Utrecht, 2003), 92–99, http://www.digra.org/dl/db/05163.01125.

[37] Espen Aarseth, "Espen Aarseth Responds," *Electronic Book Review*, May 1, 2004, http://www.electronicbookreview.com/thread/firstperson/cornucopia.

decompression of the debate has not the problem of the relationship between the game as a system of representation and as a rule-system: often, discussion on games in the wake of the debate begins with recognition of the value and importance of the absent element. In practice, however, criticisms isolate and privilege one element and pay only passing respect to the other. Of the over 130 papers presented at the 2009 conference of the Digital Game Research Association, about 30 could be said to be primarily based on the reading or analysis of the game as a cultural artifact (rather than being ethnographic studies, psychological and cognitive theories of play, design and engineering research, etc.) Of these, about half privileged representational elements and relegated mechanical and game-dynamical elements to the background, while the other half did the opposite. Only Ian Bogost's keynote address at the 2009 Digital Games Research Association conference, "Videogames are a mess," suggested an ontology which is resonant with the temporal experience of play, proposing that games were irreducible to any one of their features or frames of interpretation, and that a state of permanent *bricolage* was the best critical stance for a game scholar.

Murray distinguished between a discipline of ludology as a term to describe the study of games themselves, and a position she described as game essentialism, by which all signifying elements of the game should only be read as tokens in formal game systems[38]. Many ludologists did, in fact, seem to thus emphasize the continuities between

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[38] J. H Murray, "The Last Word on Ludology v Narratology in Game Studies," in *DiGRA 2005 Conference: Changing Views of Worlds in Play*, 2005.

pre-digital and digital game design and play: little has been made (other than a passing observation by Juul[39]) of the fact that, despite the antiquity of games, they have only recently been made the object of the kind of critical inquiry we associate with other cultural forms. Juul and others observe that computers are "very good" at managing rules, and thus it is natural that game design and play migrate to computers. The idea that computers are also channels of communication, engines of mediation and representation, was overlooked.

Aarseth[40] distinguished between the (mostly) non-electronic and (mostly) electronic literatures by seen the latter as ergodic: as a system which lay behind the visible text. In Aarseth's model, an ergodic text is one in which a distinction can be made between *scriptions,* or strings of words and characters as they appear to the reader, an *textons,* strings as they exist, latent, within the text. Not all ergodic texts are electronic: Aarseth identifies the I Ching and the "calligrammes" of Guillaume Apollinaire as ergodic texts.[41] As I am taking a broader sense of the sign than Aarseth does, including visual, architectural, and even relational objects as signs which are "written" into the games, I also identify certain other game-design practices as resembling the dual-nature of the digital game more than the socially-maintained nature of most non-digital games. If the "scripton" is too Saussurean, too literary, to explain the kinds of signs encountered

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[39] Juul, *Half-Real*, 21.

[40] Aarseth, *Cybertext: Perspectives on Ergodic Literature*.

[41] Ibid., 9–10.

within a videogame, it is still useful to consider the distinction between the signs read by the player and those within the system—either lying in wait for a possible but not inevitable exposure to the player, or those which are designed internally, to be read by the system itself, whatever its origin. The system does more than simply hold in reserve signs, awaiting the reader's prompt: it is reading the reader, producing its own model of the reader/player's intentions, disposition, and symbolic production.[42]

Revisiting semiotics in interactive media

If we return to the moment in which someone tells us that, the day before, they had played a videogame, there are some things we can say with reasonable confidence. We know that they executed at least one instance of software on a computer, loaded from some kind of storage (either on the computer or game console they have at hand, or one on a remote server); that the software's operation produced representations which the player interpreted, and that the player responded to these interpretations to provide input back to the game system's processor; the processor interpreted these inputs as the participation of the player into the game. Perhaps other players were doing the same, and responding to signs generated by the computer's response to the player's input (and identifying those signs as the player, making the mediation of the computer transparent.)

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[42] Douglas Engelbart's work developing the core concepts for human-computer interaction in the 1960's was based on this perspective. See Susan B. Barnes, "Douglas Carl Engelbart: Developing the Underlying Concepts for Contemporary Computing," *IEEE Annals of the History of Computing* 19, no. 3 (1997): 19–20.

Perhaps other players were in the same location as the player, and the signs which they interpreted included those produced by each other: shouts, gestures, stares etc.

Much else may have also happened, in the subjective experience of the player, among people with whom they were playing, in the computer systems, on the network to which the computer was connected, and among players also connected to that network. But I will argue that the basis of the player's engagement with the digital game is the interpretation of a stream of signs, almost always in the visual and usually in the audio field, and sometimes in the haptic and proprioceptic ones. And at least some of those signs, and often most, were encoded into the system in the game development process as digital code. Visual signs include everything from icons, strings of text and numbers (labels, scores, names, messages from other players, subtitles, intertitles), particle effects indicating a dynamic process (an explosion, motion, impact), a 3-dimensional figure of a human-like or animal-like character, a stylized red cross (indicating "health" in many games, part of a complex convention alluding to an internal state in the system,) and much more; the audio signs can be sound effects, music, speech (perhaps generated by other players.) In digital game and in game-like interactive media, the dynamics between these signs as the objects of interpretation by the player and as authored elements placed within the software in the development process distinguish them from the kind of signs interpreted by cinema audiences or readers of (non-ergodic) novels.

To develop a useful theory of the sign for interactive media, it is helpful to return to the origin of semiotics and to clear away possible presumptions about its limits and application. The two authors credited with the development of semiotics, Ferdinand de

Saussure (1857—1913) and Charles S. Peirce (1839—1914), each approach the problem of the sign from the perspective of the problematics of their own disciplines. Saussuaure's model reflects a linguistic set of concerns focused on signification as a conveyer of meanings, understood conceptually. It is a dyadic model: a sign consists of a a signifier and a signified: the first is the object of apprehension by the perceiving subject (e.g., the sound of a spoken word, the written characters on a page), the latter the concept which arises in the mind of the subject in its encounter with the sign. The relationship between them is described by Saussure as arbitrary: only convention determines the signified within a community of signifying practice (language speakers, readers, etc.)

In contrast, Peirce's interest in the sign was driven by his career as a scientist and logician —and could thus be said to be closer to ancient medieval medical semiotics, driven by concerns of diagnosis and the interpretation of the anomalies in the body[43]— providing the basis for an understanding of the sign and its reception that embraces phenomenological accounts of human sensation, apprehension etc.

> A *Sign* is anything which is related to a Second thing, its *Object,* in respect to a Quality, in such a way as to bring a Third thing, its *Interpretant,* into relation to the same Object.[44]

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[43] Phoebe Sengers and Bill Gaver, "Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation" (presented at the 6th Conference on Designing Interactive Systems, New York: ACM, 2006), 13, doi:10.1145/1142405.1142422.

[44] Charles Peirce, *Collected Papers of Charles Sanders Peirce: Principles of Philosophy*, ed. Charles Hartshorne and Paul Weiss, vol. 1 (Cambridge, MA: Harvard University Press, 1931), 92.

My goal in this section is simply to produce a model for the generation and reception of a cluster of signs which will allow us to understand gameplay as a decoding process and game production as the creation of an assemblage of signs, rather than try to outfit his labyrinthine system in its entirety. Peirce elaborated a complicated theory based on a system of nested trichotomies, a theory which never fully stabilized over the years he wrote:[45] the question of the sign would emerge and recede repeatedly throughout his career. There are reasons to prefer his terms over those derived from the Saussurean dyad, particularly when describe signifying systems which are not being interpreted in any way that could be said to resemble natural language. His model divides a sign into a primary trichotomy: the *representamen* (he also calls this the material sign, or, confusingly as above, simply the *sign*), the *object* and the *interpretant.* The interpretant is a conceptual entity, which includes all the conditions by which the object is determined by the representamen.

The three elements of the sign relation were further broken down by Peirce into triads. The triadic structure is a constant feature of Peirce's philosophy and theories of logic: often, they derive from his theory of phenomenological categories:

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[45] For histories of Peirce's engagement with semiotic theory, see .L. Short, *Peirce's Theory of Signs* (Cambridge, UK: Cambridge University Press, 2007); James Jakób Liszka, *A General Introduction to the Semeiotic of Charles Sanders Peirce*, Advances in Semiotics (Bloomington: Indiana University Press, 1996).

I was long ago (1867) led, after only three or four years' study, to throw all ideas into the three classes of Firstness, of Secondness, and of Thirdness. This sort of notion is as distasteful to me as to anybody; and for years, I endeavored to pooh-pooh and refute it; but it long ago conquered me completely. Disagreeable as it is to attribute such meaning to numbers, and to a triad above all, it is as true as it is disagreeable. The ideas of Firstness, Secondness, and Thirdness are simple enough. Giving to being the broadest possible sense, to include ideas as well as things, and ideas that we fancy we have just as much as ideas we do have, I should define Firstness, Secondness, and Thirdness thus:

Firstness is the mode of being of that which is such as it is, positively and without reference to anything else.

Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third.

Thirdness is the mode of being of that which is such as it is, in bringing a second and third into relation to each other."[46]

Peirce thus created a division of signs based on the phenomenological category in which it occurs. The first of these was a trichotomy of the nature of the representamen. In a *Qualisign*[47], a quality (e.g., "redness") within the sign-vehicle is the sign itself: an example of this would be the color used on a paint chip in a paint shop to match a color. A *Sinsign* is a thing which acts as a sign, which has an immediate relationship to the object for which it acts as a sign: an example would be the smoke seen in the distance

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[46] Charles Peirce, *Collected Papers of Charles Sanders Peirce: Reviews, Correspondence and Bibliography*, ed. Arthur Burks, vol. 8, 3th ed. (Cambridge, MA: Harvard University Press, 1966), 39.

[47] Peirce was inconsistent in the use of his terms, and his system shifted over the years. Qualisigns, for example, were also called "tones," "potisigns" and "marks." I use the terms he used toward the end of his career and by most contemporary Peirce scholars.

connoting a fire. A *Lexisign* is a sign whose relationship to the object is determined by a law or procedure, including (but not limited to) social convention.[48]

Another fundamental trichotomy is that which distinguishes the three ways in which signs can denote their objects: as *Icons* in which the signs perceptibly resembles the object in a way within the conventions of the interpretant to secure reference, as *Indexes,* in which a one-to-one relationship between the sign and the object emerges from the history of that object (e.g., a child is named: the naming fixes the sign as referring to the particular, rather than to a class; smoke as a sign indexes a fire, being an effect of it) and, *Symbols* (sometimes called, confusingly, *Signs,* which lack any internal structure to link it to the object, but secure reference only by convention (i.e., arbitrarily.) The inclusion of Qualisigns and Sinsigns, and Indexes and Icons, distinguish Peirce's approach from Saussure's emphasis on the (linguistic) sign as arbitrary: while it is possible to locate some arbitrary aspects in the interpretation of icons and indexes, they can be described as (at least partially or selectively) non-arbitrary, that features within those signs provide clues to their interpretation. This also allows that Peirce's semiotics not be limited to communication or ideation: that a sign can be interpreted, decoded, and mediated into another without ideation (or even cognition) is a necessary component for describing the signifying condition at work in playable forms, including videogames. Peirce is interested in the possibility of reading any phenomena as a sign: this affords a

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[48] Charles Sanders Peirce and Nathan Houser, *The Essential Peirce: Selected Philosophical Writings*, Advances in Semoitics (Bloomington: Indiana University Press, 1998), 291.

theory of authorship across multiple modes, when entities are designed and programmed to be available for various types of decoding.

A third trichotomy distinguishes signs by their working within the interpretant (as one of either firstness, secondness or thirdness.) *Rhemes* operate like proper nouns: have the character of being simple terms (like a noun); *Dicents* are propositional signs, and *Arguments,* which Peirce describes as corresponding to a syllogism.

While every sign can be located within all three of these trichotomies, only certain combinations are possible. All Qualisigns are Iconic in their relationship to the object (that is, the "redness" of a paint-chip one is trying to match to a hue of paint in a paint store is a feature of the material, neither arbitrary as a symbol nor indexical) and Rhematic in their relationship to the Interpretant: the "redness" of the red chip is neither a proposition (that the chip is red) nor an argument (that the redness connotes something not present or immediate.) A Sinsign cound be a Rhematic Icon (e.g., a diagram of a single object) a Rhemetic Indexical Sinsign In all, Peirce develops ten classes of signs (Table 1.)

Table 1.: Peirce's categories of signs. [49]

	Sign's own phenome-nological category	Relation to object	Relation to interpretant	Specificational redundancies in parentheses	Some examples
(I)	Qualisign	Icon	Rheme	(Rhematic Iconic) Qualisign	A feeling of "red"
(II)	Sinsign	Icon	Rheme	(Rhematic) Iconic Sinsign	An individual diagram
(III)		Index	Rheme	Rhematic Indexical Sinsign	A spontaneous cry
(IV)			Dicisign	Dicent (Indexical) Sinsign	A weathercock or photograph
(V)	Legisign	Icon	Rheme	(Rhematic) Iconic Legisign	A diagram, apart from its factual individuality
(VI)		Index	Rheme	Rhematic Indexical Legisign	A demonstrative pronoun
(VII)			Dicisign	Dicent Indexical Legisign	A street cry (identifying the individual by tone, theme)
(VIII)		Symbol	Rheme	Rhematic Symbol (–ic Legisign)	A common noun
(IX)			Dicisign	Dicent Symbol (–ic Legisign)	A proposition (in the conventional sense)
(X)			Argument	Argument (–ative Symbolic Legisign)	A syllogism

The richness of this model allows us to identify many features as signs and account for certain phenomena in the encounter with a new game or interface: the farther

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[49] Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce: Elements of Logic*, ed. Charles Hartshorne and Paul Weiss, vol. 2, First Edition (Cambridge, MA: Harvard University Press, 1932), 254–263. The table is closely based on a chart from a Wikipedia article: Wikipedia contributors, "Semiotic Elements and Classes of Signs," *Wikipedia, the Free Encyclopedia* (Wikipedia, The Free Encyclopedia, August 31, 2011), http://en.wikipedia.org/w/index.php?title=Semiotic_elements_and_classes_of_signs&oldid=447705007.

one moves down the list from Qualisign to Legisign, the more conventional and arbitrary the sign's meaning becomes. A game can use a color as a Qualisign: in a game of *Bejeweled*, for example it is only the color of the units which are significant, and a player will react attending only to color—though the behavior that is expected must be learned and is context-sensitive and conventional, once a player understands that three items of the same color in a row provide a score in the game, that player can attend only to the color of an element in the game, and does not need to "learn" that the "redness" of one icon is identical to the "redness" of the other—the equivalence of the quality is self-apparent. A rhemtic iconic sinsign would be the motion of a dot on a radar screen (the radar-screen as a system itself being a rhematic iconic legisign) corresponding to the direction of movement of an opponent, as in a flight-simulation fighting game such as *Crimson Skies.* A rhematic indexical sinsign could include both computer-generated and (other-)player-generated cries indicated that they had been hit in a first-person shooting game such as *Halo* – in the first case, the cry having been implemented by the game developers as an affordance to the player both indicating that s/he had successfully hit an opponent and providing some satisfaction in their success; in the latter, case, it could be a cry of frustration at having been bested. (In the latter case, too, the cry would also produce a dicent indexical legisign.)

The role of the pragmatics of play in providing the conditions of interpretation should be understated. The range of possible sign-types in videogames is a consequence of the nature of the kind of attention that a player pays to the game, and of the ambiguous status of game elements A barrier in a racing game, or a computer-controlled opponent in

a fighting game, or the sound of a warning klaxon in a war game, are not simply the fictive records of imagined, diegetic barriers, opponents or warnings: the barriers constrain the player, the opponents fight the player, the warning is meant to be heeded by the player (and not simply by the character that the player is playing.) The "world-producing" capabilities of interactive environments activates sign-reading across the spectrum of categories, because the practice of play is just that: a practice. The presence of player that is motivated to decode in order to act introduces a pragmatics of decoding very different from those of media forms like cinema, television, the novel, music etc.

Semiotic registers

Raymond Duval used the expression "semiotic register"[50] in the context of mathematics education to describe the ability of a decoding subject (in his case, a learner of mathematics) to recognize which interpretants are appropriate to a sign with multiple possible interpretants[51]. The term has been deployed since then in a variety of contexts, notably in Asif Agsa's study of language and social relations, in which a register was understood as the immanent pragmatic context of utterance, produced by shared fluencies

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[50] *Sémiosis et Pensée Humaine: Registres Sémiotiques et Apprentissages Intellectuels* (Berne: Peter Lang, 1995).

[51] The reasoning through signs to their interpretants was also addressed by Peirce, who held that icons, in particular, were decoded through a process of *abduction,* or hypothesis. That abduction constitutes much of game-learning is at the heart of recent interest in games as models for learning: see James Paul Gee, "Learning and Games," in *The Ecology of Games: Connecting Youth, Games and Learning*, ed. Katie Salen (Cambridge, MA: MIT Press, 2008), 21–40.

in the language of that register (e.g., the "received pronunciation" of Oxford and Cambridge-educated members of the English upper classes, the activity-driven recognition of the appropriateness of imperative language, etc.[52]) I take the term up in a broader sense that the sociolinguistic one, to refer to a conceptual entity produced by the player's attempt to understand and successfully play a game by organizing the signs he/she encounters.

The idea of a multiplicity or plurality of sign-systems is not new, and is presumed in the study of socio-linguistics and pragmatics, in iconography, etc., referring to the ambiguity or indeterminacy of the sign or as a site of contestation of its political uses. Here, however, I take the registers to be an implicitly understood condition in the pragmatics of game-design and game-play. The dynamic nature of the digital sign allows it operate in multiple registers, and to move from one register to another over time.

The conventional model of the videogame, partially as an outcome of the debates which informed the formation of the field of videogame studies, creates a distinction between the formal system of the game and the surface of representations featuring characters, fictions, visual design elements, etc. However, if we consider work in either of three fundamental positions: its creation, its passive existence as a "thing in itself" (i.e., as unexecuted binary code) and its reception, in no case does this distinction hold true. To begin at the end of this circuit from creation to consumption, consider the act of

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[52] *Language and Social Relations* (Cambridge, UK: Cambridge University Press, 2007), chap. 4.

play: a player (perhaps with others) launches a game according the conditions of the platform on which it is being executed: the software at a certain point makes a presentation to the player(s): a loading screen, a cinematic sequence, etc. The player may not yet understand how to play the game, but s/he is already decoding: interpreting the tone of the game, learning its scale, absorbing information which constitutes the narrative (if any), and opening his/herself to the ongoing process of learning the relationship between in-game cues, gamic action, and the levels of strategic, tactical and reflexive model-making which make it possible to navigate the game.

These cues are constructed by the player from the same material signs (or *representamen*.) Any given element – a three-dimensional model with textures, an iconic gauge which gives analog representation of a digital value in the system, the figure/ground distinction which makes one plane identifiable as a "surface" and thus registers a collision with other objects in the game – can be decoded as communicating a characteristic of a fictional entity, of positing an event in an unfolding, recounted or implicit story (e.g., placing ruins in the background of a scene implicitly tells the story "this building fell; there was something here that has fallen; there were forerunners to all the ones we see now." It – this same element, by whatever mechanisms of authorship and production have inscribed it into the software being executed by the player – can also be decoded by a range of interpretative mechanisms, from the "twitch" instinct of pre-conscious reflex, a result of the player training his/herself to respond without reflection to a stimulus, to a considered and reflective interpretation of the allegorical, metaphoric or rhetorical heft of the sign. An object encountered in the visual field of the game can also

be interpreted in many ways within a given tactical register: treated as a threat to be countered by placing a cursor over the figure and pressing a button (that is, "shooting" it,) as a resource to be gathered, as an obstacle to be navigated around, as an index to a some part of the game-system's state.

The multiple possible registers of decoding become obvious when viewing a game trailer: a video advertisement for a new game. As of this writing, the game *Journey* by "That Game Company" has not been released: however, a trailer is available on YouTube showing footage from the game. The nature of the advertisement is intentionally ambiguous: there are human figures walking over sand dunes, past expressionistic figures in the sand. The control scheme is unclear: we do not know what genre this game is in yet, but are instead simply being shown the mood. The registers into which this game will be decoded is in suspense: we do not know what elements on the screen are "actionable," whether one or more figures in the scenes are subject to direct or indirect control, whether these elements contain game-specific information. We do have an ambience, however: the stylistic positioning of the game (consistent with the understated, naturalistic style and environmental motifs of That Game Company) is indicated by the trailer, as is play experience which is thoughtful, slow and unstressed (also consistent with previous titles.)

To facilitate the analysis of games, it is helpful to examine an entire traversal of game from beginning to end in a single image. Figure 1 is a montage from a 30+ hour

play of the game Kingdom Hearts.[53] The montage is created from video recordings of game-play sessions. This image represents 62.5 hours of game-play, in 29 sessions, over 20 days. Frames are organized in a grid in order of game-play from left to right, top to bottom. Kingdom Hearts is a franchise of video games and other media properties created in 2002 via a collaboration between Tokyo-based videogame publisher Square (now Square-Enix) and The Walt Disney Company, in which original characters created by Square travel through worlds representing Disney-owned media properties (e.g., Tarzan, Alice in Wonderland, The Nightmare before Christmas, etc.). Each world has its distinct characters derived from the respective Disney-produced films. It also features a distinct color palettes and rendering styles, which are related to visual styles of the corresponding Disney film. While the inserted image is too small for analysis, the original image is over 10,000 by 8000 pixels in size, making it possible to see the contents of each frame.

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[53] Squaresoft, Inc, *Kingdom Hearts* (Tokyo: Square, Inc., 2002).

Figure 1.: Kingdom Hearts video traversal.

Looking at the game at this scale allows us to consider the moment-by-moment nature of gameplay. According to conventional models which treat game "content" as relatively independent from mechanics and play, we would distinguish conceptually between the game as a formal system of mechanics and the game as the story of a character trying to rescue his friend. In terms of the former, *Kingdom Hearts* is designated a game in the "action role-playing-game" genre : the player moves an avatar through a 3-dimensional representation of space and navigates a series of menus. Doing so builds a database of elements, and augments numerical values within that database. Over the course of play, the opponents encountered by the player are associated with database elements and higher numerical value. These opponents are dispatched by using

the controller to place the avatar in advantageous positions in the 3-dimensional space, then both pressing buttons in the controller according to the game's control schema (the mapping of game-world procedures to human input options, such as buttons and joysticks), at optimal moments, while selecting procedures from a database of procedures that are abduced by the player as being optimal for the obstacles at hand.

If this description is almost impenetrable, it is a result of attempting to communicate this game entirely in terms of the formal system of the game without recourse to the metaphors and representations that the player is actually experiencing as s/he plays. Even so, the above description breaks its own rules, because the metaphor by which the game state is communicated to the player is the game that the player is actually playing.[54]

In fact, natural language does not distinguish between reports of mechanical or systematic play-experiences from that of the game experience as the encounter with a fiction, especially when the pragmatics of play is included. Instead, we say that in *Kingdom Hearts,* "you play Sora"- already this is an abbreviation, of course. Your avatar

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[54] This is implied in Juul's thought-experiment regarding the difference in experience tic-tac-toe as a game of spatial positions – placing three markers in a row – with that of experiencing the game as a challenge to select a sequence of numbers, described in *Half-Real*. However, Juul treats these as two different games without identifying it as a question of representation within an interface; he recognizes that the player that the game is playing is distinct from the formal system that is constituted by the activity of the CPU.

in 3D spaces, the figure whose movements respond immediately to your joystick moves, is called Sora; as immediately perceived by the player, Sora (as protagonist) is a product of a function that draws and animates a model and displays it on a computer screen. Of course, Tetsuya Nomura, the character designer and producer most closely associated with the Kingdom Hearts franchise, is the credited designer of Sora. Sketches by various artists were sent to committees[55], which reviewed them before approving them; once a conception of this character was approved (in which many considerations, involving franchising, the perception of the market, the performance of previous characters, the conceptual goals for the producers for the title, etc., weighed in) eventually the sketch was turned into an articulated 3D model, animated by, at various times, the player's controller or by pre-scripted activity choreographed by animators and scripted for interpretation by the computer.

One can still make a conceptual distinction between the fictional aspects of the game and the interactive ones: in both the production of many games and in the reception of them, such distinctions are often made in everyday discussion. What this suggests, however, is that these two seemingly complementary interpretations of a game are assembled by selective and filtered organization of a collection of signifying elements with multiple possible referents, apprehended within semiotic registers maintained by the player. The creation, maintenance and adjustment of these semiotic registers are more or

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[55] Nato Yoshioka, Interview with YOSHIOKA Nato, Chief Technologist and General Manager, Research Center, Square-Enix Co, Ltd., August 11, 2010.

less effortless, reflecting the player's understanding of the game-form he/she is playing

This understanding often begins with genre.

Genre and interpretation

With an integrated approach to the signs which constitute the experience of

perceiving a videogame, we can interpret genre and even style in videogame design and

production as distinct configurations of signs: templates for interpretation which create

boundaries of expectation.

Genre plays a distinct role in videogames. Theories of genre adapted from other

media forms—whether the historical models of genre development in the English novel

(e.g. Moretti) [56] or models based on formal and content analysis in film (e.g. Altman)[57]

are ill-fitting from the outset. Altman suggests that film genre is the product of a

relationship between the syntax of a film and its semantic content: that a film which

features a lone and somber male protagonist confronting a nemesis in a frontier

environment can be read as a Western syntactically, even if the setting is colonial

Pennsylvania (or an abandoned mining colony in space.) Alternately, a film could be

characterized as a Western if it is set in mid-to-late 19th century western North America,

with characters recognizable as cowboys, bandits, sheriffs, etc., even though the plot and

mood is that of a romantic comedy with no serious gunplay elements. Genre history, for

[56] Franco Moretti, *Graphs, Maps, Trees: Abstract Models for a Literary History* (Verso, 2005).

[57] Rick Altman, "A Semantic/syntactic Approach to Film Genre," *Cinema Journal* 23, no. 3 (1984): 6 –18.

Altman, occurs when one of these two components of a film genre changes while the other remains stable.

Altman's model of genre resembles the distinction between ludological (syntactic) and representational (semantic) elements described above. Interactive aspects are privileged over those involving theme, setting or characterization in determining genre membership.[58]

The history of games can be framed as the emergence and development of new genres and variations: these genres do not disappear, but their tropes and features change over time.[59] But the changes in interactive genre in games aren't comparable to the kind

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[58] For a discussion on genre, see William H. Huber, "Ka as Shomin-geki: Problematizing Videogame Studies," in *Level up. Digital Games Research Conference* (Utrecht, 2003), 4–6; Mark J P Wolf, *The Medium of the Video Game* (Austin: University of Texas Press, 2001), 113–133. Wolf attempts to create a catalog of game genres recognizable at the moment of publication, while in my paper, I suggest that the privileging of interactive genre categories may not be ideal for critical game studies. Nonetheless, interactive regime is still the basis for most folksonomies and practical applications, from the organization of fan-wikis to the shelf-organization of retail spaces.

[59] A good example is the history described in Simon Egenfeldt-Nielsen, Jonas Heide Smith, and Susana Pajares Tosca, *Understanding Video Games: The Essential Introduction* (Taylor & Francis, 2008), 50–96. This history identifies interactive genres emerging in the 1960s, diverging and transforming over time with new technologies, audience literacies and the competitive pressure to differentiate each new title from predecessors and competitors. For an attempt at an exhaustive catalog of the interactive genres which had emerged by the time of his research, see Wolf, *The Medium of the Video Game*, 113–145.

of changes that Altman describes, at least not without substantial adjustment. The differences between game genres are more dramatic: each genre is an assemblage of literacies and mappings, of scales of operation and rhythms. Some of these elements are conventional: others are foundational, making the game coherent to a player who is learning, or know how, to play games within that genre. If genre in film can be understood as an implicit contract between the producers of the film and its audience, a contract which can be fulfilled by either syntactic or semantic elements, then genre in games—at least syntactic (interactive) genre is more exhaustive contract. It is a promise that certain genre-based literacies and convention will adhere to the game provided, that the enskilments which the player has cultivated of their career of play within that genre will provide them with at least some utility within the new work. (This is particularly true in those games which promise some difficult, challenge and perhaps competition for the player: games which play within an aesthetics of frustration.) Because game genre is a tightly-knit collection of conventions about the interpretation of key signs— interpretations that in many cases are automatic and reflexive, involving control schemes and motor-memory, genre evolution is a dialogical relationship between the producers of games and those audiences in which the habits of user interaction of the latter constrain the pace of change: emerging literacies of interaction can become elements in the design of subsequent games, which players learn and master, producing newer literacies.

We can work out interactive (or, per Altman, syntactic) genre by taking as a reference point a fixed theme, and describing how the elements of that theme are reconfigured and signified across multiple genres. The invasion of German-occupied

Normandy by Allied forces on June 6, 1944 ("D-Day" in popular memory, although the term is general and applies to the first day of any military operation) has been represented visually and narratively through a fairly well-consolidated family of images, sounds, and descriptions. The photographs of Robert Capa and film footage produced for news reels provided a vocabulary of images which would be quoted and recreated in film (*The Longest Day*[60], *Saving Private Ryan*[61]) and television (Band of Brothers), in documentaries and narratives, which in turn provided the visual semantics for games about the invasion and its aftermath. While themes, editing conventions, cinematographic techniques and even tone have changed in the cinematic renderings of the episode, the re-working of the theme in games—particularly, but not only digital games—demonstrates the close relationship between the functional conditions of a somewhat stable set of representamen within interpretants that are constrained by (interactive/syntactic) genre. These representamen include the view of the cliffs of the Normandy shore from the landing craft, over the headgear of nervous GIs; the movement of bodies through the tetrahedral and "hedgehogs," the structures constructed from I-beams used to prevent easy landing; the arrays of bodies streaming quickly to the edges of the ramparts; the over-the-shoulder view of German artillery crews looking out over the English channel, and the maps used to depict the forces and their landing sites up and down the Normandy coast.

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[60] Ken Annakin et al., *The Longest Day* (20th Century Fox, 1962).

[61] Steven Spielberg, *Saving Private Ryan* (Dreamworks, Paramount Pictures, 1998).

An early ludic depiction of the historical event was the table-top wargame[62] *D-Day*, originally designed by Charles S. Roberts for the Avalon Hill company in 1961:

> Play takes the form of 50 game turns, each representing one week of real time, during which the Allies must establish a beachhead, breakout, organize a Patton-like dash across France, and sustain 10 divisions across the Rhine in the face of heavy German opposition. This was the first wargame to feature a hexagonal grid.[63]

The high level of abstraction of the experience of conflict, as units were indexed by cardboard chits marked by statistics representing the movement and combat strengths of each of them, accompanied an innovation in the ludic representation of space (a hexagon, which allows facings on units on six sides and affords flanking strategies more closely resembling actual combat conditions.) The withdrawal of the affective power of conflict, and the detached perspective of would-be generals taking turns making strategic decisions, makes it easier to allow players to take the position of the strategists of the Wehrmacht without activating a sense of complicity. The term "D-Day" itself in the title of the game refers not to the historical date of June 6, 1944, but to the challenges and configurations of force at the moment that the invasion began. The game introduces a play of counterfactuals at that moment: strategies different from those recorded to have

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[62] D-Day is a setting for a number of board games, on a range of scales: I used the two board games *D-Day* and *Axis and Allies* as examples of the use of D-Day as a setting for a fairly focused strategic simulation in the first case, and as a signifier for the initial moment in the invasion of German-occupied Europe by Allied forces as a problem in multiple possible worlds in the latter.

[63] BoardGameGeek, LLC, "D-Day | Board Game," *BoardGameGeek*, 2011, http://www.boardgamegeek.com/boardgame/12168/d-day.

been pursued can be taken, with different results. The scale of the game, limited to a

depiction of the operations within France in 1944, contrasts with that of another board

game, *Axis and Allies,* a globally-scaled, turn-based game designed by Larry Harris, Jr.

and published in 1981 by Nova Games.[64] *Axis & Allies* places the entire world into the

possibility of play. In *D-Day*, as in any game based on an interpretation of a historical

record, the counterfactuals "in play" are constrained: one cannot, for example, invade or

call for aid to a country not represented in the game board. In *Axis & Allies,* the afforded

counterfactuals include the invasion of South America or Mexico, the occupation of

Hawaii by Japanese forces, and other very hypothetical, contractual conditions. The chits

and markers used in *Axis & Allies* do not index historical units, but represent abstract

aggregations of military strength (only distinguishing naval, air and ground forces from

each other) and economic power. The spatial boundaries on the game map upon which

the pieces move are not fixed distances, but are national borders (or zones of naval

influence and traversal for seafaring units. *Axis & Allies* begins at the moment of greatest

Axis expansion: the first problem for an Allied player is securing a foothold on the

European continent, after having amassed forces (usually) on the British Isles. In other

words, "D-Day" signifies the first offensive move of the game, and the opening

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[64] BoardGameGeek, LLC, "Axis & Allies | Board Game," *BoardGameGeek*, 2011,

http://boardgamegeek.com/boardgame/98/axis-allies. *Axis & Allies* developed into a franchise of both

board and digital games, in the latter case migrating from turn-based to real-time strategy. *Axis & Allies:

D-Day* resembled the Avalon Hill *D-Day* described above in scale of time and size, albeit with a simpler

game mechanic.

configuration privileges a maneuver analogous to that of the historical invasion: a single
crossing of the channel and a battle for an Allied presence in France. "D-Day," usually,
isn't a setting—it's a broad signifier for the initial challenged confronted by the Allied
player.

Figure 2.: *D-Day* **(1982 arcade game)**

Figure 3.: *D-Day* **cabinet and controller**

Digital games depict D-Day with more breadth of expression, both ludologically and visually. In 1982, an arcade game also named D-Day (Figure 2, Figure 3) was released in Japan by Olympia, a minor producer of arcade games with generally derivative designs. This game, unusually enough, places the player in the position of the Axis powers, facing out over the English channel and firing at incoming airplanes, ships, tanks and other vehicles. The game is played on a single joystick with one button. This control scheme is consistent with many other games in this genre[65] (the "shooter" or "shmup," and more specifically, those with a stationary gun.) The player will likely recognize the historical reference of the title and identify the key elements rather quickly; if the player has never played before, a simple tap on the controller and press of the button will indicate that the small, red line at the bottom of the screen is the player-controlled gun. As trucks, tanks and planes cross the screen, the player will quickly realize they are targets. The player will lose one of three lives ("guns") when either a bomb from the airplane drops without being shot down, or when one of the vehicles, which are usually moving horizontally across the screen, turns toward the player and drives through a clearing in the shrubs. The player will soon learn that the silhouette of barbed war and rampart are decorative; the shrubs, however, protect the player. For the player of a game of this genre, the important elements to identify are the site and limits of

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[65] The hardware platform for the game also determines its control schema. A game played on a Playstation 2 console will have a control schema different from a version produced for a home computer, although there is generally close to an isomorphic mapping from one to the other, and relative stability within a genre given the same hardware platform.

the player's activity (firing a gun,) the identification of threats, and the rhythms of activity which contain them both.

In 1998, Steven Spielberg co-produced and directed the film *Saving Private Ryan.* The film begins (after an opening sequence set in the Normandy American Cemetery) with the invasion of Omaha Beach. Tom Hanks' character, Captain John Miller, is first filmed as nervously anticipating the landing while standing with his squad in a landing craft: some of his colleagues, overcome by fear, vomit or pray or cry. As German artillery and machine guns fire upon the invasion force, the chain of command breaks down. The sequence depicts bodies in trauma: bullets tracing through the water, explosions deafening, and Miller slipping into and out of shock. Staggering through corpses and men holding their devastated limbs (over 20 amputees were employed to create the scene, with over 1500 members of the Irish Reserve Forces[66]), Miller reaches the foot of the cliffs, surviving the initial phase. As the invasion stabilizes and the infrastructure of military command is established in Normandy, the plot for the film develops. The landing sequence has a dramatic autonomy, joining war-time newsreels, the photographs of Robert Capa and the 1962 Ken Annikin film *The Longest Day* as part of the collective visual reconstruction of the historical event.

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[66] Conor Feehan, "How We Made the Best Movie Battle Scene Ever," *Independent*, June 7, 2006, http://www.independent.ie/unsorted/features/how-we-made-the-best-movie-battle-scene-ever-91583.html.

The year following the release of *Saving Private Ryan,* Spielberg produced the game *Medal of Honor:* the game was released for the Sony Playstation platform on Veteran's Day, November 11, 1999[67]. The game is in the First Person Shooter genre: a 3-dimensional space depicting a first-person view (generally a medium-length shot) in which the player's character must use the game controller to move about the 3D space, acquire items, select appropriate weapons and ammunition, avoid detection by enemies, and fire at them when necessary.[68] The player's character was Lt. Jimmy Patterson, a pilot working for the OSS (predecessor of the CIA) who parachutes behind enemy lines in the hours before the Normandy invasion, and who must complete various objectives. *Medal of Honor* became a franchise of games which stayed within this genre, each featuring a different main character; until the release of the 2010 title[69], all were set in either the Atlantic or Pacific theaters of World War II.

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[67] Medal of Honor Wiki contributors, "Medal of Honor," Wiki, *Medal of Honor Wiki*, August 4, 2011, http://medalofhonor.wikia.com/wiki/Medal_of_Honor.

[68] For an excellent critical history of the first-person shooter, see chapter 2 of Galloway, *Gaming: Essays on Algorithmic Culture*.

[69] The 2010 game is set in contemporary Afghanistan.

JUNE 6, 1944
OMAHA BEACH: CHARLIE SECTOR
0635 HRS

Health
100
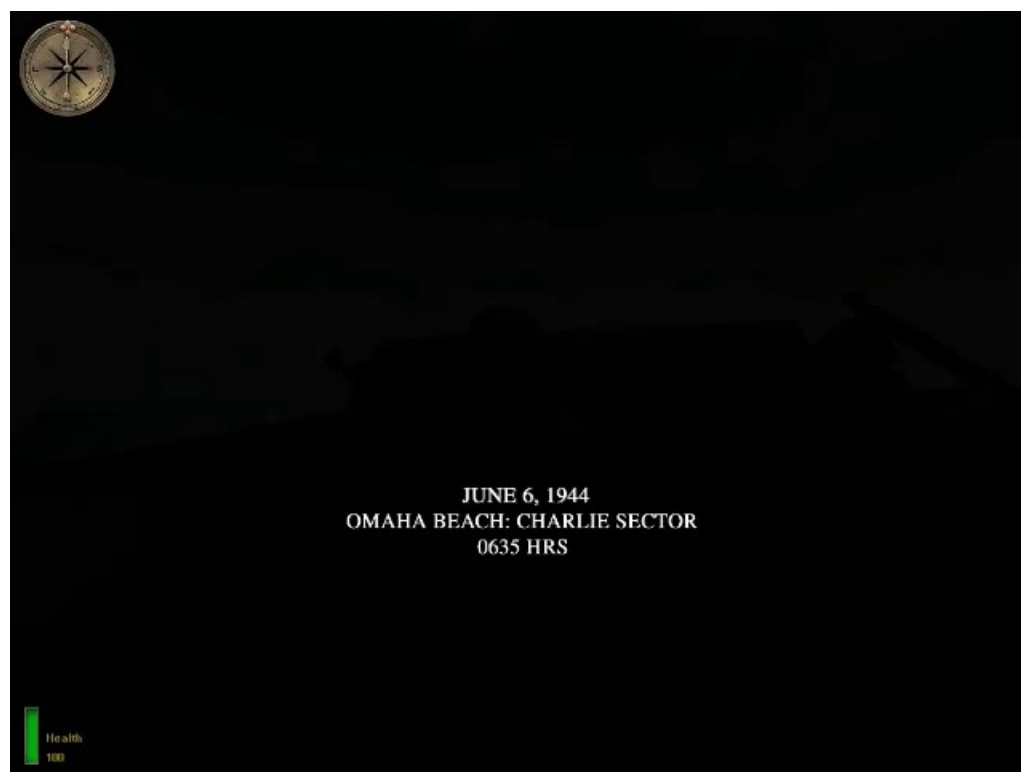
Figure 4.: *Medal of Honor: Allied Assault* **(1999) - Omaha Beach sequence**

Figure 5.: First-person view of *Medal of Honor: Allied Assault*

While the first two titles in the Medal of Honor series deal with events

complementary to those depicted in *Saving Private Ryan,* the third—*Medal of Honor:*

Allied Assault—includes missions set in the invasion itself. Many of the shots from the

landing sequence in the first act of the film are remediated in the landing sequence in

Medal of Honor: Allied Assault, including the inter-titles (Figure 4) which often indicate

a "historical" time and place. However, the sequence is entirely in a first-person view.

One can hear the whispered prayers of other soldiers as the landing craft approaches the

shore, and see the bullets track through the water. Never, however, do we see the face of

the protagonist or any view of the action outside the first-person view. The cliffs of

Normandy only come into focus as the player approaches them. A compass is super-

imposed on the top-right corner of the screen, beneath which game information scrolls: sentences such as "You have a new objective," "You have acquired the explosives," "Game saved," and "You have completed an objective" scroll up. (Figure 5) New messages are added to a queue in the bottom and scroll upward, toward the compass: the player learns this convention for identifying the sequence of messages. On the bottom left, a vertical green bar acts as a health gauge: an iconic visual representation of a numerical value, the character's "health"—this numerical value is a highly conventional abstract representation of the overall well-being of a human. As the health decrements, the upper region of the health gauge turns red: the use of the colors green and red to express health and injury respectively is also conventional.[70] In Peircean terms, it is an iconic rhematic legisign, not a symbol: a diagram which represents part/whole ratios which correspond to the numerical values which represent "health." Just above the health gauge are strings of text which transcribe the dialogue produced by non-player characters in the game, allowing the player to refer to recent statements as if reading a screenplay. Because non-player characters give the player the objectives for the mission, those statements require somewhat more persistence in the player's attention than might be obtained if the dialogue were only presented as audio.

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[70] In some genres, especially fighting games such as *Street Fighter* and *Mortal Kombat*, the color red in the context of a gauge also used to indicate the availability of a special attack: there is frequently a relationship between a state of crisis created by low health and the ability to create powerful attacks. These negative feedback mechanics give players who are at a disadvantage an opportunity to turn the tables.

The bottom-right of the screen contains a vertical row of stacked rounds of ammunition and a small caption describing the weapon that the character is said to be holding. One of the core mechanics of the game (and the genre of first-person shooters) involves situating an opponent in the center of the camera and pressing a button (often the left mouse button in PC versions of the game, the "X" button in Playstation games released for the US and European markets, and the "O" button in Playstation games released for the Japanese market.) The efficacy and range of the shot—and the radius of damage of an explosion—are a set of variables attached to the action of firing a weapon, and the icons on the screen are the basis of an abduction by the player about the efficacy of their currently-selected weapon[71]. Figure 6 is a variant of the usual first-person view, activated when a player selects a long-distance sniping weapon and then enters "sniping mode," which places a crosshair in the middle of the screen, zooms the camera to objects in the far distance, and masks the peripheral of a circle, imitating the view through a range-finder. (A discussion of "modes" in games follows in a later section.)

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[71] For an example of implementation details, see Vaughan Young, *Programming a Multiplayer FPS in DirectX*, 1st ed. (Hingham, MA: Charles River Media, 2005), chap. 9.

Figure 6.: *Medal of Honor: Allied Assault*, **sniper-scope view.**

Other first-person shooter games have portrayed or included "D-Day." An

interesting contrast can be made with a segment of the game *Call of Duty 2* (Figure 7)

While also strictly conforming to a first-person view, and giving the player the ability to

control the orientation of the camera during the sequence, this game presents the player

with the names and roles of other soldiers in his landing craft. This has the effect of

rendering them less anonymous: the deaths of colleagues in *Medal of Honor* are

portrayed as generically tragic, but those in *Call of Duty* each have a more individualized

pathos. The labels do more than produce this kind of narrative effect, however. *Call of*

Duty emphasizes a squad-based approach to the first-person shooter: the player is

supported and complemented by a group of non-player (and, in multiplayer versions,

other-player) characters with different abilities and uses. This element is not deeply explored in the game: in fact, the game-system keeps one's allies alive for most missions without substantial assistance from the player. Yet even within a well-defined genre such as the first-person shooter, small differences in signification within the game interface indicate real variations of emphasis in the game's representation of its topic, within the genre's scale and situation.

Figure 7.: ***Call of Duty 2*** **(2005) Cutscene from the assault on Pointe du Hoc mission.**

The 1982 *D-Day* is an example of an arcade/shooter treatment of the theme of the historical/conceptual "D-Day"; *Medal of Honor* and *Call of Duty 2* are first-person shooter games. Another game, *Company of Heroes,* is a game in the real-time strategy (RTS) genre. The modifier "real-time" distinguishes games from those which are

strategic in nature, from the 19th century simulation *Kriegspiel,* used to train the Prussian officer corps, to the aforementioned Avalon Hill *D-Day* and Nova Games *Axis and Allies* table-top games. A real-time strategy game weds the strategic, managerial scale of these other games to the urgency and mental athleticism of an action game.[72] Real-time strategy games are played in a bird's-eye, isometric perspective. The player uses a controller—usually a mouse—to select groups of soldiers and move them across the battlefield to engage other opponents. The player is not identified with any one unit or individual: the soldiers are resources, whose losses are to be minimalized to maintain operational effectiveness (and, often, a better score for the game.) In *Company of Heroes,* the most important entity is the squad—a collection of several soldiers—and the loss of a squad is more detrimental to one's play objectives than the loss of a few individuals within squads. Death signifies something different within a tactical register of play between the two genres, although the cinematic elements of the game often aspire to imbue both types of destruction with the same pathos found in *Saving Private Ryan* (or the 2006 miniseries, *A Band of Brothers*.)

Many of the visual elements familiar from the history of the representation of D-Day also occur within *Company of Heroes.* However, they play different roles, while still activating a reference to the history of their depiction. The hedgehogs which acted as

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[72] For a popular history of the genre, see Bruce Geryk, "GameSpot Presents: A History of Real-Time Strategy Games," *GameSpot*, accessed August 9, 2011, http://www.gamespot.com/gamespot/features/all/real_time/.

foreboding architectural elements in *Saving Private Ryan* and as points of temporary

shelter from gunfire in the first-person shooter games act instead both as obstacles around

which a player must direct his units and as places to assemble squads. Where the overlays

of *Medal of Honor* denoted the immediate firepower capacities and state-of-health of the

player's character, those in *Company of Heroes* denote the screen-elements which are

under player control, their orientation, efficacy, aggregation and status (Figure 8.) RTS

interfaces are usually more complicated than those of FPS games: the virtuoso navigation

of a complex interface with a rich vocabulary of player activity characterizes the play

experience. One might call them "allegories of control," recalling Alex Galloway's

critical study of a different genre[73], the 4X ("explore, expand, exploit, exterminate")

genre, and especially the Civilization series of games. However, 4X games are turn-

based: a player can take as long as she/he likes to make a move. The virtuosity which a

4X game demands is over the database of elements and operations itself: of an

understanding of the behavior of the system and various optimal paths for play. If the 4X

game is about the conceptual control through the system's "back-end," the RTS game is

about the mastery of interface, and the migration of the insights into the system from

consciousness to reflex and motor memory. The genre deploys signs similar in form to

those deployed in first-person shooter games, but which call for different types of

interpretation. This difference is not simply the ambiguity of any sign observed by post-

structuralist critics: a player quickly and assuredly registers the sign into its appropriate

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[73] Galloway, *Gaming: Essays on Algorithmic Culture*, 85–106.

context for interpretation by successfully playing the game. The interface—that is, the surface by which the player encounters the game[74]—arranges the elements and presents them to the player so as to cue him/her into their appropriate use.

Figure 8.: *Company of Heroes***: Normandy landing sequence**

Styles of game design

If genre produces very specific and constrained interpretations for the signs and elements which constitute a game, then style in game design is about the privileging of certain features of the game as the basis for the aesthetic experience of play. Two games

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[74] See Montfort, "Combat in Context." Montfort describes five levels of context for the analysis of games: platform, game code, game form, interface, and reception/operation. The interface is the mechanism by which the player approaches the "game form," the goals, activities and narratives of the game constituted by the game code.

of different styles may share a genre, and thus much of the syntax as described above; however, one game might place its priorities on visual experience (and then take a position on visual aesthetics); another may place priorities on the relationships created between players, and another on the rhetorics of representation and simulation in the game. This is a somewhat idiosyncratic use of the term "style:" if the commitment by authors to a style was more predictable, and the discourse on style more explicit, we might even describe them as movements. There is some precedent in game studies for describing style in my more categorical sense.

Ian Bogost distinguished an emerging style of independent games he described as "proceduralist.[75]" These games, including Rod Humble's *The Marriage,* Jason Rohrer's *Passage,* and Jonathon Blow's *Braid* (Figure 9) shared certain features, according to Bogost: *procedural rhetorics*, in which "the player's experience . . . results from interaction with the game's mechanics and dynamics, and less so (in some cases almost not at all) in their visual, aural, and textual aspects," *introspection* as the sought-for mental state of the player; *abstraction of instantial assets*, that is, a visual aesthetic uninterested in verisimilitude; *subjective representation*, a non-literal poetics of gamic metonymy, and *authorship*, a commitment of the artist to the statements produced by the game. These characteristics are not all of a sort: introspection is clearly something that the designer wishes to provoke, rather than being a feature of the game itself, while the

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[75] "The Proceduralist Style," *Gamasutra*, January 21, 2009,
http://www.gamasutra.com/view/feature/3909/persuasive_games_the_.php.

abstraction of instantial assets is a tactic that is an outcome of the aesthetic priorities of these games.

These games are different from each other, though they do share the status of being authored independently of the commercial game development studio system by small teams or single individuals. *Braid* is a "platformer" game: the player moves an avatar through a two-dimensional space viewed to the side, pressing a button (either the space bar on a keyboard or a specific button on a controller) which allows the avatar to jump onto platforms. The game also makes (ludo-fictional) time into play[76]: one button allows the player to rewind events in parts of the screen in order to accomplish the goals for each level. None of these elements in themselves are characteristic of the Bogost's proceduralist style: instead, it is the conditions of interpretation of these elements which produce the style.

The art of *Braid* is rendered in the style of an illustrated storybook, evoking John Tenniel's illustrations for Lewis Carroll's *Alice in Wonderland* or E. H. Shepard's illustrations for Kenneth Grahame's *The Wind in the Willows* and A.A. Milne's *Winnie-the-Pooh*. The player's avatar is a well-dressed young man, initially shown standing in

[76] *Braid* was by no means the first game to use time as a variable play element: commercial titles such as *Prince of Persia* and *Viewtiful Joe* already incorporated this game mechanic. Notably, both these games are also platformers (the former a 3D-platformer, the latter a 2D-platformer with a cel-shaded visual style.) Perhaps the laterality and spatial-cognitive features of the genre evoke time-based media and affords designers and players alike the possibility of controlling time as if it were a media itself.

front of a burning city. As he heads into his home, he heads into a room filled with books on pedestals, which explain the context for the game: the character Tim is trying to revive a relationship with a lover ("the Princess," in an allusion to the cliché of rescue and in particular to the Mario World series of games) whom he either spurned or who spurned him. He is motivated by regret, and seeks to undo what he has done. The time-reversal mechanic is a procedural reflection of his regret. Tim travels from room to room within the house which he once shared with the princess, each of which is a portal to a series of world-levels common to the two-dimensional platformer genre. Within each he has two broad goals: to recover jigsaw puzzle pieces and to traverse to the far side of the level, ultimately reaching a castle. (In a direct quotation of the Super Mario World games, when he reaches each castle, he is told by an increasingly coy dinosaur that "the Princess is in another castle.") The music played varies from a gentle, sprightly light classical soundtrack to a more somber ambient one; as the temporal mechanics become more complicated (in some levels, the motion of the avatar from left to right, except in certain regions of the screen, maps onto the temporal dimension: that is, when the player moves back toward the left, all the other moving elements on screen also move to the left) the soundtrack reinforces the technics by incorporating sounds associated with acceleration, deceleration and reversal (e.g., the sound of a reel tape being advanced quickly; soundtracks played backwards, etc.) The focus that is played on these mechanics—on the jumping, the manipulation of time—are then readable as having an "aboutness" to them. While the control schema of the game (the binding of a button to jump, another to move time forward or backward) and the operation of material signs secure its membership in the genre of platform games, it is other signs (including signs which are relationships

between signs) which indicate the aesthetic and rhetorical goals of the game.

Understanding how to navigate *Braid* corresponds to literacy in the interactive genre of

platformer with a time-based mechanic; understanding how to interpret *Braid* as a game

within a style-discourse corresponds to the recognition of the relationship between that

literacy and the registers of interpretation which remain outside of those on which genre

membership is dependent.

Figure 9.: *Braid* a sole-authored independent game created by J. Blow (2010)

We can interpret the proceduralist style as set of signifying practices and

frameworks: the authorship of the game, whereby the developer associates specific

aspects of the work as the site of their authority: thus, in a game in the procedural style,

the register of interpretation is produced in which procedures perform the work of being

"about" the world. Although all games have procedures, games in the proceduralist style

call the player to interpret its procedures directly, as the locus of aesthetic experience for

the game. To support this, in game design in the proceduralist style, the designer produces assets which are iconic or symbolic, rather than indexical, to be decoded in a register of interpretation marked by introspection, and then read as allusive rather than denotative or diegetic (Bogost's "abstraction of instantial objects.").

We can imagine other styles of game design[77]: what I would term a *relational* style in game design (after Bourriaud's concept of "relational aesthetics[78]") which might include Douglas Wilson's B.U.T.T.O.N[79], Nintendo's *Wii Sports*, virtual worlds such as *Final Fantasy XI,* and music-and-rhythm games like *Rock Band.* A game in the relational style would be one in which the interpretation of the game was deferred to the (usually social) context of play. Despite the apparent delegation of meaning to players, these games consist of authored affordances meant to facilitate certain interactions between participants; the signs of the game would thus be decoded in an interpersonal register which was still fundamentally gamic.

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[77] In private conversation with Ian Bogost, he stated that he had intended to produce a series of articles about different game styles, and he and I have discussed relational and expressionist styles as being also currently active in the field.

[78] *Relational Aesthetics*, trans. Simon Pleasance and Fronza Woods (Dijon: Les Presses du réel, 2002).

[79] Douglas Wilson et al., *B.U.T.T.O.N. (Brutally Unfair Tactics Totally OK Now)*, Xbox Live Indie, PC (Copenhagen: Copenhagen Game Collective ApS, 2010).

In B.U.T.T.O.N., players race to interpret a simple, one-line command through the use of a single button; the signs of play include the instruction printed on the screen, the countenance and posture of other players (including their status: as friends, strangers, etc.,) the button itself, the score, etc. (Figure 10) The nature of these mechanics make it possible for players to play very unfairly—grabbing another's controllers, distracting them, physically preventing them from moving and otherwise promoting behaviors which, for most games, would violate what Stephen Sniderman calls the "unwritten rules" of gameplay[80]. B.U.T.T.O.N. is more dramatic than other "relational" games in its foregrounding of the role of consensus in creating the play experience, but other games share the location of the aesthetic within the relationship between the players through joint attention on the signifying system of the game. Though any game which features competition (Caillois' games of agon) can be said to feature another player, in many multiplayer games, other players are ludologically constrained to straightforward procedures: for example, a first-person shooter like *Call of Duty* may have an extensive multiplayer element to the game, but other players' are understood primarily as opponents, their relationship determined by the lusory[81] goals of play: often, the players

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[80] Sniderman, "Unwritten Rules."

[81] The "lusory attitude" is the stance by which a player accepts the goals of the game. If the player does not assume a lusory attitude—that is, does not recognize and pursue the goals that the game has valored—they aren't playing the game, but using it in some other way (or playing *with* it, rather than playing it.) For more on the lusory attitude, see Bernard Suits, *The Grasshopper: Games, Life and Utopia* (Calgary: Broadview Press, 2005).

only encounter each other as players, as anonymous opponents or allies. In games of a relational style, the relationship between the players' itself is an active contributory element to the experience, and even to the meaning, of the game.

Figure 10.: B.U.T.T.O.N. Douglas Wilson and the Copenhagen Game Collective (2009)

In some ways, the distinction between these styles – one focused on the crafting of an object that is meant to compel the attention of the player for thoughtful, considered play, the other a design meant to create a basis for an experience understood in terms of the relationships formed between players, recalls trends in recent art practice which challenges a model by which the meaning of a work of art is seen as having been deposited within the work[82], to be unpacked by viewers with the appropriate education

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[82] Described as "the conventional, 'banking' style of art (to borrow a phrase from the educational theorist Paulo Freire)—in which the artist deposits an expressive content into a physical object, to be

and literacy (or players with various levels of skill at both play and interpretation: the difficulty of many proceduralist games demands player with both ludological and cultural literacies.) Although it may seem that the meaning of play has been remanded to the players in a way that takes that experience outside of the authority of the designer, the constraints created by the designers--constraints encoded in rule systems, in direct communication to the players, and in the affordances provided by the material system on which the game is played—give us a basis for describing it also as an authored experience[83].

Bogost distinguished the games of the Dutch group Tale-of-Tales, such as *Graveyard,* (Figure 11) and *The Path* (Figure 12), as not being well described as proceduralist, although they are ambitious art-game works in their own right. In *Graveyard,* the player controls an elderly woman, who slowly walks to the end of a path of a cemetery. At the end of her walk, she sits down as a song about the death of one's loved ones plays. *The Path* is a retelling of the story of Little Red Riding Hood in a gothic style, using somber music and dreamlike imagery to produce the effect of a haunted, menacing environment. In contrast to the games described as proceduralist, we can describe these games as participating in an expressionist style. Bogost observes that

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withdrawn later by the viewer" . . . Grant Kester, *Conversation Pieces: Community and Communication in Modern Art* (University of California Press, 2004), 10.

[83] The relationship between authored constraint and player motivation will be explored more deeply in a subsequent chapter.

the intensity of the experience of these games comes not from a reflection of the poetics

of the procedure, but from the visual and virtual-spatial power of chiaroscuro lighting

effects, solemn expectation, sound engineering, etc. As many commercial games could be

characterized as operating within an expressionist visual style, it might be called the

dominant style in the field of game production: games are marketed as (and development

budgets reveal an occupation with) meticulously rendered visual spaces meant to produce

mood, which imbues the activity of play with it significance. Rather than, as in the case

of *Braid* or Rod Humble's *Marriage,* referring to the problematics of intimate

relationships through mechanics such as rewinding time, running to- or from- the love

object, etc., it is the iconography, the color pallets, the architecture of these virtual

spaces, coupled with diegetic, atmospheric and non-diegetic sounds which give these

games their rhetorical heft. This is not to say that interaction or mechanics play no role in

either games like *The Path* or commercial first-person shooters liked *Doom 2.* In the

former, the player must decide to disobey the game in order to win it; in the latter, the

game is ultimately experienced as successful based on its ability to provide a platform for

genre-determined activities (shooting, evading.) Yet in both cases the aesthetic success of

each game relies less on the player's reflection of its mechanics, and more in the visual

and auditory experience of a richly-articulated and designed space.

Figure 11.: The Graveyard. Tale-of Tales, (2008)

Figure 12.: The Path. Tale-of-Tales. (2009)

Thus if (interactive) genre in games provides the conditions for the comprehensibility of the signs of the system, style describes the criteria of design success or failure and the conditions for interpreting the relationship between the game and the

world outside the game. Interactive genres create registers for interpreting the signs experienced during play; the styles described (and we can conceive of many others, including those we might describe as being in a kinesthetic style) promote certain registers as aesthetically important, and thus, perhaps, as authorial.

Proceduralism and anti-proceduralism.

The differences between the proceduralist and relational approachs to design emerged in a debate which emerged on the DIGRA electronic mailing list. Douglas Wilson, creator (with the Copenhagen Game Collective) of B.U.T.T.O.N., along with Miguel Sicart and T.L. Taylor, designed a PhD course at IT University Copenhagen called *Against procedurality,* which critiqued models of interpretation (or design or aesthetics – it was unclear at various times what the object of the critique was) which opposed itself to a position which located all meaning within the procedures of the game itself. The course was announced in the GAMESNETWORK mailing list for the Digital Games Research Association, provoking a response from Ian Bogost, who was identified as a member of a proceduralist tendency along with Chris Crawford, Michael Mateas, Janet Murray and others. The position against which the course's premise was designed was one by which the rules and behavior of the game could secure its meaning autonomous of the conditions of reception: at play were different claims about the suitability of models of game authorship.

The debate aside, in many ways this is a complementary tension to that which informed the divide between approaches to the study of games which focused on rules and those which were occupied by representations (whether narratives, fictions or other

representational components.) In comparison to the earlier ludology/narratology debate, this is a more sophisticated set of tactical misreadings: what are being played against each other are readings that focus on the materiality of the artifact and interpretation and strategies that focus on deployment. Just as prescriptive and descriptive positions became clouded in the earlier debates, so a similar conflation developed as questions of style and aesthetics were wed to those of analysis and interpretation. The claim by ludologists that games needed to be understood as rule-systems (a position described as a formalist game-essentialism by Janet Murray) leads to a privileging of abstract games as paradigmatic:

> The paradigmatic game for this view of game studies is Tetris. According to the formalist view Tetris can only be understood as a abstract pattern of counters, rules, and player action, and the pattern means nothing beyond itself, and every game can be understood as if it were equally abstract. A critic who focuses on players' reports of the game as a metaphorical enactment of a life experience . . . is accused of a lack of professionalism, because the only legitimate approach to games is a focus on their abstract formalism. . . . Because the game essentialists want to privilege formalistic approaches above all others, they are willing to dismiss many salient aspects of the game experience, such as the feeling of immersion, the enactment of violent or sexual events, the performative dimension of game play, and even the personal experience of winning and losing. To be a games scholar of this school you must have what American poet Wallace Stevens called "a mind of winter"; you must be able to look at highly emotive, narrative, semiotically charged objects and see only their abstract game function. Indeed to the true believer in game essentialism, even the voluptuous Lara Croft is perceived as merely another game counter, an instrument for engaging with the rules.[84]

To the extent to which these problems persist, we must go back to foundations and reconsider the objects – and their unfolding in play – themselves. People do not

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[84] Murray, "The Last Word on Ludology v Narratology in Game Studies."

purchase and play "formal systems", nor do they consume raw "narrative" or even

databases of representations: they purchase or acquire videogames, and then consume

them in sessions of play, whether alone or in a group. They interact with "highly emotive,

narrative, semiotically charged objects." The next section will examine one game title in

detail as a system of sign-objects.

CHAPTER 2. SIGNS IN PLAY: FATAL FRAME II AND MODAL DYNAMICS

In this chapter, I describe the role of modes in games in producing the registers by which games are interpreted. After a discussion of the conceptual history of interactive computing, providing the foundation of the player-software relationship, I analyze game-play in one game, *Fatal Frame II: Crimson Butterfly.*[85] This analysis consist of isolate the distinct, identifiable modes of the game, and exploring their relationship with the registers of player interpretation. There is also some discussion of the game's uncanny aesthetics and the construction of the game as a member of the survival-horror game genre, as aspects of the game which emerge from the player's encounter with its modes.

Modes: aggregations of signs

In the previous chapter, I used the term *register* to describe the contexts of interpretation used by a player to interpret the signs they perceive while interacting with a game. Complementing them are *modes*, which are created by the game system as aggregations of the material signs that are inscribed in them. The relationship between these two concepts was prefigured concurrently in the pioneering work of Douglas Engelbart in his initial conception of interactive computing, and in the development of computer games in the 1950s and 1960s.

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[85] Tecmo Ltd, *Fatal Frame II: Crimson Butterfly*, Sony Playstation 2 (Tokyo: Tecmo, Limited, 2003).

Videogame play is a form of interactive computing: it depends on a relationship between users and computers that is more than one in which computers are simply machines which produce calculations. The interactive computing model was the product of a particular line of speculation about the possible configuration of computer systems, one which was given its most exhaustive conceptual grounding by Douglas Engelbart.

Drawing from his work as a RADAR operator in the US Navy and his reading of Vannevar Bush's essay, "As we may think," in which Bush described the *Memex*, a cross-indexed system of annotation and linked references[86], Engelbart conceived of the human-computer relationship as a system of intellectual augmentation which transferred certain cognitive and symbolic functions to the computer[87], producing a hybrid system he described as the H-LAM/T system (Human using Language, Artifacts, and Methodology, in which he is Trained)[88]. There are two stage-components in the development of his system that have implications for our model of the reception of computer games (figure 1). The first is the division of cognitive labor, in which high-level conceptual work such as organization, procedures, customs, and methods, managed by skills and knowledge

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[86] Vannevar Bush, "As We May Think," *The Atlantic*, July 1945, http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/3881/.

[87] Douglas C. Engelbart, "A Conceptual Framework for the Augmentation of Man's Intellect," *Computer-supported Cooperative Work: a Book of Readings* (1988): 35–66.

[88] Barnes, "Douglas Carl Engelbart: Developing the Underlying Concepts for Contemporary Computing."

secured by training (which could be understood as including enculturation for the relevant symbolic practices involved) are activities of the human, while mediation, portrayal, travel, view, manipulation, retrieval, computation and communication are the activities of the tool-system. While Engelbart recognized the artefactual nature of intellectual work (the use of paper and pencils, systems of calculation, etc.) before the use of computational technologies, he predicted that a move to new information technologies would produce changes in organization and workflow, requiring retraining:

> People develop a repertoire of subprocess capabilities or tools that they select and adapt to execute higher order activities. For example, a mechanic must know what functions his or her tools can perform and how to use them. Similarly, the intellectual worker must know the capabilities of his or her tools and understand the suitable methods, strategies, and rules for making them work. When an intellectual worker writes a document, the process of writing is used as a subprocess or tool for higher order activities, such as organizing a committee, creating a report, or preparing a legal brief. The shift from pencils and paper to digital tools, such as word processing, changes information handling and the skills required to use new technological artifacts. Thus, people would need to learn how to work with these new tools.[89]

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[89] Ibid., 18–19.

Human System	Tool-System
Organization Procedures Customs Methods Language Skills Knowledge Training	Media Portrayal Travel, View Manipulate Retrieve Compute Communicate
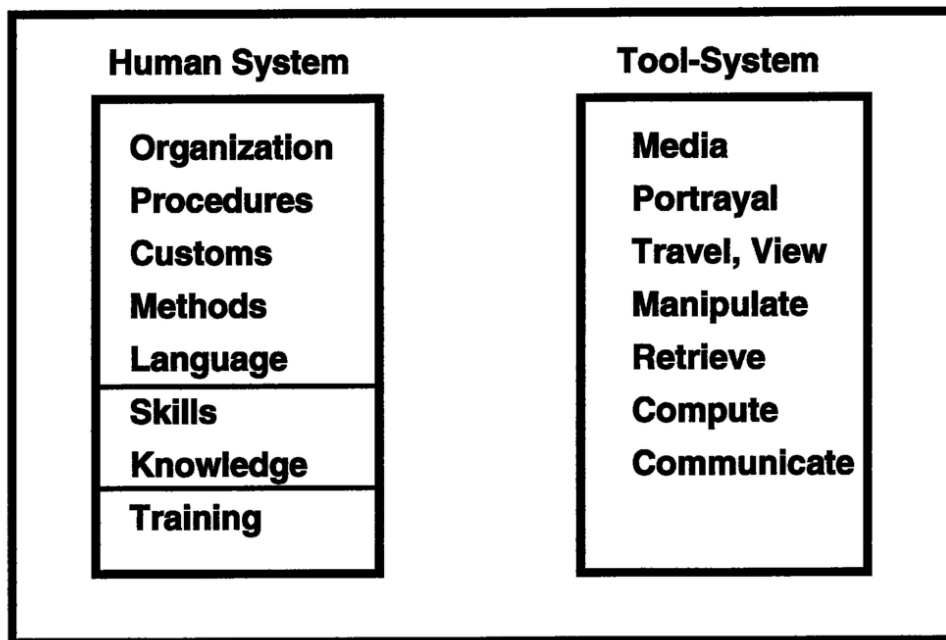
Figure 13.: The two parts of H-LAM/T, from Barnes (1997)

This re-ordering of symbolic (and thus semiotic) work to a tool-system produces

the second stage-component, as augmentation becomes the delegation of sign-processing

to the tool-system: a dual-domain system for managing and organizing signs, and

interactive computing is the real-time and iterative relationship between those two

domains (figure 14). The human system and the tool-system (computer) each produce a

model of the world based on their various channels of input: "energy" moves between

each of these systems and the world, modifying the models. This energy transfer

includes the human-computer interface, an exchange of information based on mutual

models of the conceptual/systemic model of the other (that is, the human has a model. In

the case of the human, the model is a conceptual one, a tentative understanding (or

abduction) of the system-state of the computer; in the authored tool-system, the model is expressed as the input stream registered by the system and its interpretation in the conditions of the program. In simpler terms, interactive computing produces two complementary and interdependent systems of semiosis[90].
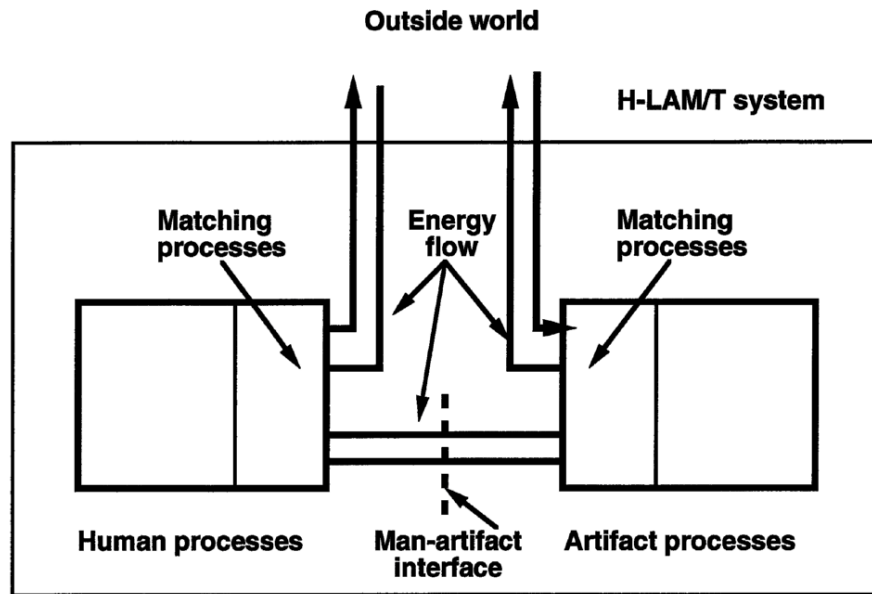
Figure 14.: "A diagram representing the two active domains within the H-LAM/T system."[91]

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[90] I would not call the relationship between user and computer *dialogical*, in that I don't think the computer can yet be said to constitute a subject. At times, however, it can produce quasi-subjects: entities which can represent the user within a dynamic system of representation, that representation itself being an object of user activity. The depth and range of the representation within the computational entity will rely both on programmatic complexity and the granularity of sensors and input devices.

[91] Barnes, "Douglas Carl Engelbart: Developing the Underlying Concepts for Contemporary Computing," 19.

Computer-based gaming developed in tandem with interactive computing. Engelbart's essay was published the year after the Tech Model Railroad Club (TMRC) at the Massachusetts Institute of Technology released *Space War*, the program for the PDP-1 computer widely (if inaccurately) cited as the "first video game." The goals of the TMRC were not, initially, to create a computer-controlled opponent to a player, but to create a fictional play-space to allow players to compete with each other, in a game setting inspired by the developers' fondness for the space-opera pulp novels of E.E. "Doc" Smith. Computer-based opponents had already been developed to play turn-based games such as tic-tac-toe (the 1952 game "OXO", written by Alexander Douglas for the EDSAC computer) and chess (Leonard Torres y Quevedo's "El Ajedricista," a clockwork-calculating automaton first demonstrated in 1915, which played rook-and-king end-games) but these kind of interactivity did not involve the feedback-loop using collaborative human-machine cognition described by Engelbart. While the TMRC's *Space War* was always a two-player, *Computer Space* (1971), an arcade adaptation of the game designed by Nolan Bushnell and Ted Dabney and manufactured by Nutting Associates, offered a computer-based opponent. The opponent—actually a pair of enemy craft—would target the player.

The distinction between a simple exchange of input and output (that is, the computer as calculator, in which data is fed to a computer, and the computer left alone until the calculations are completed) and interaction as a relation between two signifying systems (the user and the computer) may have a gray area: at times, it may simply be a matter of speed. However, computation as calculation, the mode of computing which

precedes interactive computing, doesn't produce the kind of human attention in which a user attends to the output channels of the system. In "true" interactive computing, the computer itself is an interlocutor. By no means is this the only model for either games or digital mediation in general: the popularity of social platforms such as Facebook may be seen as closer to the design goals of the TMRC, in which the system is foremost understood as a channel of communication between participants.[92] We will see, later, that even participatory models of computer-supported activity derive from interactive ones.

Modes as configurations

As a complement to the use of the term "register" to describe the provisional, conceptual contexts for decoding signs produced by the player, the term "mode" describes a software-based configuration of signs (and affordances for player activity) active in the game. This use of the term should be distinguished from others.

Conventionally, the term "mode" when used to describe a game designates *variations* in the style and structure of the game system as a whole: e.g., "mulitplayer mode", "capture the flag mode", "cooperative mode", etc. The game *Quake III* there are four basic game modes, which in strict terms[93] are really four different games: "Free for

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[92] My next chapter will discuss the question of games which foreground sociality over player-to-system interactivity.

[93] See Jesper Juul, "The Game, the Player and the World: Looking for a Heart of Gameness," in *Level Up: Digital Games Research Conference Proceedings* (presented at the DiGRA 2003, Utrecht: Utrecht University, 2003), 30–45. Juul describes the characteristics of a game in a "classic" game model.

All" (FFA) (also called classic deathmatch), where each player competes against the rest for the highest score; "Team Deathmatch" (TDM), in which (usually) two teams of four compete for the highest team frag (kill) total; Tournament (1v1), a deathmatch between two players, usually ending after a set time; and Capture the Flag (CTF) a team-based, played on symmetrical maps where teams have to recover the enemy flag from the opponents' base while retaining their own. These kind of modes as variations are a super-set of the notion of modes I use here.

"Modes" are also a term used broadly in human-computer interface to describe changes in the status of the computing system which alter the nature of user input: an example is the Caps Lock key, which sets the keyboard in a mode to transmit different character codes to the computer (usually producing, in the interface, the upper-case version of the character, although this depends on the software environment at the moment: keyboard keys can be used to navigate 3D spaces, to launch macros, or in any way configured by the programmer). The idea of "mode" from conventional game discourse shares with the HCI use of the term its relationship to the idea of configuration, which creates conditions of significance for the user's input. By including within the sense of the game mode the various configurations within the playing of a single game, I bring the game-centered term closer to that from HCI.

Each variation of Quake III—each mode—must be understood as a distinct game, with different conditions for winning, different constraints and affordances, etc.

Mode is also sometimes used as a synonym for "modality," the sensory channel by which a human (or other sensing system) apprehends its environment. We do not intend this sense of the term. Many of the modes I describe in the game *Fatal Frame II* are identifiable by the player within the visual modality (that is, the computer communicates the activation of a given mode by drawing the appropriate signs on the visual display)—and, conversely, auditory and haptic content can be deployed to constitute a mode. The integration of multiple modalities to produce meaning-bearing artifacts has already been called a characteristic of digital production:

> To rehearse the obvious, it is possible now to easily integrate words with images, sound, music, and movement to create digital artifacts that do not necessarily privilege linguistic forms of signification but rather that draw on a variety of modalities—speech, writing, image, gesture, and sound— to create different forms of meaning.[94]

Though we might challenge the implication that de-privileging linguistic forms was difficult or uncommon before the development of digital media, we can agree that working with software makes the integration of modalities much easier. Contemporary software methods produce programs which contain modalities as effects, as possible channels of output for entities that are unified within the system itself. An "object" as apprehended by the player—say, a representation of an animal that the player's avatar encounters—is an entity which has been instantiated from a discreet segment of code. Within the code of the system, the entity also acts as a discreet object (usually an object-

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[94] Glynda A. Hull and Mark Evan Nelson, "Locating the Semiotic Power of Multimodality," *Written Communication* 22, no. 2 (April 1, 2005): 224 –261, doi:10.1177/0741088304274170.

of-objects, one which produces a series of sub-objects within itself). The visual output to the screen, the audio files containing the sounds associated with the entity, its position, its state within the game (as something wounded, or valuable, or dangerous) are a network of values and child-objects and outputs coordinated by the computer program, which binds different output channels together to create what is perceptual a unified, multi-modal entity. The "modes" of the game-as-software systems are not the same as the modalities described by some media theorists[95] as constituting "multi-modal discourse."[96]

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[95] Gunther R. Kress and Theo Van Leeuwen, *Multimodal Discourse: The Modes and Media of Contemporary Communication* (Arnold, 2001); Hull and Nelson, "Locating the Semiotic Power of Multimodality"; Kay L. O'Halloran et al., "Digital Semiotics" (presented at the 10th IASS-AIS World Congress of Semiotics, A Coruña, 2009).

[96] A history of a fantasy of multimodality could begin with Wagner's conception of the *Gesamtkunstwerk,* the synthetic and totalizing work of art which produced experiences of the sublime by overwhelming the senses and the imagination, an idea which appears in much work in especially the late and post-Romantic period in theater, music and architecture. In cinema, on the other hand, the introduction of audio was treated by many as a dilution or corruption of the form, rather than its completion: e,g.: "A film in which the speech and sound effects are perfectly synchronized and coincide with their visual images on the screen is absolutely contrary to the aim of the cinema. It is a degenerate and misguided attempt to destroy the real use of the film and cannot be accepted as coming within the true boundaries of the cinema; "from Paul Rotha, *The Film Till Now: A Survey of the Cinema* (London: J. Cape, 1930), 308. That a multimodal cinema represents a decadence is an idea that would re-appear in French postwar cinema, beginning with Isidore Isou's call for a *discrepant* cinema, "where images and sound are servered from each other." (McKenzie Wark, *The Beach Beneath the Street: The Everyday Life and Glorious Times of the*

Another use of the term "mode" comes from rhetoric (and adapted into literary

theory: e.g,, Northrop Frye's theory of modes in his *Anatomy of Criticism*). Without

entering into a meta-discursive history of the idea of the mode, the usage in theory of

rhetoric does resemble ours, being conventional systems which establishes coherence

within a motivation: the expository mode, for example, frames the utterances within it in

the motivation of creating a propositional belief or knowledge in the understanding of an

auditor (generally figured as not contesting the authority of the utterer to do so); a mode

of argument may use similar utterances, but frame then within a different power dynamic

in which the utterer seeks to persuade the auditor, overcome objections, and perhaps

produce a different behavior. This sense of *mode* (as well as Frye's) resembles my idea of

mode as being a configuration of a system for interaction in that it creates an enframing

syntax for interpretation. Our sense of the term, however, foregrounds the machinic

elements of the systems which generate the conditions of interpretation.

Registers are conceptual, though they are assembled from the elements on the

screen at any given instant at play. These elements include the representations which

indicate the momentary affordances of the mode (to heal, to shoot, to navigate, to detect

the presence of foes, etc.) The nature of videogames as software-based artifacts makes

many of its semiotic elements relatively stable (vis-a-vis film or video) over the course of

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Situationist International (London: Verso, 2011), 14.) Such a history would show the ebbs and flows of the

idea, through virtual reality and the current activity in transmedia storytelling, but the modal logics I'm

describing aren't exactly part of that history.

engagement: when an event occurs (shooting something, jumping) or a graphical element is drawn on the screen (a health bar, a target, etc) it is usually produced from a database of digital assets that are used repeatedly. This makes it easy to identify the presence of a game mode by analyzing the digitized footage of gameplay with image analysis tools as described earlier. Any given mode may afford certain registers more than others: for example, in *navigational (field) mode*, present in most games in which three-dimensional avatars move through space, the dominant registers are those rely on spatial and kinesthetic cognition: surfaces, orientations, the apparent ability of a door to open or a surface to be climbed, etc. The textures of these spaces, denoting aged wood, or moss-covered rocks, or hidden nooks, are also available to the player, signifying diegetic information relevant to the fictions of the game. Reducing the navigational mode to a simple, straightforward operational register would be incorrect. The system could be continuously operating within a navigational mode, yet the player's mental activity move between a range of registers as they understand the activity as the movement of a fictional character's movement through a diegetic space, then attending to the collection of objects deigned useful for the game tasks (ammunition, health), then identifying features which indicate a possible threat and adopting a tactical stance to respond to it. Yet some operational registers will be more available than others.

Fatal Frame II

Genre and style[97] broadly predict the ordering of registers of interpretation: in the end, however, only a close playing of each game will reveal the conditions by which it can be decoded and the signifying techniques used to produce its various effects. The rest of this chapter focuses on a single title: *Fatal Frame II: Crimson Butterfly*.

The game is usually assigned to the survival horror genre[98]. As a genre category, "survival horror" is unusual: while most of the other genres, such as "first person shooters," "platformers," "role-playing games" identify interactive regimens, "survival horror" connotes specific themes, moods and setting as well as mechanics, control

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[97] "Style" in games can refer to conventional visual aesthetics styles, such as cartoon aesthetics, gothic horror, gritty "realist" aesthetics, etc. However, I intend a more formal use of the term, taken from Bogost, "The Proceduralist Style." Casting Bogost in terms of my model, style in game design includes the register which secures the "meaning" of the game, or in which its rhetoric is centered. In games of the proceduralist style, per Bogost, it is in the register of the game mechanics, in the operations of the elements as functional units, that games like *The Marriage* produce a poetics which reflects on interpersonal dynamics; in games such as *The Path*, by Tale-of-Tales, the rendering of scenes and characters, the transitions between scenes, and the atmospheric music (evocative of horror games) secures the allusion to its referents—I would describe this as an expressionist style, even when the visual aesthetics do not necessarily correspond to art-historical expressionisms.

[98] See the public game catalog at "Fatal Frame II: Crimson Butterfly," *MobyGames*, n.d., http://www.mobygames.com/game/ps2/fatal-frame-ii-crimson-butterfly. MobyGames lists the game, in its rather complex genre-tagging system, as being in the *Action* genre, and as a *Puzzle-solving* and *Survival horror* game.

schema and the relationship between the player, computer-controlled opponents, spatial

features, and even camera. Survival horror games deploy a range of interactive dynamics:

in some, such as the games in the *Resident Evil,* the player is usually equipped with

weaponry, and in many ways the game is similar to first-person shooter games, albeit

with narrative and settings similar to those of horror cinema. Other games, such as

Eternal Darkness, use game mechanics and operations which are attuned more closely to

the themes and settings of supernatural horror: in *Eternal Darkness*, the player's sanity

deteriorates over the course of exposure to the chthonic forces arrayed against them,

leading to distortions in the visual image and auditory track.

 According to MobyGames, an online, public database of videogames which lists

credits, versions and platforms of videogames:

> Survival horror is typically a 3rd person perspective game in which the
> player has to survive an onslaught of undead, human, animal or monster
> like opponents, usually in claustrophobic environments. Horror film
> elements are used liberally. The player is typically armed, but not nearly
> as well-armed or armoured as a player in a first person shooter game. The
> player's goal is generally to escape from an isolated house or town that is
> inhabited mostly by zombies and monsters through shooting and puzzle
> solving.[99]

The game is part of a franchise of games on various platforms, which began with

the 2001 release of *Project Zero* on the PlayStation 2. Keisuke Kikuchi conceived of the

game, as an employee of Tecmo, Ltd., which developed and published it. Kikuchi was

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[99] Moby Games contributors, "Genre Definitions," *MobyGames*, accessed August 24, 2011,

http://www.mobygames.com/glossary/genres/.

the design lead for the first three games, and was the co-lead for the fourth. The game has

been well received critically, and has become a staple in academic videogame criticism

(along with the *Silent Hill* and *Resident Evil series*[100]) even if in some ways it is

idiosyncratic as a member of the survival horror genre. The game *Fatal Frame II* sold

well, reaching 9th place on the sales charts in Japan after its release in November of

2003.[101] Eighty-five people/entities are credited in the production of the Japanese version

of the game, with an additional 29 credited for the creation of the US version. Of the

original eighty-five, 9 individuals in 8 roles are given credit in shorter lists and entries:

the director, the two product managers, the program manager, the chief programmer, the

visual art designer, the chief stage designer, and the chief movie creator.

Videogame content franchises take several forms and can be structured according

to different logics. Some, like *Pokémon*, were conceived from early in their production as

trans-media intellectual properties, with characters, themes, settings, and narratives which

are distributed as movies, television shows, toys, card games, comics and videogames in

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[100] Laurie N Taylor, "Video Games: Perspective, Point-of-view, and Immersion" (University of
Florida, 2002), http://www.laurientaylor.org/research/taylor_l.pdf; Bernard Perron, "Sign of a Threat: The
Effects of Warning Systems in Survival Horror Games," in *Proceedings of the Fourth International
Conference on Computational Semiotics for Games and New Media (COSIGN 2004)* (Split, Croatia:
University of Split, 2004), http://www.cosignconference.org/downloads/papers/perron_cosign_2004.pdf.

[101] Enterbrain, Inc., "集計期間:2003 年 11 月 24 日～2003 年 11 月 30 日," ファミ通*.com*,
December 10, 2003,
http://www.famitsu.com/game/rank/top30/2003/12/10/120,1071046099,19049,0,0.html.

what the Japanese culture industry describes as a *media mix* strategy.[102] Others, such as

the *Final Fantasy* series of role-playing games created by Square, Ltd (now Square-Enix,

Inc.) and the *Quake* games developed by iD software, are series of games which share a

handful of tropes, iconic elements, or gameplay elements to create a relationship between

its individual titles on various media and platforms, without sharing a narrative or a

fictional world. Square-Enix describes their strategy for creating franchises as the

production of *polymorphic content,*[103] the design of character and world concepts

independent of the multiple media forms, such as film, novels, games, merchandise or

comics, in which they might be expressed and marketed. Others, such as Microsoft's

Halo series, and the *Mass Effect* series created by Bioware, are original game-based

narrative series: in both these cases, the publishers have decided to increase the revenue

provided by the franchise by producing feature-length films, but these films are

understood as remediations of the game-original content, whereas the Square-Enix

strategy does not privilege any one form for presenting the characters and worlds of the

franchise over others. Likewise, although *Pokemon* was originally a handheld game title

published in 1996, much of its reach as a media franchise has been through its television

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[102] "The media mix is a heterogeneous but integrated web of reference manifesting in multiple
material forms." Mimi Ito, "Technologies of the Chilhood Imagination: Media Mixes, Hypersociality, and
Recombinant Cultural Form" (2007): 32, http://documents.irevues.inist.fr/handle/2042/23561.

[103] Ichiro Otobe, "Innovations in the Video Game Industry" (presented at the Autumn 2007-2008
Seminar/Public Lecture Series Topics in International Technology Management   Innovation Systems and
Processes in Asia, Palo Alto, CA, 2007), 16, http://asia.stanford.edu/events/fall07/slides/otobe.pdf.

shows, collectible card games, and film, and even its fans may not know which was the original or "canonical" source of settings and characters.

The *Fatal Frame* series maintains its coherence as a franchise both in its diegesis and in its game mechanics. While some ancillary merchandise has been licensed by Tecmo, the franchise is "video game native," with no announced plans to release produce films, novels or the like. The game titles are a series of loosely inter-related returns-of-the-repressed, atavistic hauntings, possessions and assorted traumatic memories and re-experiences involving a constellation of characters with various types of relationships to each other. The core game mechanical component has remained stable throughout the series: the use of the *camera obscura*, a device strongly reminiscent of the paranormal technologies of the Victorian era, with the power to record and dispel ghosts. There are other spectral technologies in the games, including the spirit radio, which can overhear the murmurs and exclamations of the dead. The auditory channel in the game does not, however, have the same rich ludic-diegetic function as the visual one. When the auditory does have a ludic function, it is generally extra-diegetic. A distinctive musical phrase indicates a nearby opponent; another suggests that the player is on the correct path to solve a puzzle. There are the usual sound effects which confirm that an interface element has been selected, familiar to users of graphical computing environments.

The dominant modes of Fatal Frame II

In *Fatal Frame II: Crimson Butterfly,* the *camera obscura* replaces traditional forms of weaponry used in most other horror games, and is at the center of the most important player activity: the simultaneous documentation and exorcism of spirits. The

use of the camera takes up much of the playing time (in addition to the typical navigation of 3-dimensional spaces). The moment in the game when the protagonists discover the camera is crucial both in the development of the narrative—the camera reveals the existence of the ghosts which populate the village—and the game's activity. The *camera obscura* is visually foregrounded at the moments of peak excitation, when the player is in greatest peril of failure, during that activity which makes the most demands on the immediate attention of the player throughout the course of the game. This action is different from the practice of navigating the space of the game. A trade-off is made between freedom of motion and freedom of view: when the player is in a navigational mode, the (game) camera is completely controlled by the game system; when the player is in *camera obscura* mode, the player has full freedom of rotation for a 360º view, but is unable to move forward or backward. The player must choose between the freedom to see and the freedom to move. The visual apprehension of the game, even in its most diegetic moments and modes, is subject to the transition between these modes. In other words, neither of these modes is simply either fictive or operational, ludological or narrative. They always put multiple registers into play.

The modes of any game are revealed in the process of playing, although they are often transparent to a player, particularly when those modes are conventions of a well-understood genre of play. I have identified the following modes in the game *Fatal Frame II* (and an illustrative montage of representative frames accompanies each description).

Providing a kind of limit on the spectrum of interactivity, the *non-interactive* mode (Figure 15) is a mode in which the player has almost no ability to interact with the

system (except on a meta-game level, by pausing the game or turning it off) while the

system plays back pre-recorded content. Sequences of play in this mode are usually

called *cutscenes*, a term which suggests that they are seen as interrupting the expected

dialogue between player and system, although as Rune Klevjer observes:

> A cutscene does not cut off gameplay. It is an integral part of the
> configurative experience. Even if the player is denied any active input, this
> does not mean that the ergodic experience and effort is paused. A cutscene
> is never truly 'cinematic', no matter how poorly implemented it may be. In
> any case, it can not avoid affecting the rhythm of the gameplay. For
> example, in the arcade-inspired *James Bond Under Fire* . . . the numerous
> but short cutscenes provide moments of release from the intense action.
> They create a characteristic in which the regular interruption/release is
> always expected. As a play you quickly learn the code, constantly being
> thrown rapidly in and out of bodily ergodic effort.[104]

Figure 15.: *Fatal Frame II: Crimson Butterfly.* **Montage of frames in non-interactive mode.**

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[104] Rune Klevjer, "In Defense of Cutscenes," in *Computer Games and Digital Cultures 2002*

Conference Proceedings (presented at the CGDC 2002, Tampere: Tampere University Press, 2002), 195.

During a cut-scene, a player may even put down the controller and adopt the posture of a film-viewer: the player may stare at the screen, instead of remaining in what has been described by Chris Chesher as the "glaze"[105] of player-vision which dominates those modes in which the player may be required to respond. Yet while the player is not able to produce input during a cutscene, it would be incorrect to say that the only register which comes into play is a fictive one. The player may be called to attend to various narratological, aesthetic, or game-diegetic elements (e.g., clues for the solution of puzzles) while looking at a cutscene: in Chesher's terms, the game is still a "glaze text" even if its audiovisual regime temporarily resembles that a "gaze" text (i.e., cinema).

The non-interactive mode in many games seems to use modified conventions of cinema, although generally they are animated sequences. Fatal Frame II uses "full motion video" (FMV) along with animated models for its cutscenes. FMVs are high-resolution video recordings of animation or, occasionally, film (Fatal Frame II uses animation). The

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[105] Chris Chesher, "Neither Gaze nor Glance, but Glaze: Relating to Console Game Screens," *SCAN: Journal of Media Arts Culture* 1, no. 1 (January 2004): article 5. "The audiovisual regime of the glaze is characterised by at least three distinctive characteristics: spectacular immersion, interactive agency and mimetic simulation." Chesher describes the glance as the dominant audiovisual regime of television, and the gaze as that of cinema. However, since those three characteristics are not always at work during a videogame—the cutscene, by definition, removes interactive agency—either of the other two regimes might come into play. Insofar as a game conventionally holds an uninterrupted monopoly on player attention, is not a broadcast media, and has generally non-episodic content, I am inclined to think of gaze, rather than glance, as the dominant visual regime of the cutscene.

very high resolution of the image, the naturalism in the movements, and often a letterboxing effect (the reduction of the viewing space on the top and bottom of the image, as if a widescreen film were being projected) indicate a FMV in a cutscene. A cutscene can also use an animated model created by the assets of the game. In *Fatal Frame II,* three sensory channels are used during these sequences: visual, auditory and force-feedback vibrations sent to the game controller.

The cutscene has played a distinctive role in game studies as the point around which the so-called "ludology versus narratology" argument seemed to break. Klevjer's article is a response to a radical ludological position, exemplified by Markku Eskelinen's claim (quoted by Klevjer) that stories in games "are just uninteresting ornaments or gift-wrappings to games, and laying any emphasis on studying these kind of marketing tools is just waste of time and energy."[106] Klevjer uses the cutscene as the point to respond to this extreme position:

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[106] Markku Eskelinen, "The Gaming Situation," *Game Studies: The International Journal of Computer Game Research* 1, no. 1 (July 2001), http://gamestudies.org/0101/eskelinen/. The radical ludologist position relies on a categorical maneuver, foregrounding the continuity between digital games and non-digital games while minimizing the mediational aspect of digital technologies, seeing them generally as supplementary to the translation of rules into programs and as a digitization of the sorts of assets used in non-digital games, such as player pieces, boards, settings, etc. Klevjer also criticizes Eskelinen for ignoring the discursive modes which do not focus on mechanics, and for uncritically applying

> Still, a good cutscene has other qualities than just being 'rhythmically' well-implemented. Notably, it may work as surveillance or planning tool, providing the player with helpful or crucial visual information. Another rather well-established convention is the 'gameplay catapult', building up suspense and creating a situation, only to drop the player directly into fast and demanding action-gameplay.[107]

The cutscene in *Fatal Frame II* does both of the kinds of work described above by Klevjer, providing important clues and cues for the player (thus working in an operational register even in the absence of any immediate opportunity for player input) and participating in the production of suspense and urgency which is discharged in more demanding forms of play. In the case of this title, there is no letterboxing. The player will recognize that they have entered into a cut-scene by the absence of other display elements: the compass, mini-map, and various gauges super-imposed on the field of view will disappear. The graphical quality of the image improves dramatically, with camera and lighting effects. Usually, the camera's angle, movement and level of zoom will all change from those used in other game modes; in these senses and in the style of editing, the visual scene in these sequences could be called "cinematic." However, as even here a player may be scanning the visual field for operationally useful elements, left in the visual scene by the designers in order to support gameplay, it would still be incorrect to reduce the visual codes of these sequences to those of cinema.

"concepts and categories developed to investigate non-computerized play." (Klevjer, "In Defense of Cutscenes," 192.)

[107] Klevjer, "In Defense of Cutscenes," 195.

Two other modes dominate most of the game: they, along with one other, are identified and described as modes[108] within the printed documentation included with the game disk (Figure 16). All games have one or more control schemes: the mappings between input devices of some sort and systematic representations of player activity within the game's mechanics. While modes are not identical to their control schemes, they are closely linked to them: each mode configures the player's activity in some way, providing a grammar (specifically, a repertoire of verbs) of playing activity within the fictional space of the game. The non-interactive mode described above offers a minimal control scheme, allowing the player only to turn off the system. In other modes, schemes can be complex, and their mastery by the player becomes pivotal to the traversal of the game. The operation of the mode and schema produce to functional ontology for the game as an interactive system, understood not only in a conceptual sense, but also in the practical sense. The player affirms the ontology of the game every time she/he instinctively presses a button to produce an expected effect.

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[108] Cinematic mode is not defined as a mode in the game manual, because it is a kind of "zero case" in which the user has no role outside of spectatorship: it requires no documentation.

Figure 16.: Control schema for the dominant gameplay modes of Fatal Frame II, from the instruction manual.

The first of the three explicitly named dominant game modes is *field* mode[109] (Figure 17), in which the player's interaction with the controller moves the avatar through the rendered three-dimensional space of the game, constitutes the majority of most players' experience of the game. The depth and nature of player attention demanded in

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[109] In a previous essay, I referred to this as *navigational* mode, but am here reverting to the name of the mode used in the game's instruction manual for both this mode and *viewfinder* mode.

this mode varies from inattention (the player may not be attending at all) to impatient movement through well-learned access spaces, to high tension and close scrutiny to details in the environment. It may not be far off to describe this mode as the canvas for the others; the default spatio-temporal posture in the Lost Village. In *Fatal Frame II*, this is a timeless mode; one generally invites danger only if one moves. There is not a direct link between diegetic time and play time. Entering this mode and doing nothing would set the conditions for what Alex Galloway calls an *ambient machine diegetic act,* in which the computer sustains the fiction of the world in a state of "charged expectation[110]," awaiting player activity.

When the player triggers certain conditions, the camera's position shifts in space, often changing the relative orientation of the avatar to the camera. The avatar acts more like cursor, following the absolute position of the joystick controller, than as a remote object in a virtual space. Note the long, blue health bar and the smaller filament in the lower-right-hand corner. The filament indicates the proximity of a dangerous (red glow) or harmless (blue glow) spirit

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[110] Galloway, *Gaming: Essays on Algorithmic Culture*, 11.

Figure 17.: Montage of frames in field (navigational) mode..

Within this mode, it is possible to come across elements which indicate actionability—for example, an avatar might approach a region of the screen, and a visual object appear, illuminated in a way presenting a high contrast to its background to both foreground it as prominent and as conceptual alienable from the background in which it appears. These includes items which can be added to one of several inventories[111] objects which allow the player to save her/his progress, objects which will move the player to a new space (doors, staircases), signs of threats, etc. The behavior of the game in reproducing navigable space is one common in many horror-based games designed

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[111] While each inventory provides a mode of its own, adding something to an inventory does not necessarily bring the new mode into presence. In *Fatal Frame II,* a "modal" window briefly appears indicating what item has been added to the inventory, which can be dismissed by pressing any button, returning the player to the *field* mode.

during the late 1990s and early 2000s: the camera angle is fixed and the player's

movement is bounded within a restricted area, unless the player interacts with an object

that allows egress (doors, trails, stairs, etc.) Field mode is not an open 3D environment,

but a succession of closed ones[112]. The game is thus in the fixed version of a third-person

perspective in this mode, one by which the spatial deixis of the avatar is orthogonal to the

orientation of the player's gaze. (Alternative third-person views are a tracking

perspective, by which the view of the player is at a constant distance from the avatar—

usually behind its head or over its shoulder—and a constraint-based view, which

calculates optimal placement for the camera, based on a range of parameters). The

control scheme for the field mode in Fatal Frame II is absolute with respect to space:

moving the joystick controller forward will move the avatar to the rear of the scene;

moving it back will move it to the foreground, etc. The orientation of the avatar is not

mapped onto the control scheme. Space shifts are generally very fast when the player is

moving in one direction, but slower when the player is looking within a scene for items

or important features.

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[112] A version of the game produced for Microsoft's Xbox platform, called the "director's cut," was released in 2004, and included an "FPS mode," allowing the player to experience the game in first-person view, and thus control the camera, for the entire game. The gap between field and viewfinder modes in this version is accordingly reduced to a swap-out of "HUD" (heads-up display) superimposed graphical elements.

Fatal Frame 2 deploys an architectural notion of the division of space into navigable regions. The player/avatar perceives and works within spaces that become operational units in themselves; if the player realizes that she/he forgot an important item in a previous area, the navigation back to that area is better understood as a re-tracing a sequence of action elements, rather than unrestricted movement on a two-dimensional plane. This spatial configuration resembles that of adventure games from the late 1980s and 1990s, such as *Grim Fandango*[113], at least in terms of the player's conceptual construction of the space of navigation.

Earlier in this chapter, I describe the *camera obscura* as a franchise-signature element: the entire Fatal Frame series incorporates this camera. In a flashback cutscene sequence that is triggered when the player finds the camera, the player learns from its inventor that it "takes pictures of impossible things." The camera is discovered in the first chapter[114] of the game, in the first of a series of buildings that the player explores. Once the player has the camera in their inventory, a short sequence (in interactive mode) plays, revealing the (fictional) history of the camera, followed by a series of windows describing its use:

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[113] Tim Schafer and LucasArts, *Grim Fandango*, version 1.01, Microsoft Windows (San Francisco: LucasArts, 1998).

[114] The game is divided into 9 chapters, with an unlockable 10th chapter (described a "non-canonical" in that it contradicts the events described in the sequel to the game) if one plays the game in "Hard" or "Nightmare" levels of difficulty.

The Camera Obscura is a special camera that allows you to exorcise spirits by taking photographs of them. When you face a direction where a spirit is, the filament at the bottom-right of the screen[115], or top of the viewfinder[116], will glow.

Once you've located a spirit, raise the camera with the [circle] button[117].

When you've found a spirit, centre it in the viewfinder screen and press the shutter button (the Right trigger) to take a photo of it.

(Default[118]settings.)[119]

After this sequence, *viewfinder mode* (Figure 18) is available whenever the player has the camera (in an unavoidable event later in the game, the player loses the camera and must re-locate it: viewfinder mode is unavailable until the camera is found), and is accessed in field mode when the player presses the circle button: pressing the

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[115] From field mode, the filament is in the lower right-hand corner of the screen.

[116] If the player is already in viewfinder mode, the filament will be at the top of the screen: it is a bridge-element between the field and viewfinder modes.

[117] This assumes that the player is in the field mode.

[118] The mappings between controller buttons and player-driven events can be changed by the player. The customizability of input is an important feature in genres which offer competitive play and demand deep mastery of complex mechanics, such as many first-person shooters and real-time strategy games. It is a less important feature for single-player action-adventure survival-horror games like *Fatal Frame II,* particularly on platforms with well-established control scheme conventions, governed by license agreements between developers and platform vendors.

[119] Tecmo Ltd, *Fatal Frame II: Crimson Butterfly*. Chapter 1: this text appears as an intertitles after a full-motion video (FMV) flashback cutscene sequence, depicting the folklorist who left behind notes and fragments discovering the power of the camera.

circle button while in viewfinder mode returns the player to field mode.[120] The avatar's point-of-view is synchronized with the player's point of view, as the fictive camera becomes the player's camera-eye. Navigational motion is arrested; the player has, instead, complete 360-degree freedom of motion in the round.

Figure 18.: Montage of a sequence in viewfinder mode.

The stable visual elements that identify this mode are the translucent focus ring which is superimposed over the visual plane and the icons on the top row of the image, indicating the type of film currently loaded in the camera, the number of frames of film left, and other indicators of the operational state of the camera in the context of the scene.

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[120] This is the convention in the North American and European releases of the game. Button mappings are not arbitrary with the Playstation platforms: there is an order of precedence,

The display reproduces the effect of looking through an antique camera, with a filament above a viewfinder window resembling that of an actual bulb, although the actual visual elements are still based on digital-era graphic conventions and affordances: the use of sepia tones does not hide the anachronistic elements (e.g., graded bars to indicate diminishing resources; textual information about the type and quantity of film), and the contemporary literacies of game-players are too valuable to sacrifice to any effort to efface those anachronisms.

There are two dominant variations of viewfinder mode: the more minimal "searching" view, in which the player is scanning a scene for a sign of a spectral entity, and an "exorcism" or combat view, in which the player has identified a spectral entity and is trying to record it and exorcise it. Often, one begins searching when, in navigation mode, the filament in the lower-right hand glows blue or red: the player will then enter into viewfinder mode to locate the ghost. When no ghost is within the viewfinder's window, the graphical elements remain minimal.

When the specter is not dangerous, the player is often challenged to try to capture an elusive, fleeting figure; the play of the moment is one of timing, reflexes and good guesswork. When the specter is a hostile one, the player must avoid harm, find an optimal position to take a picture, equip the optimal enhancements and film. Film acts as ammunition, a resource which must be managed: more powerful film-types are generally best reserved for the more powerful opponents. (Film and camera configuration is managed in another mode).

Combat mode (Figure 19) distinguished by the inclusion of specific visual indicators[121] to the camera mode described above. The captured frame in the figure has been annotated to highlight discreet signifying elements in the scene. The frame is from a moment of combat, after the player has pressed the X button to discharge the camera (in other games, this would be mechanically comparable to firing a weapon).

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[121] Each of these elements could be located within Peirce's systems for categorizing signs. The health bar of the opponent consists of an iconic sinsign—the mapping of the color of the gauge to an integer stored in the system: the "health" of the opponent. That integer is itself another sign mediating between the computer system and the fiction of the world, in which it acts as a rhematic indexical sign, being the health of *this* opponent. The entire gauge as such is an iconic legisign: the convention which maps it onto the health status of the opponent is learned by the player as part of the production of genre literacy.

Figure 19.: Combat mode, with discreet signifiying elements highlighted. This frame is from an instant during the process of combat in which one feature of viewfinder mode which is usually stable—the focus ring— disappears briefly: immediately after a shot has discharged.

Element (a) is the "health bar" of the opponent: the spirit is near "death" (exorcism, in terms of the game's fiction). This element only appears in combat with an aggressive ghost. This information is available only when the player has equipped the "measure" function, as described below. "Health bars" are a metaphor nested in a metaphor: they are regions of screen-space that are decoded one-dimensionally: a line, although of course they are actually two-dimensional regions—elongated rectangles which are often shaded to produce the effect of fluid meter, such as a barometer. The health bar denotes a number, or more accurately a relationship between two numbers: one

integer which represents the plenary health of the opponents, an undamaged state; the other the condition of the opponent at any instant.

There are two conventions of depiction for health bars. In one, the length of the region is constant, and the bar only indicates the ratio of the two numbers: a stronger opponent with a higher health will be represented by a slower decrementing of the bar. In the other, the region also indicates the absolute value of the health of opponents (and the protagonist): those who are "stronger" (that is, the integer representing their maximum health is relatively high) will have their health represented by a longer region. *Fatal Frame 2* follows the latter convention.

When the battle begins—that is, when the integer denoting its current health is identical to that of its fullest possible health—the entire region will be drawn in a rich saturated color with high brightness relative to the background (in the case of element *a*, a crimson tone. The player's health bar, element h, is blue). As the current health decreases, the area which is brighter will shrink, being replaced with a muted, more neutral tone: a negative space indicating the growing gap between the entity at its most vital and the entity's current status. Visually, the fluid meter metaphor is an analog representamen of a digital object (the integer denoting "health"[122]).

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[122] Following the chain of signification further, the sign of the health bar, within an interpretant of the broad experience with meters like thermometers and catheters and the behaviors of fluids in general, activates a fullness/emptiness metaphor directing it to the relationship between the integers standing for full

"Health" is part of the conceptual model the player has of an aspect of the game: it has its own history, with origins in *Kriegspeil,* a war simulation in the early 19th century in game form used for the training of Prussian officers. The use of a single value to represent the well-being of an entity originally was meant as an abstraction not of its vitality, but of its fighting capacity, and this connotation does persist in many games, which often are ambiguous in characterizing defeat as death, or as mere incapacitation. (In the early 1990s, two arcade games in the fighting genre—*Mortal Kombat* and *Street Fighter*—took contrasting positions in this depiction: Mortal Kombat was notorious for its grisly animations of the final blow, with decapitations, impalings, and the tearing out of living hearts as the coda to a one-on-one battle; *Street Fighter* and most games of the genre depicted defeat as a mere *K.O.,* a knock-out.) In *Fatal Frame II,* the depletion of a health bar means different things for ghosts than it does for the player: in the fictive mode, the ghost is thought to have been exorcised, while the player is presumed to have been slain by the ghost (and will be obligated to resume play from a saved session—a

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and current health. Those integers are sustained by the computer, and while they produce the fiction of an entity with such-and-such well-being, they are themselves a decoding of a sequence of bits—zeroes and ones—interpreted within the framework of encoding system used in most contemporary computer systems as standing for an integer, based on the value of a header, or other sequence of bits. The sequence of bits is also an interpretation of a range of differential states: a bit is a differential in amperage in the working memory of a computer, but is an interpretation of magnetic polarity on some storage media, or of the existence of a pit or plateau, read by a laser, on a CD or DVD.

task which incorporates other game modes, including a meta-gamic navigation of representations of saved files).

Element (b) is the filament, both diagetically and ludologically equivalent to the small filament in the lower-right hand corner of the screen in field mode.[123] The filament glows when a ghost is near, more brightly when the camera's focus ring is centered on the position of the ghost. (The filament in field mode has the same behavior, with regard to the facing of the character.)

Element (c) is a stylized text-box, using a linotype font in a sepia color to connote a 19th century "steampunk" aesthetic, stating the film type described above. The number to the right of the film-type is the number of shots available in that film type. Element (d) is a contextual element, available to the player, but not a discrete, stable element like the others: it is an indication of the orientation of the player on the game map; in this case, it indicates that the player is in what is called the "brazier room" in the "Kurosawa house," a building in the Lost Village. The graphical information here also helps the player orient her/himself with other features of that space (opponents, doors, windows, etc.) Element (e) is the opponent itself. The player must frame the opponent optimally within a focus ring to take a shot that can reduce its health, and move the bar in element (a) as low as possible. If the opponent gets too close to the player without a picture being taken, the

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[123] The activation of the filament in field mode both presages and calls for the more strongly foregrounded presentation of the filament in viewfinder mode.

camera will cut away to a third-person view, showing the ghost shaking or strangling the player, reducing her health.

Element (f) indicates the augmentations and configuration of the camera obscura. As the player progresses through the game, she/he will find "spirit orbs," obtained by battling ghosts. This spirit orbs become a kind of internal currency for a system of upgrades to the camera. The orbs can be used to augment the camera's basic functions or those unlocked by finding "equipment." This upgrade-management mechanic is common to games in many genres, and adds combinatorial depth and strategic planning to the game experience, while extending the domain-mapping of photography as metaphor. Element (g) serves a decorative and connotative function: it is a small plate with the words "SHADOW OBSCURE." Element (h) is the health bar of the player: minding the integer to which this sign refers is of both immediate and medium-term interest to the player, who will seek apply items from her/his inventory to increase their health value. If the blue bar should drop to the bottom, the character will die, and the player will have to resume play from a saved position[124]. Of all the signs in this frame, only one—element (h)—can be understood as working within a single, fictive register of play experience. All the others participate in multiple registers, and often allude to other modes.

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[124] There are modes dedicated to the management of saved game images, and the catalog of saved games stored in the game-system is itself another player-register.

Each of these elements is produced by the coordination of multiple work processes, stored in an asset library that allows workers in different roles to edit, copy and use them.[125] More importantly, they are discrete objects, constituted by digital code, with associated behaviors (the fighting algorithm of an opponent, the creaking of steps as a character climbs them), which allude to values (such as the relative position of objects, ranges of effects, and health values for the avatars and opponents). In most contemporary game development, the programming languages used to create both the engines on which the games run and the games themselves are object-oriented languages like C++ and Java. These languages make it easier to write modular code: visual, auditory and code assets can be checked out of asset libraries, enabling teams of hundreds of artists, designers and programmers to concurrently work on the same game.

However, even in highly abstract games made with simple tools by sole authors, these elements operated in multiple registers, within modes, in much the same way. A brief comparison with an independent, experimental game created by a single designer will demonstrate this.

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[125] The specific software used to manage the asset library in the case of *Fatal Frame II: Crimson Butterfly* was not revealed by the developers. Often, the libraries are managed by asset pipeline tools developed in-house. Production digital asset management software is also built into game development engines such as *Unity Pro,* which includes an asset server.

In the mode for love: The Marriage as single-mode game

Rod Humble's 2006 independent game *The Marriage*[126] is a procedural reflection

on monogamous, asymmetrical heterosexual relationships. Ian Bogost describes the game

as a paradigmatic example of the proceduralist style: process-intensive, designed for an

introspective reading, using abstraction in graphics, and representing subjective inner

experience.[127]

In *The Marriage,* players click on one of two squares—one blue, one pink—in

order to attract green circles to them. (Figure 20) Contact with green circles makes the

squares grow larger. There are only four visual elements in the game: a blue square

connoting a male partner, a pink square connoting a female partner, colored circles which

connote positive external factors (other people, work, activities), and black spots

connoting destructive/traumatic events. The size and opacity of the squares change based

on their interactions with each other, with other objects, and with the player's mouse

cursor. Reflecting a normative model of gender difference, the blue and pink squares

react differently to certain procedures. Placing the mouse over either square triggers them

to move closer to each other (both move toward the mouse cursor), but makes them

smaller. Placing the mouse cursor over any circle causes it to disappear, and causes the

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[126] Rod Humble, "The Marriage: a Computer Game by Rod Humble," August 2006,
http://www.rodvik.com/rodgames/marriage.html.

[127] Bogost, "The Proceduralist Style."

pink square to get smaller. When the two squares collide (or, as he describes it, "kiss"[128])

the blue square diminishes in size and becomes more transparent, while the pink square

grows slightly and becomes more opaque. Contact with a colored circle causes the blue

square to become more opaque and to grow in size, but only causes the pink square to

grow in size slightly. Black circles cause both squares to shrink significantly. Without

any contact with the blue square, the pink square will slowly grow more transparent over

time. If either square either shrinks or becomes transparent to the point of disappearance,

the game ends.
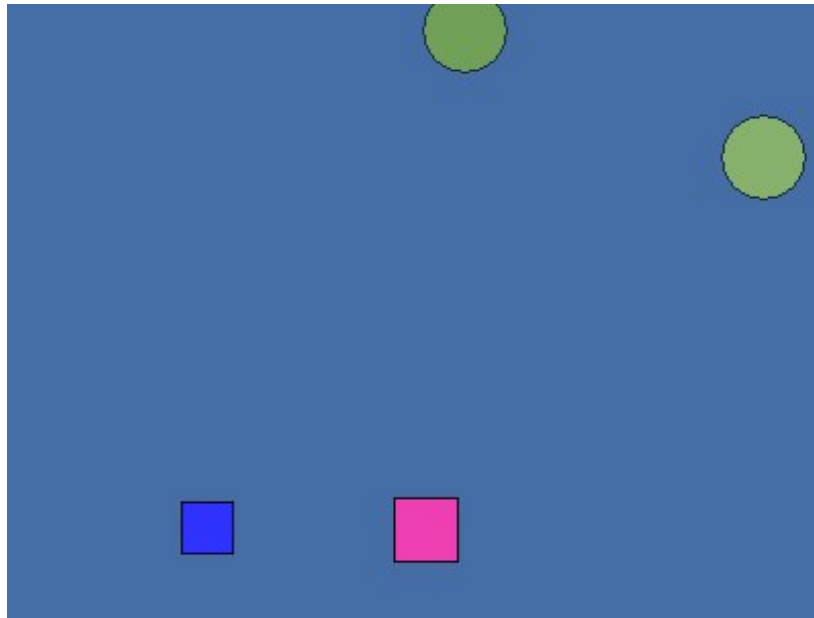
Figure 20.: The Marriage. Rod Humble (2006)

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[128] Rod Humble, *The Marriage (game)*, Microsoft Windows, 2006,

http://www.rodvik.com/rodgames/marriage.html.

Humble is explicit about the intension of the work and its metaphors:

> The game is my expression of how a marriage feels. The blue and pink squares represent the masculine and feminine of a marriage. They have differing rules which must be balanced to keep the marriage going.
>
> The circles represent outside elements entering the marriage. This can be anything. Work, family, ideas, each marriage is unique and the players response should be individual..
>
> The size of each square represents the amount of space that person is taking up within the marriage. So for example we often say that one person's ego is dominating a marriage or perhaps a large personality. In the game this would be one square being so large that the other one simply is trapped within the space of it unable to get to circles and more importantly unable to "kiss" edge to edge.
>
> The transparency of the squares represents how engaged that person is in the marriage. When one person fades out of the marriage and becomes emotionally distant then the marriage is over.[129]

In other media forms, this kind of explicit allegorical mapping may seem like excessive hand-holding for an overwrought metaphor; insofar as allegory by procedure is still the exception in the field of independent videogames, some allowances might be extended to the author for his explanation. For us, the conventional and normative rhetoric on human intimacy and asymmetrical need is less interesting than the registers in which it is articulated.

There is clearly only one mode: the screen shown in Figure 20, with some changes depending on the stage of the game, is the only one that the players encounter. There are still, however, multiple registers: that of the *lusory* (the game as a set of

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[129] Humble, "The Marriage: a Computer Game by Rod Humble."

objectives and mechanics, described by the rules—described by Bernard Suits[130]) and the

register of allegory. The signs in the allegorical register are not the elements as visual

representations, but the interpretants for those signs in the lusory register. The visual

region (square, circle) and color are the material signs, the object is the behavior that

results when certain kinds of interaction occur, and the interpretant is the rule-set which

maps the latter onto the former. The ruleset *in toto* is itself a sign, with the object being

the domain of human relationships (as understood by Rod Humble) and the interpretant

being the conventions and behaviors—and the explicit guide written by Humble—which

connotes them (or, in the latter case, denotes them).

    The Marriage was created by Humble alone:

> "The Marriage "came out of a long weekend I took with my wife down to
> Carmel. It was created that evening on my laptop as I listened to the waves
> of the pacific below. All the game mechanics were completed that evening
> although I spent weeks afterwards tuning and polishing. The game was
> also made "in process" as it were. I simply could not design this game on
> paper before hand. It had to be done by exploring , discarding and
> balancing game elements during creation. This feeling way of game
> creation felt right. It was like carving with the grain of the wood or
> painting with the brushstrokes rather than against them.[131]

Though created in 2006, it has much in common both visually and in terms of the

conditions of its production with the games developed for the Atari VCS in late 1970s

and 1980s, with simple assets, the close association of code and visuals, and the lack of

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[130] Suits, *The Grasshopper*, 55.

[131] Humble, *The Marriage (game)*.

differentiation of production roles and moments. The gap between the conception and realization of the material signs (the circles and squares) and their behaviors within the procedural system (attracting, repelling, shrinking, growing, become translucent, becoming opaque) is negligible.

This tight coordination between the elements that operate in these registers for smaller games is also made apparent in Ben Fry's *distellamap* visualizations of the assembly code which produced Atari VCS games such as *Adventure* and *Combat* (Figure 21). Fry's image reveals how the machine code which instantiates the game calls upon graphical elements that are also embedded in that code, to display them on the screen.[132] Just a play of a game of *The Marriage* occurs within a single mode, so does play within a game of *Combat*[133].

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[132] The operation of the Atari VCS and its graphic procedures are described in Montfort and Bogost, *Racing the Beam: The Atari Video Computer System*.

[133] Despite the lean code used to produce the game, *Combat* is, in fact, about 27 different games, chosen by the player from a loading screen, which, in strict terms, can be considered a meta-game mode. However, any given single game is played within a single mode: the different "games" are modifications of parameters of the core game design, and were created by the addition of variables and modifiers, not in parallel development processes. *Combat* is given a "vertical" analysis in Montfort, "Combat in Context." Montfort describes the nested dependencies that produce the experience of the game, from the platform (Atari VCS) to the code, to the game's form, interface and reception. Our approach begins with the interface—which contains both the elements made available to the player by the system and the affordances for responding to it—and accesses the other levels of his analysis from them.
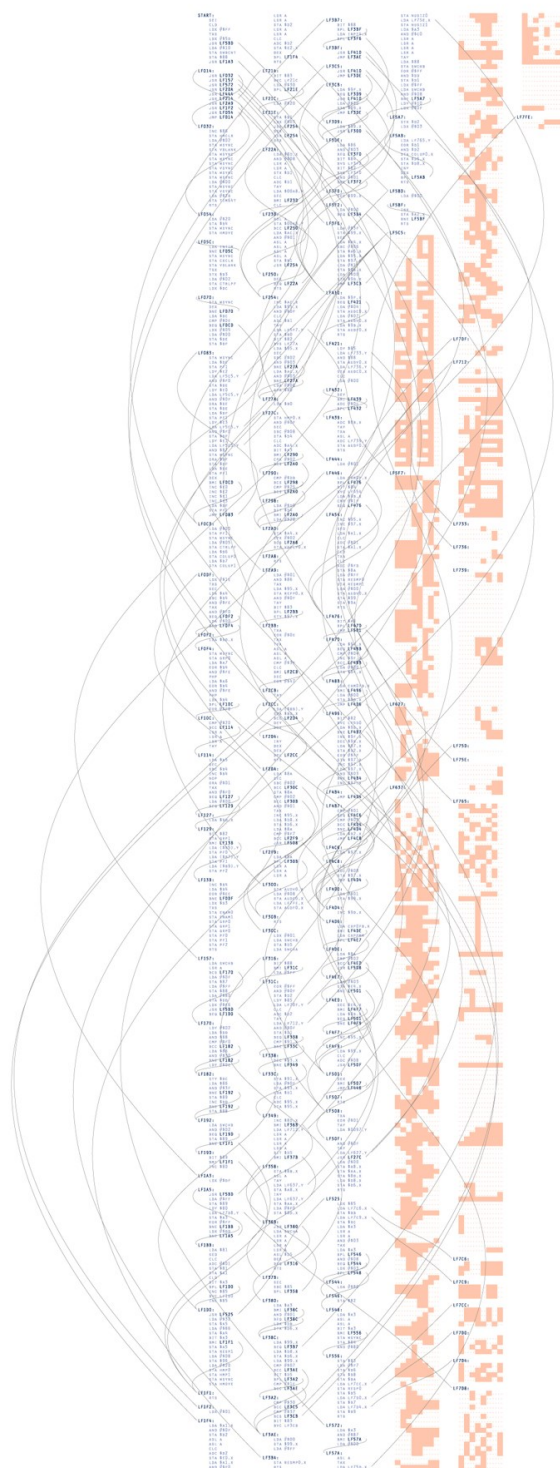
Figure 21.: Distellamap: Combat. Ben Fry, 2005

Game traversals and methodology

The modes of *Fatal Frame II* described above were produced by capturing the videostreams of the full traversals of the game. A traversal is what is more prosaically called "playing a game to the end." Just as the reading of a novel may take place over multiple reading sessions, the traversal of a game can take place of a series of game sessions. A new traversal is started in many games after the "new game" button is pressed to reserve space in the system's memory for recording a game-state. In practice, a player can branch off multiple traversals of a game, exploring different tactics, strategies, and unlocking different content: thus, the traversal can be understood as a conceptual entity centered on a specific save file until the player reaches an recognizable conclusion. A traversal is an artifact of an extended instance of reception, a transcription of the "putting-into-play" of the game software's assets and algorithms by a player. Espen Aarseth describes texts as having *traversal functions*, "a mechanism by which scriptons are revealed or generated from textons and presented to the user of the text.[134]" A traversal can thus be seen as the output of this function treated as a whole. In many cases, the game's fictional registers are best understood through recounting a canonical traversal.

Many games do not have traversals distinct from sessions. Some do not indicate any kind of closure or completion. Multi-player games, puzzle games, and games which foreground the play-activity over fictional/narrative ones can be studied in terms of series of sessions which produce increasing expertise without constituting a traversal, but in

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[134] Aarseth, *Cybertext: Perspectives on Ergodic Literature*, 62.

those cases the full vocabulary of signifying elements, the panoply of modes and registers, will also be available within a single session. While one might suppose that the presence of a strong fictive register predicts a finitude for a game, this is not the case. Most of the arcade games of the 1970s and 1980s closed with events that, as fictions, simply indicated failure. *Missile Command*, designed by Dave Theurer and published by Atari, Inc in 1980, always ends with the destruction of the cities in a nuclear explosion, which the player simply tries to forefend against for as long as their abilities allow. Nonetheless, the time between the drop of the quarter to start a game and the final screen (Figure 22) and, if applicable, the entry of the player's initials into a leaderboard, could be described as both a session and a traversal. For arcade games, a single session of play may contain multiple traversals; for many console and computer games, played in player's homes or offices, a single traversal (which may require many hours of play) may consist of several sessions. This is the case for *Fatal Frame 2* for most, though not all, players.

Figure 22.: Missle Command, final screen.

Capturing Frames

Analyzing video transcription of game play[135] from four different players'
traversals of the game revealed differences in the relative frequencies of modes between

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[135] Video capture equipment was used to capture the video signal sent from the game console to
the screen, producing a linear recording. This recording was then processed to produce a linear series of
still frames, sampled at regular rates (one frame per second, 4 frames per minutes, etc) as appropriate for
the analysis at hand. For purposes studying the modal transitions in Fatal Frame 2, we generally used two-
frame-per-second (fps) sampling. 15 fps sampling was used to "zoom" into the dynamics of shorter play-
segments.

different play styles. Three (one undergraduate and two graduate students) were fairly typical players in terms of genre and platform literacy and enskilment. The fourth was a speed-run performance uploaded to YouTube by a player under the pseudonym Persona[136]. A speed-run is a session of game-play in which the player seeks to complete the game in as little time as possible: it is a virtuoso performance of game-play, and players compete with each other to achieve ever-shorter play times. A speed-run is thus a single traversal occurring within a single session.

In general, the relative ratios and paces of transition between modes for the three researcher-players were comparable, despite the range of ability and familiarity with the game and its genre between them. The speed-run traversal (Figure 23) was different, with significantly less time in navigation or combat modes for any given section of the game. The speed-runner was, of course, interested in minimizing the duration of any mode as much as possible. Cinematic sequences are, however, of fixed duration; thus, they constitute a greater percentage of the speed-runner's full traversal when compared to the other players. The speed-runner has essentially removed a semiotic register entirely: any given sign or icon is treated only as a cue to a well-rehearsed, somatized activity. This supports an interpretation that sees the material signs as modally authored, but the authorship within registers as being more dialogical.

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[136] Attempts to contact the player were unsuccessful; according to his now-defunct web site, apparently he/she lives in Singapore.
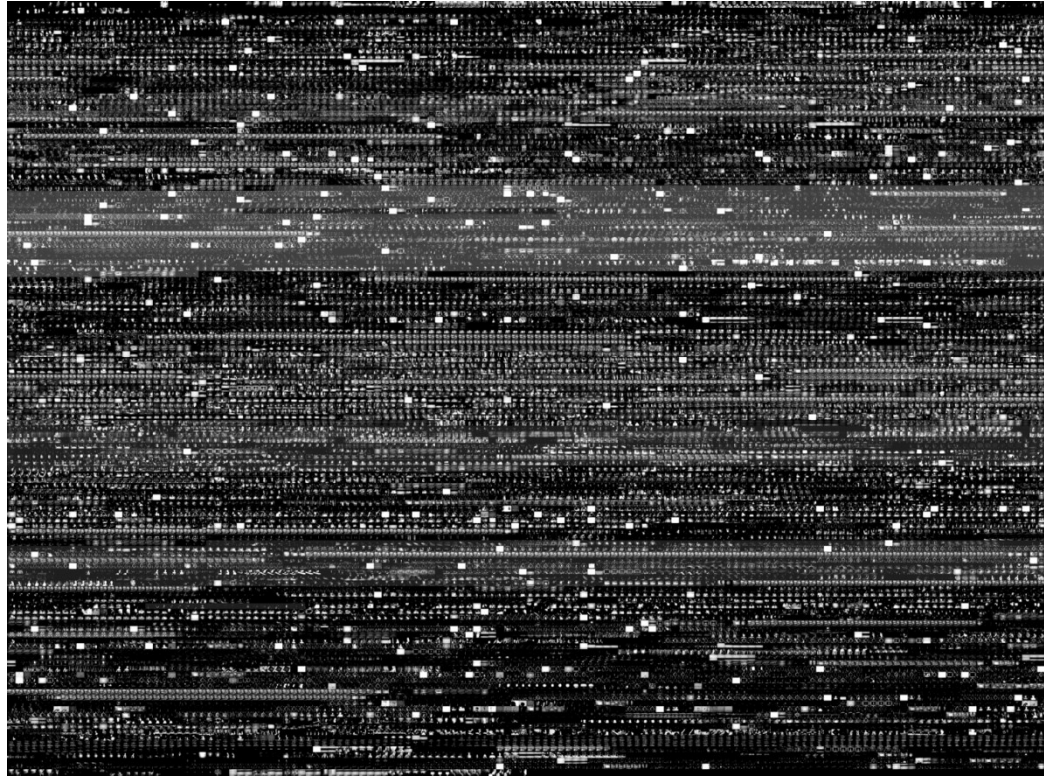
Figure 23.: *Fatal Frame II: Crimson Butterfly* **(speed-run by Persona) – the clouded regions are an artifact of his/her inconsistent recording technology. Completely white frames indicate the end of combat. The speed-run footage was sample at the rate of one frame per second. The entire traversal of the game by Persona took a little over two hours.**

In the speed-run, the player has learned optimal strategies to eliminate unnecessary expenditure of time. White frames indicate that an enemy has been defeated: the defeat of an enemy is accompanied by a bright, white flash which fills the screen completely. This element can also be used as an indicator for a (successful) battle. The player is certainly aware that the activation of these elements also performs a fiction, the ghost story sustained by the fictive register, but represses the engagement with that register to accelerate their progress through the game. All the modes of the game continue to operate, however: the transcribed footage of the player's traversal ironically

shows a greater ratio of frames in the cinematic mode than those of the other players. The modes which are of the greatest import to the speed-run player—those involving combat or navigation—are those which he wishes to dispatch the most quickly. One cannot rely on the relative ratios of modes to determine which registers are of priority to the player.

Modal rhythms

Informational and operational modes oscillate over the course of play. The cinematic sequences during which the player is not called upon to act releases the compression created when the signs of the uncanny accumulated during operations are instead released into another kind of reading. This release is never complete: even as the player is transfixed by the phantasmic spectacle on the screen, the sequence may contain clues and indications which the player will need to progress through the game. The result is a somaticization of the reading of the range of signs.

The perception of hazard is, in fact, greater than its reality, because the same signifier can come into play in various registers and modes. In the visualization of mode transitions during a typical play-session, what is striking is how little actual combat or near-combat activity there actually is: most of the activity occurs as cinematic material or in navigating the space of the game.[137] The low ratio of actual threats to the connotation

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[137] This segment, from a long game-session by Laura Hoeger, was fairly typical for the student players. The cinematic mode dominated the "speed-run" player's modal ratio for an obvious reason: it is the one mode which cannot be shortened by optimal play. This produces the superficially counter-intuitive

of jeopardy is a simple mechanism for creating suspense (and a lingering aesthetics of paranoid perception.) One detail which emerges after sorting through the transcripts of play sessions is the player's management of the codas and discontinuities of the play experience. Not only do players use save-points in the ways we might expect - to save progress to avoid having to repeat a passage, or in order to end a session - but menus are also called up to freeze play to take a break, as a pause mechanism. These patterns of saving and pausing are the player's mechanism for managing the tempos of the game experience, in the interstices between intense and semiotically dense sequences of play in navigational and combat modes.

Modes encode the possibility of other modes, and the player's experience is marked by an indeterminacy: where are they? What is expected of them? We can see this ambiguity at work by looking at entirely typical screens and isolating dominant signifiers within them. A typical frame from a player's navigational mode (Figure 7) features Mayu, the character/avatar (b) navigating a passageway. The filament (c) would begin to glow if there were spectral activity in this scene in the direction toward which the avatar (but not the player's camera) is facing. The region (a) is an area in which, at certain points in the game, a ghost could well appear, if the avatar turns in that direction. At the moment of this frame, however, these are mere possibilities. In fact, at this point, Mayu is exploring the deserted Kurosawa house. The filament remains at the periphery of

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result that the content of a speed-runner's game traversal transcription will be largely cinematic, rather than interactive.

attention, in the background, denoting that the player has the *camera obscura* equipped (at a later point in the game, this object is lost and the filament does not appear on the screen) and connoting the Edwardian techno-aesthetics of the dawning years of the 20th century.

A moment of greater player excitation (figure 8) occurs as the player-character (b) encounters a ghost which is not yet in the visual field (a), indicated by the red filament (c); that the filament is glowing red indicates that the ghost is hostile and must be dispatched by the player. The blue gauge (d) indicates that the player has already taken some damage, and must attend to their health-state or risk losing the game and being obliged to restart from a save point. We should take note of the transition between the above mode and the one illustrated here and observe that this is not a transition between a representational or fictive state and an operational one. The scene which did not indicate combat or jeopardy was also operational: however, that operation is navigation, rather than conflict. The subsequent scene contains a range of signifiers which must still be decoded in a fictive register: the identity of the ghost, the nature of the box in which it appeared, etc. The transition between those modes is a change in excitory states which manage the tempo and tone of the experience of the game.

The screen in mid-combat (Figure 19) reveals a rich range of icons and representations, which the player is compelled to decode appropriately in an operational register, while defering their decoding in a fictive one. One gauge (a) indicates the quantity of a given type of film (c) that is left in the camera (different film types have different efficacy - the player learns over the course of a game to conserve the most

effective film types for the most difficult battles). The ghost (e) appears after examing a window (d) - after the combat is completed, some information about the nature of the ghost will become available to the player. At this moment, however, such considerations are deferred. Other icons indicate with what augmentations the camera has been equipped (f). The element on the bottom of the frame (g) is decorative: it also connotes the late-Victorian/early-Edwardian spiritual-technology motif. The player is probably not attending to it at the moment of this frame, although it shares visual features with elements (b), (c), and (h).

After dispatching a ghost like the one in Figure 19, the player might either open their menu and restore their health, or return to a navigational mode, continuing the exploration of the architectural spaces in which the game is set. Expository texts, which explain the motivations and histories of the ghosts that the player encountered, are selected and read within the menu screens. The "menu" is usually considered the least narratological and most operational aspect of a typical console game, yet it may contain the most explicit fictive exposition. The mode does not constrain the possible registers of player interpretation.

Modes are software; registers are conceptual frames.

Modes are features of software: they are structural components of the game as a software-based artifact. The idea of a register—drawn from socio-linguistics[138] as well as

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[138] See Agha, *Language and Social Relations*.

educational psychology[139]—is here understood as a conceptual context, rather than a material one. It is a model of something towards which the signs that are being decoded is directed: more than a simple referent, a register is an epistemic frame for interpreting signs.

The so-called ludology-vs-narratology debates described in the first chapter resolved into a kind of truce—or even a consensus—between the two camps, but this consensus was an awkward one. In this consensus, theorists from one of these approaches would give a kind of lip-service to the value of the other, observing that while the game dynamics and genre logics of a game might be important, they were nonetheless choosing to focus on characters, representation, and identity, or on the other side, while representations and fictions were part of the game experience, a soi-disant ludologists would still deal with the game system strictly in terms of mechanics. The implicit model was one by which game representations were stretched over a skeleton of game mechanics. The problem with this model is that it accounts for neither how games are created (as systems of signs configured into modes in game development) nor how players receive them (as an object of a range of interpretations into inter-related and transitive models.)

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[139] Raymond Duval, "A Cognitive Analysis of Problems of Comprehension in a Learning of Mathematics," *Educational Studies in Mathematics* 61, no. 1 (2006): 103–131.

The fictive aspect of a game is not, in fact, a skin (though many games can be skinned—that is, given different visual aesthetics and immediate referents, which can be taken as a kind of co-authoring) but rather is a conceptual model—a semiotic register—in which many of the signs they are decoding are interpreted. These signs are also being interpreted into other registers, and, indeed, each register can produce signs interpreted into others.

The playing subject generates its registers, which are co-determined by the game software, but not necessarily completely determined. Some are fairly inevitable, though the may be given low priority by the player: the gameplay as the production of a series of events, as the creation of a narrative, is in some sense inescapable, though it might not be of any real concern or interest to a given player. The speed-run player described above could be said to be producing the effect of the narrative resolution epiphenomenally, as his working through the field and viewfinder modes at the fastest possible speeds suggests his suppression of any but the most operational registers of interpretation for each and every sign; they will be decoded not by the production of an imaginary about the game, but by the quick responses somaticized into muscle-memory by repetition. In a sense, however, his suppression of the referential aspects of the game elements is part of the aesthetic strategy for the game itself, and its production of a variety of uncanny experience particular to horror games.

Ludic activation of the uncanny

In Freud's 1919 essay on the uncanny[140] built up through an analysis of E.T.A. Hoffman's short story, *The Sand-Man,* he describes it is an effect of multiple decodings of the sign: a privileged one, (the *Heimlich*, the homey, familiar reading of an event) and a hidden one, discomforting, menacing, alien. The transitivity between a reliable decoding of a familiar sign and its destabilization (when a human figure in motion is revealed to be a doll, or a corpse; when a shadow takes a human form; when speech is distorted back into noise) is more than a simple matter of suspense—it is the latency of interpretation that triggers the experience. Ernst Jentsch, in the original essay to which Freud was responding, observed that "the effect of the uncanny can easily be achieved when one undertakes to reinterpret some kind of lifeless thing as part of an organic creature, especially in anthropomorphic terms, in a poetic or fantastic way."[141] For both Freud and Jentsch, it is the undecidability of interpretation, which produces the *Unheimlich*.

A ludic version of the uncanny exists: an interplay of registers and their mutual inhibitions and excitations over the course of gameplay (in coordination, of course, with more conventional tropes of uncanny depiction.). If we accept multivalence in the decoding of signs as characteristic of the uncanny, then the ludological uncanny can

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[140] Sigmund Freud, "The Uncanny," in *The Standard Edition, Volume 17*, vol. 17 (Hogarth, 1955).

[141] Ernst Jentsch and Roy Sellars, "On the Psychology of the Uncanny (1906)," *Angelaki: Journal of Theoretical Humanities* 2, no. 1 (1997): 13–14.

spread this multivalence across the range of semiotic registers of the game, according to the ordering of those registers by the modes of gameplay. Thus, in navigation, a player will see the filament burn blue: this presages a shift to another mode, that of the camera (a player-directed mode switch); the space which was traversed when the filament began to glow becomes a space for a new, undetermined reading in the fictive register, which will be deferred until the operation of manipulating the camera is completed. If a cutscene then begins, then the operational decoding is the one which is repressed, while the supernatural explanation for the event in the fictive register enters the foreground.

When the filament glows red, then the next, presaged mode is likely to be combat (flight is almost impossible in this game except as a temporary delaying tactic); conventional methods of foretelling may have already imbued the now-visible visage of the attacker with a reading in the fictive register, yet contemplation of this element must be deferred and repressed all the more until the threat is dispatched. Neither signs, nor modes, nor modalities, nor registers are resolvable completely into each other: since a single sign may be reproduced in multiple modes, and a sign can traverse multiple modalities (for example, the player bumping into an object might simultaneously be "performed" by the computer as a single routine which both produces a sound and generates a vibration in the player's game controller) registers are not determined by the modes used to constitute them, and the movement between them is delegated to the

player. As conceptual entities into which signs are encoded and within which they are decoded, they lay in wait when not engaged in the foreground[142].

Semi-autonomous elements

Not only are the semiotic elements of videogames available for interpretation in multiple registers, but as software-encoded objects, they can be produced and distributed semi-autonomously from the game as a whole. Lev Manovich describes this modularity as an element of new media:

> Media elements, be it images, sounds, shapes, or behaviors, are represented as collections of discrete samples (pixels, polygons, voxels, characters, scripts). These elements are assembled into larger-scale objects but they continue to maintain their separate identity. The objects themselves can be combined into even larger objects -- again, without losing their independence.[143]

Briefly discussing the modular augmentation can shed light on the dynamics of individual elements, because these elements are produced and distributed in a process separate from the production and distribution of the original game.

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[142] While this model is meant to be a general one, *Fatal Frame 2* extends it into the text of the game-fiction itself, in its play of twins and avatars. I address this in more depth in Laura Hoeger and William H. Huber, "Ghastly Multiplication: Fatal Frame II and the Videogame Uncanny," in *Situated Play* (presented at the DiGRA 2007 Conference, Tokyo: DiIGRA, 2007), 152–156, http://www.digra.org/dl/db/07313.12302.pdf.

[143] Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2002), 51.

There is a precedent for the modular extension of content in game design: the production of supplementary rules, errata, and expansions, and even the practice of variations in games like chess and poker[144]. In the mid-20th century, wargame magazines would frequently include rules for incorporation into existing military simulation games, to enhance the sense of realism (if not the playability of the game) with rules to account for weather, for weapon types, for command and control factors, for morale, etc. These practices would be carried on in pen-and-paper role-playing games such as Dungeons and Dragons, and a cottage industry prospered in the 1970s and 1980s, as publishers such as The Judges Guild produced rulebooks and settings to supplement the core rulebooks published by dominant game publishers such as TSR and the Game Design Workshop. That the game as a form so easily embraces supplementary economies supports the observation that "gaming" was always suitable for computational expression.

We can distinguish between different types of modular extension of a published or distributed game title. The *patch* is software meant to replace and correct errors in software, but can also be used to introduce new behaviors and objects in a game. The

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[144] Poker is still what chess once was: a family of variants without an absolute center. The modern form of chess became relatively stable after a series of publications by Spanish writers. The modern game of chess, originally a variant called the "mad queen," become the mainstream version c. 1475 (David Hooper and Ken Whyld, *The Oxford Companion to Chess* (Oxford: Oxford University Press, 1996), 328.) The cultural and literary history of medieval chess, and its relationship to rule variants, is covered in depth in Jenny Adams, *Power Play: The Literature And Politics of Chess in the Late Middle Ages* (Philadelphia: University of Pennsylvania Press, 2006).

option to distribute patches to games is a feature of the platform which the game targets: until the most recent generation of videogame consoles, systems such as the Atari VCS, the Nintendo Entertainment System and the Sony Playstation did not support the patching of games, which were distributed on read-only media and could not store changes in the state of the game's software. Home computers, however, ran games on media which could be changed, and games targeting them might be patched using magnetic tape, and later floppy drives. The online distribution of patches preceded widespread access to the internet, as BBS systems and commercial online services such as Prodigy and CompuServe also distributed updates for games like the 1993 first-person shooter *Doom,* published by iD Games. Publishers would also make patches available for consumers to download using modems, dialing a server directly and transferring files using protocols such as XMODEM, YMODEM and ZMODEM. As continuous internet connections became commonplace, the patching of games became automatic. Multiplayer games built on client-server architectures would patch elements of their games in both the client and the server, and updates would be distributed automatically as players logged in.[145] A

[145] The interplayer dependencies of many massively-multiplayer games makes changes in the rules system sometimes controversial: the next chapter will address questions of multiplayer reception of a game. The effects of changes in rules on the social interactions of communities of players is described in Vivian Hsueh-hua Chen, Henry Been-Lirn Duh, and Hong Renyi, "The Changing Dynamic of Social Interaction in World of Warcraft: The Impacts of Game Feature Change," in *Proceedings of the 2008 International Conference on Advances in Computer Entertainment Technology*, ACE '08 (New York: ACM, 2008), 356–359, doi:10.1145/1501750.1501834.

patch was more likely to change the behavior of existing game elements than to introduce new ones, but this was not always the case.

Another category of extensions of already-released games are *levels* (including *maps*) which usually leave the mechanics of the game intact, but provide new settings and environments for play. These may be made freely available by the publisher, sold as a product to extend the value of the original product, or created by third-parties (whether commercial or hobbyist.) Recent (as of 2012) trends in game publishing business models for certain genres make the core game engine freely available, and charge users for levels and maps. iD games, producers of *Quake* and *Doom*, have frequently released the source code for their older game engines into the public domain, while retaining intellectual property rights to the levels, maps and artwork. Multiplayer racing games *Simraceway* and *Trackmania* allow users to download and play the basic game without charge, and then sell racing courses and cars.

Downloadable content (DLC) is the higher-level category for software meant to extend an extant game which is distributed online. *Team Fortress 2,* a multiplayer team-combat first-person shooter game developed by Valve and released in 2007, is free-to-play, but allows the player to participate in an economy of in-game items[146] which

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[146] An exhaustive chronological list of in-game items is available at TeamFortress Wiki Contributors, "Item Timeline," *Official TF2 Wiki | Official Team Fortress Wiki*, June 17, 2012, http://wiki.teamfortress.com/wiki/Item_timeline. A list of those items created by the user community is at TeamFortress Wiki Contributors, "List of Community-contributed Items," *Official TF2 Wiki | Official*

change both the appearance of the game and its behaviors. Players could obtain some

items by playing in other games, such as "Iron Curtain," (Figure 24) a weapon that could

be obtained by winning poker games in TellTale Games' 2010 *Poker Night at the*

Inventory (a single-player poker game with comic characters.) As the owner and

producer of the online game distribution system *Steam,* Valve profits when its 3rd party

partners sell games to consumers: thus the online game-item economy strengthens the

positions of its ecosystem.

Figure 24.: "The Iron Curtain," in-game item for *Team Fortress 2* obtained ("unlocked") by playing
Poker Night at the Inventory

Team Fortress Wiki, July 12, 2012, http://wiki.teamfortress.com/wiki/List_of_community-

contributed_items.

Developers are not the only producers of these semi-autonomous game elements: user-generated content can extend and transform existing games, and even turn them into entirely new ones[147]. *Counter Strike* was created by Minh Le and Jess Cliff in 1999 as a modification of the Valve first-person shooter game *Half-Life,* and was released as an independent title (using the game engine from *Half-Life*) by Valve the next year. This kind of total modification of a game inverts the authorial relationship: the original game simply becomes a kind of kernel, a set of elements (though functionally vital ones, providing behaviors and interactive frameworks) in a new work. Le and Cliff were subsequently hired by Valve.

More to the point regarding the autonomy of small, authored elements, Valve has produced an application called "Steam Workshop," which allows users to generate assets for inclusion in games. Most user-designed elements are decorative in nature, and do not alter the behaviors of the game systems themselves. Yet they are part of a lively economy of gift-items which plugs into the Steam network. This kind of dissemination of

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[147] The culture of mods and modding has, oddly enough, been given considerable more attention in game studies than authorship itself has. Henry Jenkins' extensive coverage of participatory culture—*Fans, Bloggers, and Gamers: Media Consumers in a Digital Age* (NYU Press, 2006); *Convergence Culture: Where Old and New Media Collide* (NYU Press, 2006). —discuss communities of fan-programmers from an ethnographic perspective. A more exhaustive typology is laid out in Hector Postigo, "Of Mods and Modders Chasing Down the Value of Fan-Based Digital Game Modifications," *Games and Culture* 2, no. 4 (October 1, 2007): 300–313, doi:10.1177/1555412007307955.

contributory authorship allows talented player-producers to showcase their work, and in some cases, also find employment within Valve.

From a theory of signs to models of authorship

One can think of software-based works not as fields of light captured by a machine-eye (as in cinema) but as aggregates of objects. These objects can be produced in modular processes which are somewhat independent of each other: The modularity of production introduces variability into the authorship of videogames, both materially (in that the various tracks of design, development and production can be distributed among many different creators and teams) and conceptually, as certain registers—and thus the signifiers that work in them—will be given importance of place in the presentation of the work to its publics.

The model of videogame semiotic operations in these first two chapters treats the videogame as being produced and located within modes, but apprehended by players with registers. The relationship between these two organizing principles for the signifying elements in a digital game accounts for the range of possibilities for locating the authorial position in the game. No theory of authorship which does not account for the striking variety of forms produced under the umbrella of "videogame" creation will be very useful unless we identify the mechanisms, contextually sensitive to genre, style and format, through which players understand and interpret what designers have inscribed into the game. Absent this specific account of the production of meaning in games, models of authorship are likely to be associated only with those elements (story, writing, visual design) which are already well-understood as authorial, as critics and theorists

privilege those registers which most resemble the forms for which such a model is already well-articulated.

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CHAPTER 3. PLAYING WITH SPACE, PLAYING WITH PEOPLE

The first chapter of this dissertation built a theory of the videogame as a signifying system out of C. S. Peirce's theory of semiotics, and then works out theories of style and genre; the second chapter applied that model more closely to a single game, *Fatal Frame II: Crimson Butterfly* and extended it with a close look at the modes of software which make up the game as a traversal object experience by a player over time. This chapter evaluates spatiality as an authored effect in games. Two postures to the authoring of games are described: one which is centered on the creation of an experienced space, the other which extends this space-centered approach by creating or intervening upon relations between players.

I set out two precedents to the emergence of game design as a space-creating practice: first, that of the general spatial aspects of non-digital play, mentioned in chapter one and extended here. This is adjoined to a history of the computational representation of space—a series of practices which are generally coeval with the history of computing itself. I then focus on the production histories of games within the *Final Fantasy* series of games, produced by Square, Inc. (renamed Square-Enix after a 2003 merger) from 1983 to 2010 with allusion to the framework laid out in the previous chapters. The series is a franchise which has survived changes in the scale of production and multiple platforms, and provides a lens for considering how changes in the scale of production and digital technologies have changed the design of the experience of virtual space. A study of the first multiplayer online game in the franchise, *Final Fantasy XI,* follows it, and provides a basis for considering the possibility of game design as relational authorship.

8-bit geo-space

Since the year 2000, different divisions of the search-engine and internet-ad firm Google release demos and promotional videos about hoax products for April Fool's day. These pranks play just outside the realm of plausibility: one of the pranks produced in 2012 was an "updated" version of their Google Maps product (Figure 25), an 8-bit port designed to be run on the Nintendo *Famicom* (call the Nintendo Entertainment System, or NES, in North America.) [148] "Google Maps 8-Bit for NES" reproduced much of the functionality of their widely-used map and location services web application, but with the simple, iconic graphics and 53-color palettes used in game consoles in the mid-1980s. Like many of Google's April Fool hoaxes, the humor plays off of the discrepancy between the seemingly "state-of-the-art" technology in Google's location-based services (such as Google maps) and the dated aesthetics and graphical conventions of 8-bit rendering, a discrepancy which is recast by the rhetoric of promotional marketing as a technological advance. The joke relies on nostalgic recollection for these older interface styles, particularly among users who played with Nintendo and other 8-bit systems in their childhood.

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[148] Alex Chitu, "Google April Fools' Day 2012," *The Google Operating System*, March 31, 2012, http://googlesystem.blogspot.com/2012/03/google-april-fools-day-2012.html.
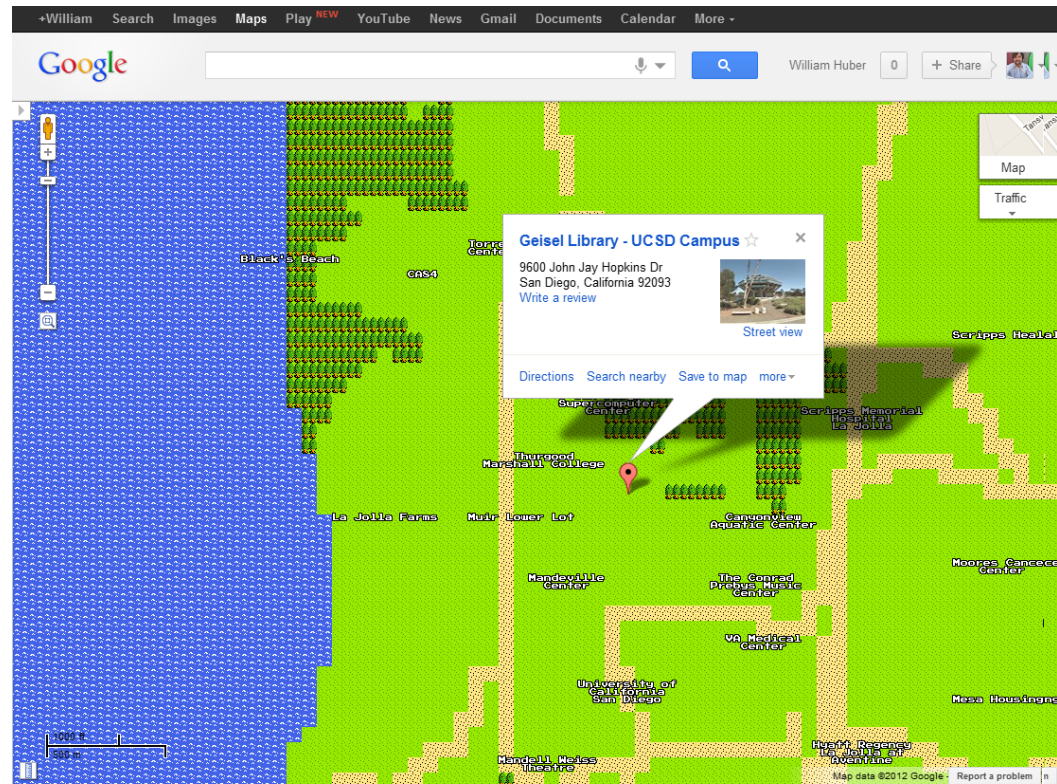
Figure 25.: Screenshot, Google Maps 8-bit for NES screenshot.

Google's Japan office produced the affectionate tribute to the veteran game-

platform, but the piece wasn't created by Google alone. Japanese game publisher and

developer Square-Enix, which (under the name Squaresoft, Inc.) started as a developer

targeting the Famicom, collaborated with the Google Japan team by hiding monsters and

fortresses drawn from their games throughout the piece: Google's offices in Tokyo and

Mountain View, California were shown as besieged by dragons and monsters, and at the

intersection of the equator and the prime meridian (0° Latitude, 0° Longitude)—a spot off

the west coast of Africa—viewers using the 8-bit "quest" application could find a castle

containing a dragon. (Figure 26) Google Maps indicates the source of the geographic

information provided for each search, and in this case, the caption of the bottom-right of the screen read "Map data ©2012 SQUARE ENIX").
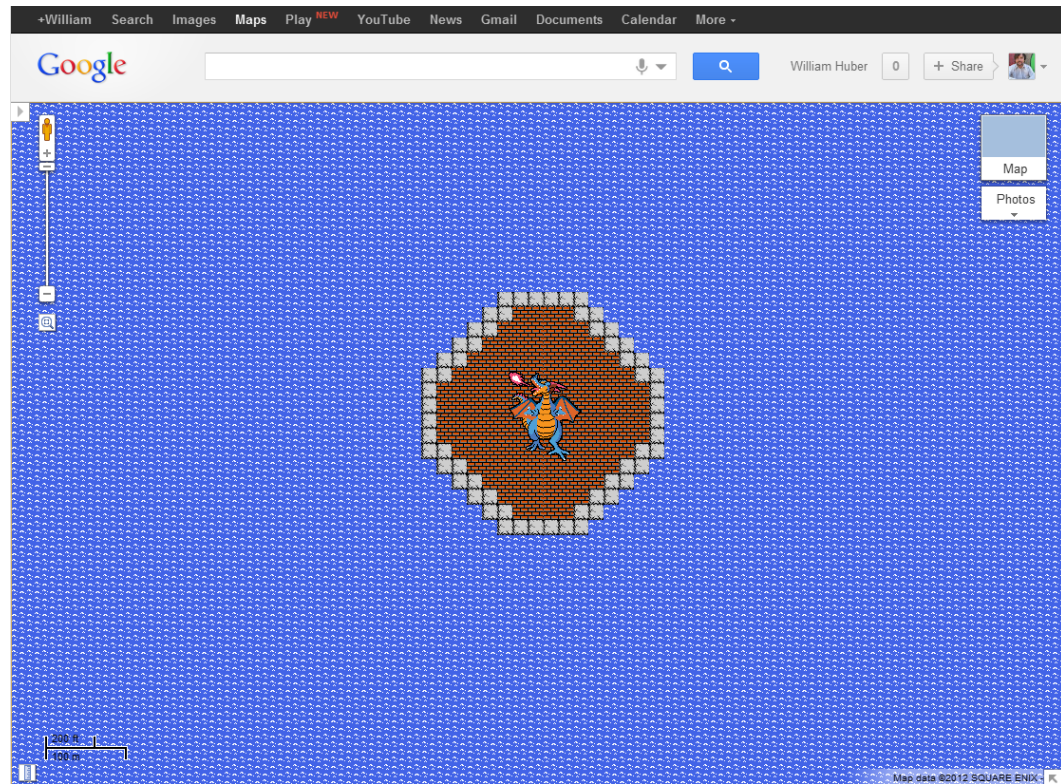
Figure 26.: 0.0,0.0 – The prime meridian meets the equator in Google "Quest" for NES

While Google "Quest" is playful ephemera, it shows that the style of spatial representation of a 25-year old game platform was easily recognized by broad sectors of the audience, evoking nostalgic recognition among game players. There were other possible points of reference for Google to select to evoke the style and mood of the 1980s (not the least of which would have been the actual technologies for navigation at the time: the folding map, the road atlas, etc.), but visual strategies used for producing fantastic play-spaces was effective for the many users of Google Maps who had grown up

with Nintendo platforms. There is a space-producing element to the creation of digital games, one that has begun to influence other forms of space-production.

As a complement to the previous chapter, rather than focusing on one game as a signifying systems which organize elements within modes, I will look more broadly over the development of a single franchise, the Final Fantasy games, produced from 1987 to the present day. There are two large sections in the chapter: the first[149] uses the history of Square-Enix's *Final Fantasy* franchise as a lens for reflecting on how games create spatial experiences, using a framework proposed by David Harvey for distinguishing between different human practices which produce space. The subsequent section is a study and reflection of the massively-multiplayer game *Final Fantasy XI,* which relies on many of the same tropes as the rest of the franchise, but produces a starkly different set of effects as a multiplayer game.

Game-space and game-place.

Videogame spaces have the characteristics of both play-spaces and computer-mediated spaces. These two origins produce a range of effects, which require a robust model of spatiality.

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[149] A revised version of this section appeared as William H. Huber, "Epic Spatialities: The Production of Space in Final Fantasy Games," in *Third Person: Authoring and Exploring Vast Narratives* (Cambridge, MA: MIT Press, 2009), 373–384.

Cultural historian Johan Huizinga described play as transpiring in dedicated spaces: "Play is a voluntary activity that takes place outside ordinary life. It proceeds, within its own proper boundaries of time and space, according to fixed rules in an orderly manner.[150]" Huizinga is describing a kind of legislation of daily life by rule-based declaratory practices (and it is in fact let a little unclear whether he claimed that the designation of a space for play was pre-condition for the activity of play, or—more likely, and more coherent with observed practice—play itself designates a space a provisionally re-interpreted.) The setting-aside as a space for play is clearly what is at work in the creation of a ball-court or pitch, for games such as the Mesoamerican ball game:

> As played by the Aztecs in sixteenth-century Mexico, the ballgame was enacted and understood on several levels: as a sandlot sport, indulged in by most adolescent boys; as a public game, eagerly gambled on by avid spectators; as a sort of gladiatorial ritual, in which captives might be killed; as a reenactment of cosmic conflict between Venus and the sun; and as a game that the gods themselves might play.
>
> The game itself may have taken many forms. Among most Mesoamerican peoples, formal games were played in a special kind of building, the ballcourt, generally formed by two parallel structures, often with supplementary walls or structures that demarcated an end zone. The playing surfaces encompassed a ground surface in the shape of an open or closed letter / as well as the vertical or sloping side walls. Points were scored either by driving the ball into an end zone or other designated area

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[150] Huizinga, *Homo Ludens: A Study of the Play-Element in Culture [1933]*, 11.

or by hurtling the ball through a high, relatively small ring placed in a side wall.[151]

The creation of specialized architectures of play in public space may be co-extant, and partially produce, the more institutionalized versions of play: professional sports leagues, for example, both produce the conditions by which stadiums are designed, funded, and produced, and at the same time rely on them. Yet these more institutional forms of play develop, according to Caillois, from those which are more spontaneous and tumultuous:[152] the movement from *paidea,* the unstructured and improvised play of children, to *ludus,* the stabilization of rules and institutions of play, is co-extant with the process of cultural development itself. If this is correct, it suggests that play and its provisional designations made upon spaces, precedes and produces institutional and persistent designations of spaces as meant-for-play and in-play. In fact, we can observe children transforming and designating spaces interactively: a floor will be declared "hot lava" as children leap across furniture; a tree will be chosen as "home base" and a natural or built feature, such as a hedge or sidewalk, will be declared a boundary in a game of tag.

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[151] Mary Ellen Miller and Stephen D. Houston, "The Classic Maya Ballgame and Its Architectural Setting: a Study of Relations Between Text and Image," *RES: Anthropology and Aesthetics* no. 14 (October 1, 1987): 47.

[152] Roger Caillois, "The Definition of Play and the Classification of Games [1958]," in *The Game Design Reader : a Rules of Play Anthology*, ed. Katie Salen and Eric Zimmerman (Cambridge, MA: MIT Press, 2005), 141–142.

If play produces the spaces in which it transpires, games also create playable and visible representations of space. Specific references to real-world spaces have been produced by non-digital play in the past: a chess game represents a space of war, in a generic sense. The board game Monopoly specifically refers to early 20th century Atlantic City, New Jersey, and hundreds of variants of the game exist which place the game elsewhere, from Berkeley, California to South Africa. War-games designed as military training tools and simulations in the late 18th century and onward would both reproduce tactically relevant terrain in a generic sense—a hilltop, a stand of trees, a river—as well as representing specific sites of conflict, historical or speculative:

> The first game to break away from chess, however, was invented by Helwig, Master of Pages to the Duke of Brunswick in 1780. This game included 1666 squares, each coded for a different rate of movement depending on the terrain the square represented. Playing pieces now represented groups of men instead of a single soldier, and each unit was rated for different movement (infantry moved 8 spaces, heavy cavalry 12, for example). There were also special rules for such things as pontooneers and the like. In 1795, Georg Vinturinus, a military writer from Schleswig, produced a more complex version of Helwig's game. He modified it in 1798 by using a mapboard that depicted actual terrain on the border between France and Belgium[153].

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[153] Wilbur E. Gray, "Playing War: The Applicability of Commercial Conflict Simulations to Military Intelligence Training and Education" (Joint Military Intelligence College, 1995), 10. This was during the occupation of the region by French forces, and the beginning of the Peasant's War, a local uprising after sovereignty over the region had been ceded by Austria to Napoleon in the Treaty of Campo Formio in 1797.

Game-play as a material activity has two initial realms of operation: the first is the space that contains the play itself: a café in which a game of cards is played, the field in which children will throw a Frisbee®, the living room in which a group of friends play Little Big Planet. The play will also create and delimit spaces internal to it: the chessboard, the bases of a baseball diamond, the shores of France in a historical war-game about the D-Day invasion, the discard pile in a game of cards. While the processes behind the first kind of play-space designation are straightforward, the two do meet each other in the creation of the boundary of play: that designation is a game-rule which establishes the space in which game-rules apply. The mechanisms for producing these designations vary, along the *paidia-ludus* scale, from immanent negotiation to institutional practices (the publication of rulebooks, the decisions of committees) and material production practices (the design and printing of the world-map on a game of *Risk*, the physical manufacture of a chessboard.

While there is some resemblance between those space-making practices in non-digital games and their counterparts in digital ones, the distance between the two domains of game-play is still considerable: the practices that produce playable spaces contribute to the catalog of spatializing effects, but their status as interactive, software-based objects, which render graphics onto screens and accept user input, is more immediate.

Designed spatiality

Lev Manovich characterizes digital media as creating a "general trend of computer culture to the spatialization of every cultural experience.[154]" While Manovich was specifically referring to a visual spatialization—such as Art+Com's spatialized representations of historical film footage set in a 3D rendering of Berlin—this spatialization is older than the evolution of computer graphics. Electronic computation has long been a spatial practice: the ENIAC computer was commissioned by the US Army in 1943 to determine the ballistic trajectory of artillery, producing a modeled space (the path of ordnance) in anticipation of a real one.[155] Science-fiction author William Gibson coined the term *cyberspace* to refer not just to a fantasy of an inhabitable and navigable virtual space, but also to networked databases of socially and politically vital information:

> Cyberspace is a metaphor that allows us to grasp this place where since about the time of the Second World War we've increasingly done so many of the things that we think of as civilization. Cyberspace is where we do our banking, it's actually where the bank keeps your money these days because it's all direct electronic transfer. It's where the stock market actually takes place, it doesn't occur so much any more on the floor of the exchange but in the electronic communication between the world's stock-exchanges. So I think that since so much of what we do is happening digitally and electronically, it's useful to have an expression that allows

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[154] Manovich, *The Language of New Media*, 87.

[155] William T. Moye, *ENIAC: The Army-Sponsored Revolution* (Adelphi, MD: US Army Research Laboratory, January 1996), http://ftp.arl.army.mil/~mike/comphist/96summary/.

that all to be part of the territory. I think it makes it easier for us to visualize what we're doing with this stuff.[156]

Many factors can contribute to the effect of place: scalable inter-subjectivity, 2nd-person address to the user, human-scaled temporality, the primacy of visual description (whether rendered or narrated), navigability and persistence. Not all of these need be activated to produce a sense of place, but we can compare a range of computer-mediated activities and distinguish between those which do so, and those which do not. Those qualities which produce the sense of space (from which place-making can arise) become apparent:

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[156] William Gibson, I don't even have a modem., interview by Dan Josefsson, Television interview for "Rapport," November 23, 1994.

Table 2.: Spatial experience in digital media

Less spatializing	More spatializing
❖ Internet messaging (Google Talk)	❖ Chat-rooms (AOL, IRC)
❖ Email	❖ Online forums
❖ Person-to-person videoconferencing (Skype)	❖ Group videoconferencing (e.g., Google+ Hangouts)
❖ Computer-assisted drawing software (AutoCAD, Inventor)	❖ Architectural fly-throughs
❖ Arcade games (Tetris	❖ MUDs /MOOs
❖ Music/rhythm games (Guitar Hero, Rock Band, DJ Hero)	❖ Text-adventures (e.g., Colossal Caves/Adventure, Zork)
❖ Single-player 4x games (Civilization)	❖ Multiplayer and single-player first-person shooters (Team Fortress, Halo, Quake)
❖ Single-player real-time strategy games (Age of Empires)	❖ 3rd-person action games (e.g., Grand Theft Auto)
	❖ Massively-multiplayer puzzle-games (Yo-Ho-Ho Puzzle Pirates, Club Penguin)

By "generating a sense of place," I mean that the interaction with the application activates enough of the elements of spatial cognition in such a way as to motivate the user

to locate themselves within the conceptual space created by the application, as a subject. This is not to say that no "space" could be identified to be at work in some of the less spatializing practices: software like AutoCAD or the Unity game engine integrated development environment (IDE) create 3D models that can be rotated or navigated with a cursor, and in the latter case, at any moment, the user could be said to be "at" a set of coordinates. But it is an absence of constraints on that location and the lack of address to the user at that place that greatly diminish the sense of being "at" that point in space.

A comparison between reading messages from a mailing list from within one's email client (whether locally hosted, like Mail.app and Outlook, or web-based, like Gmail) and reading and writing messages on a web-hosted forum reveal some of the traits which contribute to a sense of place. In both cases, the user is reading and responding to messages in threads. In the case of the former, however there is no binding between the content of the messages and the specific software instance used to access them: an email message may have been written in Microsoft Outlook, which stores a database of mail messages on the user's hard disk, but read in a web-based mail client such as Gmail or Yahoo mail, or read in a mail application on a smartphone. A web-based forum, in contrast, has a single "address." The messages are stored in a server, and while it is possible to subscribe to the discussion and read them on a local client, there is still a canonical visual style and formal presentation, which relies on the software used to manage the forum. The discourse is persistent, discussions growing even when the use is not attending to them. A forum on a given topic gives this address an identity. Users on forums frequently use the vocabulary of place deixis, referring to the forum as a "here"

(and other forums as a "there") to describe the activity of other participants in the forum, terms which are generally not used to describe one's email inbox. Indeed, the best marker of a "spatializing" computer-based practice may be the casual use of space/place deixical address, and other metaphors of place, by its users.

Many computer-mediated practices that don't involve the depiction of a space visually still produce sense of space and place. Text-based online-chat "rooms," from AOL chat to IRC, reveal a sense of co-presence in its users, "changing the way satisfactory relationships are conceived even among people who have never met physically[157]" according to a study of the psychology of online behavior. What produces a sense of space in the digital is not only a portrayal of space, but the affordance of a computer-based system to enable users to engage in an activity whose nearest analog was already spatialized. The "chat room" produces the effect of a space not simply because users can exchange messages with each other—a mail correspondence affords this, as does telegraph—but because it reproduces some key features of a public meeting space, such as a pub or salon: discourse occurs instantly, new discussants can enter and older ones leave, and the conversation seems to persist even when a user leaves it. The most available analog for this form of computer-mediated group communication is a place-specific practice, and thus it invokes the senses of space and place in its participants. In

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[157] R. Peris et al., "Online Chat Rooms: Virtual Spaces of Interaction for Socially Oriented People," *CyberPsychology & Behavior* 5, no. 1 (February 2002): 43, doi:10.1089/109493102753685872.

the terms Benjamin Bloom's domains of educational activity[158], the sense of place can be produced by cognitive and affective, as well as psychomotor, domains.

The effect of place can arise when a representation of space is experience in a human scale of time and motion. This distinguishes the activity in a first-person shooter such as Halo, or an action/adventure game such as Grand Theft Auto, from genres in which processes occur in much larger time-frames. Real-time strategy (RTS) games (the name notwithstanding) compress scales of time and space: the player hovers above a field of dozens of bodies and equipment, selecting and herding them to their positions. A minute of play may correspond to hours or weeks. Most RTS games collapse processes which, in real terms, take months and years (the recruitment of forces, the building of infrastructure, the design of new technologies) into the few seconds of play it takes to select a structure from a menu and place it on a map.[159]

Computer-mediated practices can also provoke a sense of place in the user, even in the absence of a visual representation of space, when there are a series of procedures which produce different configurations of objects in space-like containers. This is evident in many times of interactive fiction and in text-based "virtual worlds" such as MUDs (multi-user dungeons) and MOOs (MUDs, objected oriented.) In these sorts of works, a

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[158] Benjamin S Bloom, *Taxonomy of Educational Objectives; the Classification of Educational Goals, by a Committee of College and University Examiners.* (New York: D. McKay, 1956).

[159] The point is not to illustrate that real-time strategy games are absurd if taken as literal simulations—they do not pretend to be, using warfare as a metaphor in the way that chess does, in order to inform an engaging activity—but to explain why games within the genre does not generate senses of place.

user would frequently be given a description of a setting, and a prompt for textual input.

The description of the setting will change when the player inputs a string of text which

indicates motion in one direction or another. The following is a transcript of the initial

turns of a play of *Colossal Caves Adventure*[160], the original text-based adventure game

from 1977. —the ">" character indicates user input:

AT END OF ROAD

You are standing at the end of a road before a small brick building.
Around you is a forest. A small stream flows out of the building and down
a gully.

> enter building

INSIDE BUILDING

You are inside a building, a well house for a large spring.

There are some keys on the ground here.

There is tasty food here.

There is a shiny brass lamp nearby.

There is an empty bottle here.

> get all

set of keys: Taken.

tasty food: Taken.

brass lantern: Taken.

small bottle: Taken.

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[160] Will Crowther and Don Woods, *Colossal Cave Adventure (ADVENT)*, PDP-10 (Palo Alto, CA:
CRL, 1977).

stream: The bottle is now full of water.

well house: That's hardly portable.

spring: That's hardly portable.

pair of 1 foot diameter sewer pipes: That's hardly portable.

> enter sewer

The stream flows out through a pair of 1 foot diameter sewer pipes. It would be advisable to use the exit.

exit

AT END OF ROAD

> look

AT END OF ROAD

You are standing at the end of a road before a small brick building. Around you is a forest. A small stream flows out of the building and down a gully.

IN A VALLEY

You are in a valley in the forest beside a stream tumbling along a rocky bed.

 > down

AT SLIT IN STREAMBED

At your feet all the water of the stream splashes into a 2-inch slit in the rock. Downstream the streambed is bare rock.

The procedures by which the game is experienced produce the effect of place by presenting each space as a single screen of content, revealed sequentially in response to text strings which denote motion in space. Text input becomes movement; description becomes place.

Game-spaces

Videogames have been understood and analyzed as a spatial practice from the earliest years of game studies[161], distinguished from other screen-based representational practices and emphasizing that its spaces are not simply represented, but also experienced, understood and navigated. Henry Jenkins placed videogames against a history of boys' play-spaces in the 19th century United States.[162] His use of the idea of space was not simply an allusion to obvious reproduction of space that occurs in many games: his was a historical argument, claiming that videogames served a social and development function for boys in the United States (and elsewhere) by compensating for the loss of open, undeveloped outdoor spaces, in which they could play without adult supervision, experiment with peer-oriented social organization, and learn about their physical environments. Both the loss of public space and anxieties about child safety mean that suburban and urban children (specifically, boys) must settle for virtual open spaces, both as places to explore and as contexts for learning how to socialize with each other.

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[161] Spatial experience in interactive fiction games is discussed in Buckles, "Interactive Fiction: The Computer Storygame Adventure...," 18–20. Buckles' dissertation is the earliest known scholarly work on videogames.

[162] Henry Jenkins, "Complete Freedom of Movement: Video Games as Gendered Play Spaces," in *From Barbie to Mortal Kombat: Gender and Computer Games*, ed. Justine Cassell and Henry Jenkins (Cambridge, MA: MIT Press, 1998), 262–297.

Jenkins' sense of palliative nature of virtual spaces for children isn't unique to him. Many game designers, particularly those in Japan, have said that they were motivated to create their games by a sense that the varieties of childhood experiences they had enjoyed were unavailable to today's Japanese children. Satoshi Tajiri, the developer of Pokemon, and Shigeru Miyamoto, the creator of Donkey Kong and the Zelda series, have made claims like this:

> The place where I grew up [in Machida, a western Tokyo suburb] was still rural back then. There were rice paddies, rivers, forests. It was full of nature. Then development started taking place, and as it grew, all the insects were driven away. I was really interested in collecting insects. [Later, Tajiri's father tells me the other kids used to call Satoshi "Dr. Bug" as a child.] Every year they would cut down trees and the population of insects would decrease. The change was so dramatic. A fishing pond would become an arcade center.[163]

In the production of contemporary computer games, the authoring of space frequently precedes the creation of other components of the development process. The first authoring tool developed by Japanese game developer Square, Inc., was the creation of a map editor to support the creation of world-levels for the game Final Fantasy IV.[164] Both spatial and temporal phenomena are co-produced by the design of procedurality, but the models and context of the system are usually created first. This evokes a work by Cory Arcangel 2002 art piece *Mario Clouds*, in which he edits out the procedural elements of a level of Nintendo's *Super Mario Brothers*. The resulting work is a sequence

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[163] Tim Larimer, "The Ultimate Game Freak (Interview with Satoshi Tajiri)," *TIME Asia*, November 22, 1999.

[164] Described in an interview with HN, 2010.

of clouds moving across a screen, without the figure of Mario, without the platforms and

opponents, indeed without any interaction from the user whatsover. The game itself gives

a player two minutes to traverse across the space of the game before the game expires.

What is missing from the game is only slightly more uncanny than what is present: a

spatio-temporal dynamic still recognizably that of *Super Mario Brothers.*

Henry Jenkins claims that the design of a playable space is the central

narratological concern of games, and sees this as a continuation of spatial design in non-

digital games:

> Game designers don't simply tell stories; they design worlds and sculpt
> spaces. It is no accident, for example, that game design documents have
> historically been more interested in issues of level design than plotting or
> character motivation. A prehistory of video and computer games might
> take us through the evolution of paper mazes or board games, both
> preoccupied with the design of spaces, even where they also provided
> some narrative context.[165].

His article is a general defense of attention to narrative aspects within

videogames, rather than a theory of spatiality itself. He identifies three ways that game

spaces produce narrative: *evocative spaces* use references to known stories in other forms

in a way analogous to the design of theme-park rides (Jenkins uses Disney's Haunted

Mansion ride as an example); *enacted narratives*, in which a series of local events

performed by the character, each a kind of micronarrative (his term) produce the

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[165] Henry Jenkins, "Game Design as Narrative Architecture," in *First Person: New Media as

Story, Performance, and Game*, ed. Noah Wardrip-Fruin and Pat Harrigan (Cambridge, MA: MIT Press,

2003), 1–15, http://web.mit.edu/cms/People/henry3/games&narrative.html.

complete narrative of the game, and *emergent narratives*, stories generated from the condition of the game in its play, though never authored as such. The kind of stories which emerge from games like *The Sims*, or the after-action reports which remediates the play of military games into pseudo-documentary narratives of a campaign, are emergent.[166]

As useful as Jenkin's model is, it doesn't account for the player's actual experience of space in the games: how a player navigates spaces, reflects on them, interprets them, or relates the experience of space in the game to their experience of space outside of it. His model does correspond to the immediate location of place-making elements in games, but not to the conceptual ones, either in production or in reception. I propose starting with a theory of space and spatial experience itself, and then considering how those experiences are evoked in software-based games by authors and designers.

Harvey's model for the production of space

An undifferentiated hermeneutics of "videogame space" cannot manage an analysis of these spatialities with any real precision. It is within genres, franchises and specific titles that we can unwind strategies and methods by which space is produced,

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[166] After-action reports (AAR) are popular re-tellings of games, often posted onto forums associated with a given title. The turn-based strategy game *Europa Universalis III* has supported a robust community of AAR writers, cataloged in "Duke of Wellington" (forum pseudonym), "EUIII LibrAARy," *Paradox Interactive Forums*, November 8, 2008, http://forum.paradoxplaza.com/forum/showthread.php?282740-EUIII-LibrAARy.

represented and engaged. The *Final Fantasy* franchise of role-playing games can provide a container for conceiving the practices of spatial authorship and play of videogames, over the 30+ years that the franchise has existed. The franchise consists of dozens of games on a range of platforms, as well as ancillary and derivative products such as manga, anime and merchandise. The producers of the game have aspired to create ludic *Gesamtkunstwerk* in the core titles of the game: as such, it offers a diversity of spatializing practices.

The theory of space proposed by critical geographer David Harvey in his article "Space as a Keyword"[167] is well-suited to the task of creating a framework for the analysis of spatializing effects in videogame design. Harvey extended a tripartite model of the types of spatiality he developed in the early 1970s by intersecting it with another tripartite model proposed by Henri Lefebvre[168], to produce a matrix of concepts for understanding space and spatial-temporality. Harvey intended his model as a general one for understanding the role of political and economic forces in society in producing human

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[167] David Harvey, "Space as a Key Word" (presented at the Marx and Philosophy Conference, London: Institute of Education, 2004). Harvey writes: "If I focus on Lefebvre here it is not because, as so many now suppose in the sphere of cultural studies, that Lefebvre provides the originary moment from which all thinking about the production of space derives (such a thesis is manifestly absurd), but because I find it most convenient to work with Lefebvre's distinctions in my own geographical practices." I would make the same observation about Harvey.

[168] Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Oxford: Blackwell, 1991).

discourse and activity about space, particularly in urban contexts. My appropriation of his framework is more modest—perhaps a little perverse—yet it may also be relevant to his work insofar as the digital technologies that work with space supplements or even supplants earlier strategies for conceiving of and working in space.[169]

The first element of Harvey's initial model is *absolute space*, typically characterized as Newtonian or Cartesian space. This is space as a fixed system of coordinates, which exists without reference to the objects that are then conceived as populating or traversing it: space is a container or field, understood by an outside viewer not itself located within that space. It contrasts with *relative* space, most powerfully expressed as Einsteinian space "Space is relative in the double sense: that there are multiple geometries from which to choose and that the spatial frame depends crucially upon what it is that is being relativized and by whom." [170] It is in temporal terms that the most basic distinction between absolute and relative space is drawn: Harvey writes, "(t)he idea of simultaneity in the physical universe, (Einstein) taught us, has to be abandoned."[171] Only in absolute space can one talk of space without time. Relative space relies on spatial framings which can be brought into some tension with other spatial

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[169] Ffor example, navigation software which uses global-position satellite (GPS) data replaces the use of paper maps: this turns what used a process of telescoping perception, from the impression of a plan to the identification of line of navigation, into a series of commands generated by a computer voice-synthesis module.

[170] Harvey, "Space as a Key Word," 3.

[171] Ibid.

framings: the internal space of a train coach, for example, which is both a static frame of spatial reference for the inhabitants of the coach even as it is traversing another space on land.

The third of Harvey's concepts is that of *relational* space, which he associates with Leibniz's critique of Newton:

> (T)he relational view of space holds there is no such thing as space or time outside of the processes that define them. (If God makes the world then He has also chosen, out of many possibilities, to make space and time of a particular sort.) Processes do not occur in space but define their own spatial frame. The concept of space is embedded in or internal to process. This very formulation implies that, as in the case of relative space, it is impossible to disentangle space from time. We must therefore focus on the relationality of space- time rather than of space in isolation.[172]

While relative space can be expressed as a contra-position of absolute spaces in time, relational space is created by time-bound processes themselves. Harvey, as a geographer of urban spaces and differential global development, understands "process" mostly in historical, economic, and socio-political terms, but we can exploit a different idea of "process" in this regard to foreground authorial and programmatic aspects of the production of software-based space: the procedure is inscribed in a program. Among the operations which Harvey positions as embedding relational spaces within them are those of collective memory: the idea of Hiroshima, the "Orient" and the "West," of Ground Zero, Nanking, and Abu Ghraib.

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[172] Ibid., 5.

Harvey is interested not in determining whether space is "really" absolute, relative, or relational, but seeing how all these conceptualizations are implicit in human social practice. In his recent work, he extends his three conceptions of space by transecting it with another triplet, posited by Henri Lefebvre, which foregrounds experiential (rather than conceptual) categories[173]. Lefebvre describes space as a phenomenon produced in three different modes of human activity. *Material* (or experienced) space, Harvey describes as "the world of tactile and sensual interaction with matter," as produced and traversed by the immediate actions of bodies and objects. This mode of spatial phenomena includes a range of practices, from our immediate, bodily interactions with stairs, bridges, walking surfaces, and so forth, to environmental and microscopic experiences of space. *Representations of space* are spaces produced conceptually by human representational practices, including cartography (especially administrative and cadastral,) narratives of landscape, simulated space, scientific models of space, spatial metaphors, painterly spaces, and (according to Harvey) cyberspace.

Spaces of representation are "the lived space of sensations, the imagination, emotions, and meanings incorporated into our everyday lives and practices."[174]These include the various affective, interior and situational conditions under which humans represent space, including memory, imagination, anxiety, fantasy, loss, shame, nostalgia,

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[173] Lefebvre, *The Production of Space*, 38–41. Lefebvre distinguishes between spaces as perceived, as conceived, and as lived, all reveal by and as social practice. He is less concerned with the conceptual content of these three kinds of space.

[174] Harvey, "Space as a Key Word," 8.

trauma and desire. The practice of representing space is drawn as much from these internal states as from the experience of material space. While, at first, this seems like the most elusive of the phenomenological categories, one can recall what it is like to revisit, after a long absence, the place of one's childhood, or a place of personal or collective trauma, to capture how distinct this mode of spatial production is from those which are either material or simply representational, and how it determines much of the perceptual and navigational experience of these spaces.

Harvey organizes these types of space into a three-by-three matrix, transposing his original conceptual modes of space onto Lefebvre's phenomenological ones. The resulting grid allows us to speak, for example, of *absolute material* (or experienced) space, such as that created by walls, bridges and other physical, body-navigable features; *relative spaces of representation*, such as that produced by the frustrations and anxieties of a commute through dense traffic, and "relational spaces of representation," which includes, in his words, "surrealism; existentialism; psychogeographies; cyberspace." It is through this 3x3 matrix of spatial categories that we will parse the spatial elements of the Japanese console role-playing game series *Final Fantasy*. Harvey implicitly positions computer-generated spaces in his matrix as representations of space: when one is addressing space at the level of city, nation and world, this is understandable. But the procedural nature of gamic interaction produces the entire matrix of spatial experience, not just the representation of space: the transference of somatic identity and place-deixis to the avatar even engages a virtual-material space. In their procedurality, games activate the spectrum of spatial categories.

Spaces of *Final Fantasy*

The Final Fantasy series of games spans four primary platforms in its mainline history, with other platforms targeted for ports, adaptations and derivative works. Platform differences account for the broadest divergences in the visual, tactile and conceptual experiences of space within these games, but there are noticeable differences in the use of space between games which target the same platforms, reflecting the specific aesthetic and narrative goals of each.

The series began with *Final Fantasy* (ファイナルファンタジー: the English phrase has always named the series in all its markets), released in Japan in 1987 by a then-struggling Square, Inc. The publisher had already released a handful of unsuccessful titles for the Nintendo Famicom, and the title reflected the belief of the game's director and original creator, Hironobu Sakaguchi, that it would be the company's last release before being forced to liquidate. The game became a paragon of the Japanese role-playing game genre, along with then-rival Enix's *Dragon Quest* title, released a year earlier.[175] The genre which emerged from these two titles was both a continuation of, and a response to, the Western computer-based role-playing genre. Especially influential was the *Ultima* series, first produced in the early 1980s for the Apple II and other personal

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[175] Cèsar A. Berardini, "An Introduction to Square-Enix," January 2006, http://features.teamxbox.com/xbox/1554/An-Introduction-to-SquareEnix/p1/.

computers. In particular, the third title of the series, *Ultima III: Exodus* had a strong influence on the developer of *Dragon Quest.*[176]

The *Ultima* games, and other western computer-based role-playing games, were adaptations of the non-digital practice of pen-and-paper role-playing games such as *Dungeons and Dragons*, which had become popular in the late 1970s. Pen-and-paper role-playing games (RPGs) emerged from miniature wargaming hobbyists, who grafted a narrative and fantastic sensibility onto a medieval-themed, one-to-one[177] scale military simulation. Within this relatively brief history—though military simulation as both a hobby and as an element in military practice has a history dating at least as far back as the late 18th century, the passage through *Dungeons and Dragons* to *Final Fantasy* encompasses less than 15 years—the migrations of the space of practice accompany a transformation in the practice of space.

Pen-and-paper role-playing games use grid paper to generate adventure maps. In games such as Dungeons and Dragons, a game-master either prepares an event-filled space with latent content by drawing maps, annotating them to indicate what antagonists, inhabitants and resources they contain, or uses charts to generate the fictional place by rolling dice, or some combination of the two approaches. The grid-space is then used in conjunction with game-rules that dictate rates of traversal, effective ranges for weapons,

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[176] The chronology is detailed in Matt Barton, *Dungeons and Desktops: The History of Computer Role-Playing Games* (Wellesley, MA: A K Peters, 2008), 208–220.

[177] That is, one game-unit represented one simulated combatant, rather than a group or organized unit of combatants.

line of sight, and the like. In a session of play, the players report their intentions in navigating these spaces and responding to what they find: often, they will also be generating a map of the terrain covered, both as a tactical tool and as a discourse-object to manage the collective production of an imagined space. The game referee and author of the session (the "dungeon master" or "game master") will tell the players what they "see." This is a distributed process, described by Mizer as "a polyphonous set of overlapping utterances.[178]" His analysis of the negotiated creation of fictional space includes this transcript of players:

1 DM   OKAY. You find yourself in a la::rge room. At this point it

2   extends east and west farther than you can see:. And it goes

3   ↑north↑and ↓south↓ to the limits of your vision: (.5) which

4   is be-tween forty and sixty feet without pacing off. (1)

5 NICK [So we can't see anywalls at all right? heheheh]

6 DM   [It's like an east to we:st-east to west] corridor: forty to

7   sixty feet=

8 CHRIS [Right.]

9 NICK =I DREW A DOT.

10 CHRIS   [That's us.]

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[178] Nicholas Mizer, "Hey Grimm, I'm Not in the Room, Right? Negotiations of Space and Place in Dungeons & Dragons" (presented at the American Anthropological Association Conference, Montreal, 2011), 13.

11 TOM   [Okay.]

12 NICK WE'RE THERE.

13 ALAN Basically we're outdoors with a ceiling [right now.]

14 TOM   [So::]

15   ↑East↑ and west [are about sixty feet to either side.]

16 DM   [Are-yeah.   Um:]

17   [Ceiling a-ppears] to be:

18 NICK [No wait-he s-]   We can't see any walls.

19 TOM   He said east and west are [about] sixty feet to either si:de

20 DM   [No.]

21   Y-y-no.

22 TOM   [Oh::]

23 ALAN [That's] as far as we can see.

24 DM Yeah.

25 ALAN We're outside with a ceiling.

26 GREG How high is the ceiling?[179]

Though Mizer doesn't use the term, this process is an instance of distributed

cognition. Ed Hutchins' landmark study of naval navigation described the coordination

between crew members on the bridge of a U.S. Navy vessel maneuvering a ship through

the San Diego channel[180]. Just as the D&D players use pen, paper and overlapping

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[179] Ibid., 13–14.

[180] Edwin L. Hutchins, *Cognition in the Wild* (Cambridge, MA: MIT Press, 1996).

utterances to confirm, modify and collectively produce a functional model of a fictional space, so do Hutchins' navigators use radio telemetry, drafting tools, calculators and hand calculations to collectively produce a functional model of a physical space.

These players create material objects—hand-drawn maps (Figure 27)—used to support the calculations that constitute the simulation, such as the relative positions of opponents, the lines of sight, distances travelled within a cycle of time, etc. When these calculations are performed on a computer, players no longer directly perform this representational practice[181]. Instead, the visual representation of space is constrained by technological considerations, and the perception and cognition of space becomes a matter worked out in concert with the game system's interface.

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[181] There are interstitial practices, by which computer systems are used to perform calculations within the context of pen-and-paper games, or—particularly for text-based role-playing games such as the early Zork games—in which players produce their own hand-drawn cartographies of the game spaces as mnemonic and tactical aids.
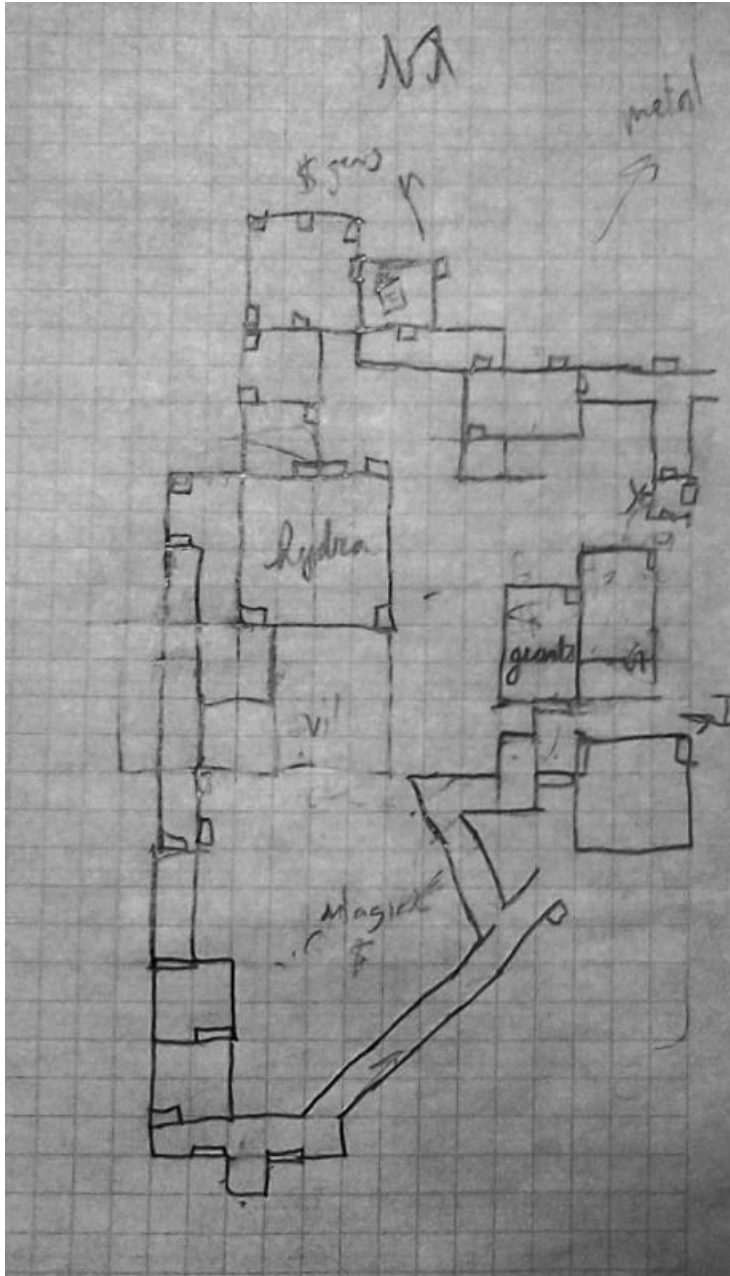
Figure 27.: Player-created dungeon map. From Mizer, 2011

The Japanese reception of computer-based role-playing games differs from the experiences of players and designers in North America, in that there is little sign of a culture of table-top fantasy role-playing games in Japan before the production of computer-based games. *Dungeons and Dragons* itself was translated into Japanese

in1985, the same year that *Dragon Quest* was released, and the *Ultima* and *Wizardry*

games were already in widespread Japanese distribution by this time. While the acronym

"RPG" denotes pen-and-paper role-playing games in the US and other Anglophone

regions, it denotes computer-based games in Japan, and the pen-and-paper games are

referred to as テーブルトーク RPG ("table-talk RPG", or TRPG.)[182] Thus, the

representation of space associated with the RPG in Japan has been primarily computer-

based from the outset: the creation of space as a practice performed by a collaborating

group of players in the sense described by Mizer were not part of the experiences or

expectations of the domestic Japanese market, but character-driven, fantastic stories of

manga and anime were. The "roles" of role-playing in Japanese role-playing games are

roles as *function*, and the player-driven theatrical aspects of pen-and-paper role-playing

are instead replaced by story practices, which owe as much to cinema and television as

they do to military simulation. This is the historical context for the development and

domestic reception of the original *Final Fantasy* games.

Using Harvey's and Lefebvre's categories for the production of space, the

platform produces, first, absolute and relative material space. Along with the genre-

specific conventions for the control schema and the conventions of narrative world-build,

platform also contributes considerably to the structuring of material space. That it does so

with a symbolic, representational system (programming, digital and digitized artwork) is

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[182] Shunichi Furutani, "What Is TRPG?(TRPG ってなに？)," *TRPG.net*, 2003,
http://www.trpg.net/WhatisTRPG.html.

an inversion of the typical characteristics of spatial relationships, but this is the nature of the production of spatial phenomenon authored by computer software: the representation of space in a computer is directly actionable, rather than referring to either another lived space (as a map refers to its territory) or a fictional space.

Material space and the production of bodies

When videogames produce graphical and processual representations of space, they produce them within the constraints created by the hardware and software platforms on which the games run. The initial *Final Fantasy* games produced space within the constraints and affordances determined by their target platforms. The first three titles in the mainline *Final Fantasy* series[183] were created for the Nintendo Famicom (re-branded as the Nintendo Entertainment system, the *NES*, in North American and European markets) in 1987, 1988 and 1990. . The Famicom was an 8-bit video game console system, developed by Nintendo Japan and released in 1985. It was capable of producing a video display of 256 pixels by 240, and displaying 53 colors[184]. The Famicom lacked true 3D display capabilities (except by isometric projection) – that is, it lacked a processor which could process models drafted for display in three axis (x, y, and z) on a timescale suitable for player experience.

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[183] Only the first title was originally released outside of Japan.

[184] Patrick Diskin, "Nintendo Entertainment System Documentation v 1.0" (NESdev, August 2004), http://nesdev.com/NESDoc.pdf.

The next three titles in the series were produced for Nintendo's follow-up platform, the *Super Famicom* or *Super NES* system, and released between 1991 and 1994. Confusingly, Final Fantasy IV was released as Final Fantasy II in North America, and Final Fantasy VI was released as Final Fantasy III, while Final Fantasy V was not originally released outside of Japan—for the purposes of this chapter, I will use the Japanese numerations. The latter-generation console provides more processing and graphical power than its predecessor: the *Super Famicom* was built around a Ricoh 5A22 processor on a 16 bit core with a 21 MHz clock rate, while the original *Famicom* used a MOS 6502 8-bit processor with a 1.79 MHz clock rate, essentially processing half the data at any given cycle at about one-tenth the speed. In addition to the greater processing speed, the *Super Famicom* featured a picture processing unit (PPU) which allowed the system to produce scenes and images with several thousand colors, compared to 53 colors of the earlier console. The earlier console could display up to 64 sprites[185] at time without reloading the screen, with each sprite being up to 8 x 16 pixels; the *Super Famicom* could display 128 sprites of up to 64 x 64 pixels. While the *Super Famicom* could produce an interlaced resolution of 512 x 448 pixels, few games would use that resolution, and most would be produced using the 256 x 224 progressive scan resolution: the same as the earlier model. What this all means is that individual elements in the display field could be more detailed and more animated in the *Super Famicom* games, but the backgrounds and

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[185] A sprite is a two-dimensional image which is rendered separately from the rendering of the scene, like a game piece on a board.

fields of play were generally shown with the same resolution, though with greater color variation and a much more variegated palette. The fourth through sixth *Final Fantasy* titles exploited the affordances of the SNES to create graphic imagery at higher resolution and with the richer color palette, but the general style and schema of depiction was relatively stable: pixel-based spites performing looped animations on a static background, punctuated with top-down maps. Video game platforms are systems of computer processing power and graphical display, as well as systems of interface that give players a specific vocabulary for interaction. The sequels for a given platform (e.g., *Final Fantasy II* and *III*) generally made only incremental changes from the original design. The Nintendo *Famicom* and *Super Famicom* games (*I—VI)* used three types of displayed spaces: *city/dungeon* scaled space, in which the display screen bounded a scaled region analogous to one or two city blocks; *battle space*, in which the characters would be depicted individually; and *countryside/landscape* space. Transitions between them were well-marked. The player would move their avatar onto an icon marking either a town or, often, a cave entrance. Some event would usually presage the transition to battle-space, such as dramatic music. Within any given scale, the navigation of spaces on Nintendo platforms is generally continuous.

    Final Fantasy VII was released in 1997 globally: beginning with this title, the franchise would synchronize its numeration, and the publishers would pursue globally coordinated marketing and release strategies. This and subsequent titles in the franchise were developed for the Sony PlayStation family of videogame consoles. These systems

all had dedicated processors for the display of 3D models, supported disc-based storage,

and promoted as creating a cinematic and "immersive" experience.[186] With the added

technological capacity came an increased need for labor: the greatest increases in the

scale of production accompany shifts in platforms (Table 1).

Table 3.: Final Fantasy releases, 1987 to 2012

Game	Year[187]	Platform[188]	Credited contributors[189]
Final Fantasy I	January 1987	Nintendo Famicom/Nintendo Entertainment System	5
Final Fantasy II	December 1988	Nintendo Famicom/Nintendo Entertainment System	18
Final Fantasy III	April 1990	Nintendo Famicom/Nintendo Entertainment System	17
Final Fantasy IV	November 1991	Nintendo Super Famicom/ Super Nintendo Entertainment System	22 ("special thanks" to 21 others)
Final Fantasy V	December 1992	Nintendo Super Famicom/	31

[186] The PlayStation system was developed in response to a failed business partnership between

Sony and Nintendo: see Edge Staff, "The Making of: PlayStation," *Edge Online*, April 24, 2009,

http://www.edge-online.com/features/making-playstation/.

[187] Year and month of first release on initial platform in Japan.

[188] These are platforms for initial release: most of the games would be ported to other platforms

several times.

[189] Information collected from MobyGames (http://www.mobygames.com), the standard database

of information about videogames.

Table 3. continued

Game	Year[187]	Platform[188]	Credited contributors[189]
		Super Nintendo Entertainment System	
Final Fantasy VI	October 1994	Nintendo Super Famicom/ Super Nintendo Entertainment System	43 ("special thanks" to 17 others)
Final Fantasy VII	January 1997	Sony PlayStation	140+ (including several outsourced agencies)[190]
Final Fantasy VIII	February 1999	Sony PlayStation	105+ (included several agencies)
Final Fantasy IX	July 2000	Sony PlayStation	330 for production 120+ for post production (including several contracting agencies)
Final Fantasy X	July 2001	Sony PlayStation 2	485+ production Numerous outside contractors
Final Fantasy XI[191]	May 2002	Sony PlayStation 2, Microsoft Windows, Microsoft Xbox 360	[unavailable]
Final Fantasy X-2	March 2003	Sony PlayStation 2	330+
Final Fantasy XII	March 2006	Sony PlayStation 2	560+ Many aggregated credits
Final Fantasy XIII	December 2009	Sony PlayStation 3, Microsoft Xbox 360	880+ Includes legal team, designers of Crystal Tools

[190] Beginning with Final Fantasy VII, business units and roles, such as marketing and customer service, would also get credited in game material.

[191] Online games such as *Final Fantasy XI* and *Final Fantasy XIV* have continuous production and support cycles, with different staffing needs and organizational structures from those of single-player games.

Table 3. continued

Game	Year[187]	Platform[188]	Credited contributors[189]
			Multiple outside contractors for motion-capture and other functions
Final Fantasy XIV	September 2010	Microsoft Windows	[unavailable]
Final Fantasy XIII-2	January 2012	Sony PlayStation 3, Microsoft Xbox 360	[unavailable]

New roles and job functions appear in the credits of each new generation of game titles. Increases in graphic performance creates a greater demand for artists, and just as a map editor was the first in-house tool developed in SquareSoft, used to produce maps that utilized the thousands of colors which became available on the new platform, in the development of Final Fantasy IV (the first title for the Super Famicom) so too was a map designer—Yasushi Matsumura—first credited on that title.[192] Nobuo Uematsu was credited as a sole composer for most of the titles created for the Nintendo platforms, in which music was synthesized on the 6502 microprocessor: composition was essentially programming, and no performers were engaged. The Sony platforms provided the storage and playback capabilities which allows games to play pre-recorded music, and thus for

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[192] MobyGames contributors, "Final Fantasy II (1991) SNES Credits.," *MobyGames*, accessed November 3, 2012, http://www.mobygames.com/game/snes/final-fantasy-ii_/credits.

Final Fantasy XIII, multiple sound engineers, pop singers, and the Warsaw Philharmonic Orchestra all receive credit.[193]

Final Fantasy X was the first of the franchise's titles to be produced for the Sony PlayStation 2. The platform afforded the designers increases in storage capacity: while games for the original PlayStation were shipped on compact disks, with a single title taking up as many as 4 CDs, the PlayStation 2 included a DVD player[194]. The system also provided greater processing power and video resolution than its resolution, particularly for rendering 3D models. The PlayStation 2's computational architecture revolves around the "Emotion Engine," described as "a combination CPU and DSP Processor, whose main function is simulating 3D worlds." [195]

The world-spaces of the PlayStation-based games, particularly those created for the PlayStation 2 and later, are implemented as a series of zones: characteristic spaces which often also have an architectural, aesthetic unity. The PlayStation's architecture dedicates considerable resources to graphical display. Because they used read-only discs (CDs, DVDs and most recently Blue-Ray discs), rather than cartridges. the continuous spaces within a given style of space found in games for the Nintendo platforms are not easily produced on Sony platforms: content is loaded from spinning discs, which is a

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[193] The publishers of the *Final Fantasy* games release soundtracks of the games as ancillary merchandise, including remix albums and solo piano arrangements.

[194] DVDs can store about 10 times as much data as CDs.

[195] Jon Stokes, "Sound and Vision: A Technical Overview of the Emotion Engine," *Ars Technica*, March 2000, http://arstechnica. com/reviews/1q00/playstation2/ee-1. html.

slower process than loading it from a read-only memory (ROM) cartridge. Instead, as a spatial transition occurs, the required data is loaded into the working memory of the PlayStation. As the load times to these transitions could be noticeable as the disks would spin, it was more effective to turn these transitions into temporal and narratological ones: the movement from one area to another produces "chapters." Moving into a new region moved the calendar forward, while remaining within one created a perpetual "now."

While zone-transitions become less continuous, transitions from travel to battle would become more continuous as the representations of characters in the navigational screens increased in resolution and scale. Beginning with *Final Fantasy XII*, the transition from distinct navigation-interface to conflict-interface was replaced by a more continuous experience. Conceptually and ludologically, the modes are still distinct: the game indicates that combat mode is at-hand by drawing of lines of hostile force, indicating that a combatant was targeting a character[196]. Thus, there are two trends in the history of the game franchise: the convergence of relative spaces, as movement from one place to another is depicted within the same mode as the approach and engagement of an opponent (where in earlier games these moments were depicted in separate modes) and the division of space along geographic (zones as aesthetic and landscape ideas) and temporal line (zones as chapters.)

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[196] The temporalities of battle in the games would go through various changes as well, and would act as a differentiator between titles. However, these design differences were less dependent on platform considerations.

Representations of space (and place): producing worlds

At least four of the worlds of the Final Fantasy games are named, and in the naming of the worlds, sub-franchises have been created. The world of Ivalice, for example, was introduced in the game *Final Fantasy Tactics*, and revised and reused for a number of other games, including *Final Fantasy Tactics* and *Vagrant Story*. These fictional worlds are often themed and modeled after regions and periods of human history: in recreating Ivalice for *Final Fantasy XII*, teams of world designers traveled through Turkey to study its architecture and design.[197] The entire line of *Final Fantasy* games does not share a single setting: instead, a collection of elements and mechanics unite them, including creatures ("chocobos," "moogles"), character classes ("red mages," "dragoons") and technologies. The sub-franchises extend the appeal of titles to the audiences which embraced the initial titles set in those worlds, and are part of the Square-Enix strategy of "polymorphic content," the creation and accumulation of narrative properties which can be deployed on multiple platforms, and appear in film and print publication, over several years. The more traditional idea of a "sequel"—a continuation of a story using already-known characters and settings—is at work in the "minor versions" of the main line of games: *Final Fantasy X-2* is a continuation of the story of *Final Fantasy X,* and *Final Fantasy VII: Advent Children*[198] is an animated feature set a few years after the events of the game *Final Fantasy VII.*

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[197] IGN Staff, "Final Fantasy XII Q&A," *IGN*, November 20, 2003, http://www.ign.com/articles/2003/11/20/final-fantasy-xii-qa.

[198] Tetsuya Nomura, *Final Fantasy VII: Advent Children*, Feature, Anime (Square Enix, 2005).

The fictional setting of the *Final Fantasy X* was a departure from the preceding titles. *Final Fantasy VI, VII and VIII* in particular, and to a lesser extent *Final Fantasy IX*, featured worlds of fantastic technology and "steampunk," retro-futurist aesthetics, gritty urban environments, and projectile weaponry. They were also identified as having architectures that evoked a European sensibility. The designers *of Final Fantasy X*—particularly producer Yoshinori Kitase and character designer Tetsuya Nomura—associated a move to a more traditional fantasy ambience to an aesthetic turn away from "the West" and pursue an Asian ambience and themes.[199]

Final Fantasy X is set in a world called Spira, which is dominated by a religious institution called Yevon. Spira endures a cyclical cataclysm: the destruction of any center of population greater than a village by Sin, a huge, armored monstrosity which came from the ocean. The doctrines of the church of Yevon teach that Sin was punishment for the technological and scientific aspirations of earlier generations of Spira's inhabitants. It is revealed later in the game that this was not the case, and that the religious institution itself was complicit with the destruction wrought by Sin[200].

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[199] Kitase Yoshinori et al., Interview with Final Fantasy X developers, interview by Enterbrain staff, January 19, 2001, http://www.mmcafe.com/news/news01-9-01.htm.

[200] Tensions between magical/religious and technological ideologies are common themes of Final Fantasy narratives. Other common tropes are memory and trauma, friendship and isolation, and complicity. Addressing these issues exhaustively is beyond the scope of this chapter: for a deeper treatment, see Fabio Calamosca, *Final Fantasy: Vivere Tra Gli Indigeni Del Cyberspace* (UNICOPLI, 2003). These tropes are

The establishing sequence is set in the city of Zanarkand, a fantastic-technological metropolis with an immediately apparent vibrant popular culture and broadcast media. The avatar which the player controls is a character named Tidus, an up-and-coming sports superstar, on his way to a professional "Blitzball" match. The spatial representations are on a local, urban scale, although these are somewhat constrained: there are few open urban spaces in Final Fantasy games, and instead, there are interconnected zones of passage, resembling the Situationist topographies of Paris as a system of nodes. *Final Fantasy* games are not open simulations of urban space in the way that *Sim City* or even *Grand Theft Auto* are, at least not on the scale of the single avatar moving through them.

This scale of player-space relationships persists—that is, a broader geographical representation of space is not yet presented—when the initial apocalyptic event, the destruction of the city of Zanarkand, destroys this space before it can be explored or understood. The player must simply run in one direction, while learning how to operate the basic combat mechanics of the game; after a brief set of battles, the player is transported to another time-place, and is left with an unsatisfied curiosity about Zanarkand, the setting of initial play. From this new place[201], the player begins a process

well-represented in other forms of Japanese cultural production, including literature, film, television, and manga.

[201] Within the diegesis, the relative status of these spaces rather elusive. Later in the game it is revealed that the initial space did exist in the "historical" past of the moment. The instance of it experienced by the player, as the character, Tidus, was a phantasmal space generated by the collective memory of those

of narrative and spatial traversal which resembles and reflects that of the genre at

franchise: "forward" progression through space (that is, from the known and "cleared"

region to the unknown; to another place directed by the conditions of the game) which is

slow and fraught with challenges.

The game is divided into zones. The first time the player enters a new zone, the

game announces that a new chapter has: the temporal dimension is managed by the

navigation of space (one can backtrack one's steps without reversing the movement of

the *syuzhet*. Upon entering a new zone for the first time, the name of the zone ("Besaid,"

"Kilika," "Zanarkand Ruins") is flashed across the screen, along with a panning shot of

the zone's typical landscape. These markers serve to indicate to the player that they are,

indeed, making progress through the storyline.

Players need not make this progress immediately. Most *Final Fantasy* games[202]

adhere to the level-up conventions of the role-playing game genre, which it shares with

table-top role-playing games like *Dungeons & Dragons*. Characters are a bundle of

statistics that simulate traits and abilities, and these statistics are modified by the

experience of the character. In practice, every battle that a character fights provides it

with "experience points." By earning experience points, a character will "level up,"

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destroyed in the original cataclysm. Perhaps this reflects a desire by the game's authors to embrace the

illusory values of *jidei-geki*.

[202] *Final Fantasy II* removed the job-specific leveling system with an open-ended skill system.

Table-top role-playing games have also sought to replace the leveling convention with a skill-acquisition

one: *Runequest* (Chaosium, 1978) is a notable early effort.

becoming stronger, more difficult to destroy, and become capable of various feats of combat, magic, and the like that were previously inaccessible to it. The result is a kind of statistical Bildungsroman. It is possible, although time-consuming, to repetitively kill weaker opponents in the game to increase one's level in such a way as to make the traversal of zones trivial. The "experience points/level" mechanic is nearly ubiquitous to this genre of games, and exceptions to this mechanic are often noted for just this reason[203].

Final Fantasy games often include mini-games: a *mise en abîme* by which the characters encounter and play games within the diegesis: one might call it "diegetic play," analogous to "diegetic sound" in film. Final Fantasy IV features "Tetra Master" as a pervasive mini-game: a card game popular on the continent throughout which the characters traveled. These mini-games have their own modes and interfaces, and are often developed semi-autonomously by dedicated designers and artists as part of the development effort. Frequently, these games are depicted as professionalized, with in-game tournament-level play occurred in designated arena. The mini-game in *Final Fantasy X* is a fantastic variant of water polo called "blitzball," played in suspended globes of water[204]. It is possible to play blitzball as a stand-alone sports game, along with league management mechanics that involved recruiting players throughout the world of

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[203] The Zelda series of games published by Nintendo, among others, does not use this mechanic, relying instead on changes in player inventory to differentiate abilities and constraints.

[204] Tidus is a professional blitzball athlete, as was his father.

Spira. The player can recruit, manage and compete with a blitzball team during the indefinitely extensible period before the game's denouement, the period in which the world is most freely accessible.

The tactic of "leveling up," of seeking out story-irrelevant combat in order to improve the statistics of the players' avatars[205] occurs outside of the fictional temporal progress of the game, which is driven forward by movement into new zones. The passage through geographic space creates the tempo for the passage of fictional/historical time.

Playing Tidus, the player is displaced several times before being given more latitude over their own navigation. After this first cataclysmic displacement, he finds himself swimming and wandering through half-submerged ruins. He is later picked up by a ship over which he has no control, and is eventually again thrown ashore to a strange place, without any information or understanding of the relative position (in time or space)

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[205] Most Japanese RPGs differ from most western RPGs by representing a group, rather than an individual, as the unit of play. This could be interpreted broadly as a cultural difference—the well-worn and perhaps overstated observation of the importance of the group over the individual in Japanese culture (the observation leaves too many questions about the construction of the self and subjectivity unanswered, and fails to accounts for narratives and games which do foreground heroic individuals)—but it is also an adaptation of the dynamics of the tabletop RPG, which foregrounds group tactics and coordination, to the computer/console. Representing a party of characters, rather than a single character, as the unit of play is truer to the origins of the RPG, as well creating tactical play options that do not arise in an action/adventure game with a one-to-one-to-one player/avatar/character relationship. In any case, in Final Fantasy X, experience points are awarded to the entire party, but the player determines what skills and abilities will be augmented for each character.

of this place with regard to those traversed earlier. As play and story progress, the player begins constructing a coherent model of the spaces of Spira, of the relative positions of its regions and cities. In most Final Fantasy games, new modes of transportation become available to the player at critical moments of the story. These modes of transportation have become brand-icons of their own. One is the chocobo, a large, flightless yellow bird that is ridden as a mount, which has appears in most Final Fantasy games since *Final Fantasy II*. Players who have access to a chocobo are able to navigate spaces more quickly through which they had "walked." A player riding a chocobo avoids the random combat which otherwise besets players moving on foot through the games' terrain. Another of these iconic modes of transportation is the airship, which reduces space to connected nodes—the player flying in an airship simply arrives at a new region with traversing the zones between. Acceleration in *Final Fantasy* is frequently about what the player avoids, rather than what the player experiences. Each mode of transportation presents certain landscapes as navigable and impassible: in *Final Fantasy III*, the player will get access to different airships which may allow access undersea, yet be unable to cross over a mountain. Toward the end of the game, the player has access to a flotilla of airships that account for every possible terrain.

Velocity compresses the experience of place and creates by-passed landscapes, or spaces of transition. As the player moves quickly through a space she which one once moved slowly, she may experience a sense of mastery: one based not on defeating opponents, but on not even encountering them. A landscape that was novel becomes a marking-place for the relative position of the player and the destination.

Spaces of representation: Spira revisited

 Final Fantasy X was a commercially and critically successful game, and Square, Inc. decided to produce a sequel, *Final Fantasy X-2*, released in 2003. Much of the software and resources of the original game were re-purposed for the sequel: as indicated in table 1, the has a somewhat smaller production teams than the initial game, and a cursory examination of the credits for *Final Fantasy XIII-2* suggests that this is a trend. This game is also set in Spira; the protagonists of the sequel are three young women, two of whom were lead characters of the original game. Tidus, who vanishes at the end of the first game, is a memory, and the loss of Tidus motivates Yuna, one of the three women; he only appears toward the end of the game.[206]

 A short film, created as bonus content for one of the later editions of the game acted as a narrative bridge between the two titles and provided the internal impetus for producing the sequel[207]. While the two titles are set in the same world and feature many of the same characters, the tone of the world and even the dynamics of play are

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[206] Eventually, Tidus is revealed to be a phantasmic re-imagining of a historical blitzball player, Shuyin, who was killed in a long-past war. In an optimal traversal of the game, however, the player can actually revive Tidus and reunite him with Yuna.

[207] Jeremy Dunham, "Final Fantasy X-2 Developer Interview," *IGN*, November 24, 2003, http://www.ign.com/articles/2003/11/25/final-fantasy-x-2-developer-interview. Aside from the obvious commercial motivation, the sequel was meant to offer the possibility of overcoming the tragic overtones of the conclusion of the first game with the possibility of a non-tragic ending. The use of sequels to overcome tragic loss would be repeated by the producers of the *Final Fantasy* series when they released a number of products which continued the story of *Final Fantasy VII*.

dramatically different. Whereas *Final Fantasy X* begins with a mysterious world which is slowly, painstakingly uncovered through pilgrimage, the sequel, set two years after the end of the events of the first game, immediately places the protagonists in control of an airship, with full access to a world which is completely familiar to players of the first game. The space of representations has changed from one created by foreboding, expectation and cataclysm to one dominated by a lighter sense of play, by often comic sensibilities, despite the dramatic conditions of near-apocalypse which inevitably appear. Yuna was the primary love-interest in the first game: she is a summoner who had been intended as a sacrifice to mollify the destructive anger of Sin.[208] Having survived what was meant to be her moment of world-saving self-sacrifice, and now is faced with a new kind of existential crisis: what to do with the rest of her life, after her world-historical moment.

The music of the sequel, too, dramatizes the shift in mood. Whereas the first title favored orchestral program music, the sequel tends toward popular, jazz, and even funk-inflected sounds. In light of the conscious "turn to Asia" that motivated the directorial

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[208] Every 20 years, a new summoner would "become" Sin, and then be replaced after two more decades. This cycle was ended by the player's activities in the first game. If the interpretation of the two games as an allegory for the predicament of Japan before and after the Pacific War holds, one could see Sin as representing the colonialist model of hegemony, with the quest to play Yuna as Sin connoting Japan's imperialist project and the dream of the Greater East-Asian Co-prosperity Sphere. This reading would then interpret her survival—her *not* becoming Sin—as the collapse of that project and the accompanying end of Western colonialism in the East Asia/Pacific regions.

team of these titles, it is easy to see allegorical references to the experience of Japan during and after the Pacific War. If the turns of complicity and ironies of memory, the slow construction of spaces through travel evoke the national memory up to and through the war period, the sequel suggests the giddy consumerism and conflicted identities of the postwar period.

The three protagonists begin the game not as sports heroes, but as pop stars. At least so it seems: the pop idol whose performance in what was the sports arena in which Tidus played turns out to be an imposter, Leblanc, disguised as Yuna. Leblanc had stolen a device called "the Garment Grid," which allows its user to change their wardrobe instantly. These wardrobe transformations are also the mechanism by which the player shifts from one player-role to another (e.g., from an attacking role to a support role.) If the first game was one of almost modernist melancholy and historical inevitably, the latter is one of post-modern irony, of playful subjectivities. *Final Fantasy X-2* celebrates the ecstatic freedom of a culture of the commodity and the spectacle, in no small part because it is still based on the absence of the state of war. That this peace accompanies a false, masked identity presages a narrative in which dissembling and misrepresentation plays a fundamental part.

The differences in tone between the two games are inseparable from the differences in the experience of the games as spaces. The sequel begins in a well-understood world: movement begins as a return, a "checking in" to the state of a place.

The matrix of spatialities revisited

David Harvey's matrix was designed to provide an interpretive frame for human spatiality in general, and particularly for the geo-political, the political-economic, and the urban. Re-purposing this matrix to track space-making activities in video games may seem somewhat perverse, but it is not without precedent. Edward Castranova, an economist and sociologist of virtual worlds, describes them as "radically manufacturable places that can be shared by many people at once,"[209] and called the preferential attention given by many gamers to them as an "exodus." Computer-mediated spaces aren't simply representations of space: they provoke the full gamut of spatial experience, at least as an imago.

I am applying this matrix at a specific scale, to those produced immediately by the game itself. It does not include the living room or desktop of the player, or the environmental context of play. Such a scale of inquiry might be worthwhile, and complement our analysis by becoming a general theory of spaces of gaming, obscuring the ways in which the game as an authored system produces these spatial effects. We do, however, include the player-avatar dynamic. We see character/avatar/player relations as a deictic displacement across multiple modes (that is, as the way in which the "as if" of the game fictions can recruit the player into space-production) rather just a representational strategy. Attention to only the fictive space of the game would diminish the materiality of

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[209] Edward Castronova, *Synthetic Worlds: The Business and Culture of Online Games* (University of Chicago Press, 2005), 8.

the spaces produced. This "middle ground" lets us consider the production of spatial experience as a kind of authorship: an idea that will be expanded and revised in the next section.

Table 4.: Videogame spaces and Harvey's matrix of spatialities

	Material space (experienced space)	Representation of space (conceptualized space)	Space of representation
Absolute space	Rendered 3D space; physics; buildings, trees, grass, road; barriors, walls, rivers that affect navigation.	Map displays; inter-titles;landscape features.	The game world and its fiction as an object of contemplation; the game world as traversed by a habituated player.
Relative space	Modes of transporation and acceleration: chocobo space, airship space; scaled space. Spatial relationship as proximity to target or adversary	Airship destination menus; nodes and linkages; zone transitions; hidden and revealed spaces (secret doors, corridors); minigame (blitzball) spaces.	Affective play-spaces: melancholy, anxiety/tension – sense of threat/excitement in high-risk zones and boss fights; shifts of attention motivated by changes in level of threat and comfort; cut-scene spaces[210].
Relational space	Relationship	Narrated space;[211]	Collective and

[210] This kind of space is thematized within *Final Fantasy X* through various tropes: the "dreaming" of Zanarkand by the disembodied spirits of its former residents, the massive space of the interior of "Sin," who is both nemesis and a region of its own, and even the.

[211]Within Final Fantasy X, and X-2, one of the NPCs,a wandering scholar named FFX, Maechen, periodically meets the party and reveals various historical and "scientific" aspects of Spira.

Table 4. continued

	Material space (experienced space)	Representation of space (conceptualized space)	Space of representation
	between "battle space" vs. "traversing space" within a mode; the pace of threat as player seeks to either traverse quickly or mines an area to accumulate experience.	the diegetic accounting of the spaces of the world by in-game characters; aestheticized space; rendered architectures and landscapes with art-historical references (e.g. Turkey/Ivalice.)	personal memories of spaces, both player-produced and authored. Multiple representations of space (pre- and post-cataclysmic.) Diasporic spaces and spaces of return.

Material space (experienced space) is, in game terms, the features that produce the possibility of spatial cognition and the perception/fiction of a physical space; the space "experienced" by the avatar. This space is most subject to the constraints and affordances of the platform. The representation of space in games is very much like other representations of space: it can include maps understood as maps, labels on regions, and interface elements which indicate navigability and impassability. The spaces of representation are those aspects of the game system which take some stance—affective, memorial, documentary—to the representation of space.

Final Fantasy XI: multiplayer games as constrained spaces

The spatial effects described above are authored and designed in a fairly conventional sense: they are produced by a team of creators with various systems of authority and delegation to generate a fairly stable software-based experience. The experiences of place which occur emerge from the player's commitment to the project of

the game, attending to its tasks and the objects which attain them and visually consuming the sculpted and animated assets of the computer-sustained world.

Final Fantasy XI is both a *virtual world* and a *massively-multiplayer role-playing game*: the latter is a subset of the former. Virtual worlds are based on networked software, and almost always rely on client-server architecture.[212] They rely on spatial metaphors and usually involve the visual rendering of a shared space inhabited by the avatars of multiple players. They are persistent: they continue to operate whether or not any given computer user is accessing it. This is a consequence of the client-server architecture: the "world" is a set of databases and procedures and state running on a server, which the client software, running on the player's computer, refers to in order to produce a representation of a small subset of that state: the visual information and systematic behaviors that produce the "there-ness" and "then-ness" of the player's presencing in the virtual world. This is a kind of spatio-temporality unlike that of a single-player game, which instantiates a world only when the user runs it.

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[212] A virtual world can be implemented as part of a time-sharing system or other system by which multiple users interact on a single computer: this is the original model for games such as *Oubliette* (1983), which ran on the PLATO system. Peer-to-peer virtual worlds are still generally experimental, although see Erica Naone, "Peer-to-Peer Virtual Worlds," *MIT Technology Review,* April 16, 2008, http://www.technologyreview.com/news/409912/peer-to-peer-virtual-worlds/. Client-server architectures are overwhelmingly the dominant model for provisioning virtual worlds.

Massively-multiplayer online role-playing games (MMORPGs) are virtual worlds with additional constraints: they have all the features that I described above, as well as game logics and genre-oriented settings and themes. The largest current MMORPG game is *World of Warcraft*, a game with about 10.2 million active users as of 2012[213]. The most heavily-trafficked virtual world that is not a massively-multiplayer online role playing game is Second Life, by Linden Labs, which peaked at 90,000 concurrent users in 2009.[214]

This section examines one of the two members of the *Final Fantasy* game franchise which are also massively-multiplayer online role playing games. These games exist in a different sort of temporality than the other, single-player games. Because they participate in a persistent and global time, they can, as spaces and places themselves, intersect with external events, and put players into direct relationships with each other.

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[213] Adam Holisky, "World of Warcraft Subscriber Numbers Remain at 10.2 Million," *WoW Insider*, May 9, 2012, http://wow.joystiq.com/2012/05/09/world-of-warcraft-subscriber-numbers-remain-at-10-2-million/.

[214] Tateru Nino, "Second Life User-concurrency Spends Year in Slow Decline," *Massively*, December 25, 2009, http://massively.joystiq.com/2009/12/25/second-life-user-concurrency-spends-year-in-slow-decline/.Due to the different business models and reporting practices between the producers of the two virtual worlds, equivalent figures are difficult to come by—as a free-to-play game, there is nothing corresponding to a "subscriber" in Second Life—but the total concurrent usage for World of Warcraft hovers around a million players: over ten times the number of Second Life players.

On April 9, 2005, the Tokyo-based servers which hosted the game *Final Fantasy XI* came under a distributed denial-of-service attack, an onslaught of network requests from a botnet of compromised computers. This attack made it impossible for the thousands of players of the game to play for several days, until Square, Inc., the developer and publisher of the game, adjusted its network's routing schema and took other corrective measures. Immediately before and after the attack, players of the game reported seeing slogans such as "Resisting all Japanese goods. Long live the People's Republic of China" in the "search strings" of "RMT" players.[215] The "search string" is a small comment, up to about 240 characters, drafted by a player for their character: another player on the system can type */sea <name>* and read the comment. It is usually used to determine the goals and aspirations of players as they play, and to determine national identity and linguistic competencies among the international player-base. "RMT" means 'real-money trade', the exchange of in-game currencies or goods for real-world money. Tolerated in some massively-multiplayer online role-playing games, encouraged in others, it was both proscribed by the terms of service for *Final Fantasy XI*

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[215] Allakhazam members, "DDoS Attack to POL and SE," Forum post, *Allakhazam.com: Final Fantasy XI*, April 15, 2009, http://ffxi.allakhazam.com/db/forum.html?forum=10&mid=1113583164674215299&num=46.

and discouraged by Square-Enix, and was unpopular for a variety of reasons among most players.[216]

Virtual worlds of difference

 Final Fantasy XI was not the only target for this attack: a similar series of DDOS attacks were launched against the web server for the Yasukuni shrines.[217] Controversial visits to this war memorial by then Japanese Prime Minister Koizumi Junichiro, and revisions to national school curricula minimizing the responsibility of Japan for its activities during the Pacific War, had triggered anger among many Korean and Chinese citizens. On the same day, April 9, over 1000 protestors attempted to storm the Japanese embassy in Beijing, pronouncing slogans such as "Boycott Japan," and calling for an end to attempts to allow Japan a permanent seat on the UN security council, and over 10,000 protesters marched in protest in Shanghai, breaking the windows of the Japanese consulate. The slogans repeated by the protesters echoed the written comments in the search strings of the putatively Chinese players.[218] The servers of *Final Fantasy XI* were marked by the protesters as Japanese space.

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[216] Ge Jin has been working on a documentary about the conditions, experiences and motivations of Chinese RMT gamers. Ge Jin, *Chinese Gold Farmers* (In production, 2008).

[217] R. Gandhi et al., "Dimensions of Cyber-Attacks: Cultural, Social, Economic, and Political," *IEEE Technology and Society Magazine* 30, no. 1 (spring 2011): 28 –38, doi:10.1109/MTS.2011.940293.

[218] Philip P. Pan, "Japan-China Talks Fail to Ease Tensions," *Washington Post*, April 18, 2005, sec. World news.

Two months earlier, in February of 2005, Square-Enix had cancelled the accounts of about 800 people for engaging in behavior that violated the terms of service. Although it was never explicitly stated by the producers, many players assumed that most of those accounts were held by Chinese RMT players. This would be the first in a series of account suspensions and revocations, which would lead to a series of account cancellations and suspensions over the next several years.

These dramatic events accompanied a number of longer-simmering divisions among the players. Many would complain about the performance of their colleagues, or criticize in-game activity. Cross-national characterizations were often fraught with acrimony and resentment. Rather than producing space of rapprochement and camaraderie, the game seemed to accentuate differences between groups of players. The game is an authored space, which strongly determines specific work-play practices for its participants; the constraints of this space are experienced in the context of differentially structured play time, creating different player motivations, which bring players into conflict with each other at a meta-game level.

Final Fantasy XI (abbreviated as FFXI by many) went online in the year 2002 in Japan, and was released in America about a year and a half later. At its peak at the beginning of the year 2005, there were over 550,000 players in Japan, North America, the Commonwealth Pacific, and Europe: these are the regions in which the game was officially released. After stabilizing to about 500,000 players, the subscriber numbers

have declined, and the most recent analysis estimated around 350,000 subscribers in the 2010.[219] While never as popular as *World of Warcraft* in most of the world, in Japan it eventually become very successful, after a slow introduction, with numerous product tie-ins. Square-Enix CEO Yoichi Wada has reported that *Final Fantasy XI* was the most profitable of all the Final Fantasy titles.[220]

Certain design decisions were important to creating the kind of experience that is Final Fantasy XI. There are currently about 32 running game servers, but these servers are not distinguished from each other by geography, language, or play-style. In contrast, *World of Warcraft* is hosted on servers (called "realms") that serve specific regional markets, and with different rules of play: players who have the American version of the software client cannot play on European or Chinese servers. Some *World of Warcraft* servers allow for players to attack and kill other players (called "player vs. player", or "PVP"), while others do not. A minority of realms are designated as "role-playing" realms, in which player are encouraged to participate in ways enhance the fiction of the game, by speaking (that is, typing) using in-character voice. The differences in play-experience in these different servers are substantial, and these differences are primarily

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[219] Ibe Van Geel, "MMOData.net: V3.9 Ready, Working on V4.0," *MMOData.net*, August 29, 2012, http://mmodata.blogspot.com/2012/08/v39-ready-working-on-v40.html.

[220] Colin Moriarty, "The Most Profitable Final Fantasy of All-Time Is…," *IGN*, June 24, 2012, http://www.ign.com/articles/2012/06/24/the-most-profitable-final-fantasy-of-all-time-is.

enforced by software. As a result of regional constraints, most *World of Warcraft* servers are semi-officially monolingual.

But it was an explicit design goal in *Final Fantasy XI* that players from different nations and, to lesser extent, with different play styles[221], be allowed to play together in the same game worlds. All *Final Fantasy XI* game servers are available for the global market, and there is no difference in the configuration of game rules among them. One consequence of this is that FFXI servers tend to "follow the sun," with players able to find other players online at all times, whereas *World of Warcraft* servers have observable peaks and valleys of activity. The game's client features auto-translation tools which enable players from different language groups to play together: an English-speaking player might begin typing a commonly-used phrase, such as "Defeat this one first!" After typing a few characters, the player could press the tab key, and be given a number of possible phrase completion options. Selecting those options surrounds the player's text with colored brackets; other players using Japanese, French or German clients see "これを先にやっつけて！" "Eliminez d'abord celui-ci !"or "Schlag den hier zuerst!", respectively. Experienced players are familiar with which phrases are available to them, and use an extensive vocabulary to play with others with whom they could not otherwise

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[221] "To lesser extent" insofar as there is simply little support for PVP, but there are otherwise components oriented to a range of play styles in the game, and they are equally available on all servers.

communicate.[222] Not only is this consideration part of the mechanics, the theme of cooperation in the context of cultural difference is a recurrent theme of the game, both in its fictive register[223] and its mechanical ones. Final Fantasy XI is almost impossible to play alone, and finding other players with whom to cooperate is crucial to the game experience. The relationships into which the players are put with each other could be regarded as both rhetoric and affordance: a relational aesthetic enacted by the rule system.

Designed constraints

While the game itself affords a range of activities to players, most activities are contingent on a core practice common to many role-playing games: that of gaining experience points to advance job levels. This obligation produces constraints which befall upon all players, whatever their motivations and interests; they are mechanistically universal play constraints, emerging from designed elements of the game. The job level/ experience point convention is a genre-specific mechanic which massively multiplayer role-playing games share with other types of computer-based role-playing games. This

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[222] The content and operation of the auto-translate function is documented in great detail in FFXIclopedia contributors, "Auto-Translator: In-Depth," *FFXIclopedia*, September 6, 2009, http://wiki.ffxiclopedia.org/wiki/Auto-Translator:_In-Depth.

[223] I discuss the relationship between the themes of international cooperation and real-world international players in William H. Huber, "Fictive Affinities in Final Fantasy XI: Complicit and Critical Play in Fantastic Nations.," in *DiGRA 2005: Changing Views: Worlds in Play* (presented at the Digital Games Research Association International Conference, Vancouver, BC: Simon Fraser University, 2005).

convention has its origins in table-top and pen-and-paper fantasy role-playing games such as *Dungeons and Dragons*, which itself developed from the practice of table-top miniature military simulation,[224] which distinguished certain forces as having more combat experience, and thus more combat efficacy. What in military simulation served to denote and recognition of the benefits of combat experience has evolved into an abstract currency of experience, gathered as if a resource through player-documented procedures in massively-multiplayer online role-playing games. These procedures are usually routine, repetitive and predictable, and constitute what is called the *level grind* by English-speaking players.[225]

Experience points are earned almost exclusively by defeating computer-based non-player opponents in battles that are generally un-winnable without the assistance of other players: as a player's level advances to the point such that a foe becomes easy to dispatch without assistance, that foe will no longer provide experience. When the distributed denial of service attack struck, the highest attainable job level was level 75: the level limit has since been increased to 99. Reaching the 75th level of any job requires

[224] For an exhaustive history of Dungeons and Dragons, with considerable detail on the origins of its mechanics, see Jon Peterson, *Playing at the World* (Unreason Press, 2012).

[225] A reflection on the appeals of "the grind" was presented in Douglas Thomas, "2,443 Quenkers and Counting, or What in Us Really Wants to Grind? Examining the Grind in Star Wars Galaxies: An Empire Divided" (presented at the Digra 2005, Vancouver, 2005). In his abstract for his talk, Thomas writes that "(g)rinding represents a kind of mastery. Because of its algorithmic nature, grinding demarcates a certain class of players and provides tangible markers of achievement."

the player to garner a total of 944,600 experience points[226]. While in some rare occasions a player can gain as many as 6,000 to 10,000 points in an hour, a rate of about 3000 to 4000 points per hour is typical, and even this only in a full party of 6 players. This means that, at the very, very minimum, with no other consideration for auxiliary mechanics or requirements, developing a single player-character to the upper echelons of ability requires about 300 hours of focused, active play. In practice, however, this is a conservative figure. [227]

The level grind was not designed to be repetitive and potential tedious, but is an emergent phenomenon as players document and share efficient, predictable and low-risk procedures for achieving in-game goals. This play-labor might be understood as an

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[226] *Final Fantasy XI* features a "sub-job" system, by which each player must also provision a minor job function to supplement the major one. That minor job will be equipped at half the level of the main job. Thus, a player with a main job at level 75 would need to have a sub-job at least raised to the 37th level. Accounting for nothing else in the game, leveling one job to level 75 required 801,350 experience, and raising another to level 37 would require 143, 250 experience points.

[227] There is a command called /playtime which reveals how much time has been spent logged into the game server. A playtime of several hundred days—that is, several thousands of hours—is not uncommon.

aesthetic experience in its own right, as a kind of deferral of pleasure in the service of a progressive career[228].

The result of these mechanics is an extensive interdependency of players. Skilled play rewards everyone in the party: incompetent or irresponsible play, or failure by a single player, can result in the death of some or all characters. The death of a character leads to the loss of experience points – at times undoing as much as 2 hours of the player's efforts. Insofar as this is a fantasy game world, death is temporary: a player who has been"K.O.'ed" can easily be brought back. However, the resulting interruption stops play for 5 to 10 minutes at a minimum, as the player is in a "weakened" state. It is somewhat frustrating for the entire party, and very frustrating for the player to whom it happens. The specific mechanics of game combat mean the player character who has been "K.O.ed" may not be the one who was responsible for the party's failure. This makes the inter-player acrimony all the more pronounced.

The mechanical interdependence of play-work pressures players to maintain an adequate level of performance to contribute to the collective success of the group. This creates a number of important constraints. Two primary factors determine the "power" of the player, which is understood as the ability to withstand attacks, to deal out damage, to use more powerful spells, and otherwise operate within the division of labor created by

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[228] Thomas describes the pleasure of the grind as the exercise of Freud's reality principle. The condemnation by many players of RMT customers, who use real money to bypass elements of the grind, seems to confirm that a work-ethic principle is also at play.

the game rules. The first is, as described above, the experience level. The second is the "equipment" which each player wears and uses, whether it is weaponry, clothing, food, magical items, etc. As a player advances in level, they are able to equip more powerful items. These items may be produced by other players in what is called a crafting system, or won in certain battles. Without going on at length about the mechanics of item generation in this game, it is enough to observe that this process requires participation in the in-game economy, and is comparably as time consuming as the process of getting experience points itself.[229]

The unit of currency in the game is called the "gil," an imaginary currency which is common to all games in the Final Fantasy series. The equipment that a player needs in the first few levels of play are typically in the low thousands, and can be earned with relatively little effort; at the upper limits, the amount required can reach the millions. While some "gil" is won simply by accomplishing quests, missions and in the process of killing certain monsters within the game, this income stream is inadequate for most purposes. There are a variety of strategies for generating high gil revenue streams – crafting, farming, resource extraction—but they are all time-consuming activities,

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[229] "Participation in virtual worlds is, at the moment, participation in a market for games." Edward Castronova, *On Virtual Economies*, CESifo Working Paper (Bloomington, IN: Indiana University Bloomington - Department of Telecommunications, July 2002), 8, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=338500. Castronova analyzed the virtual economy of Everquest, and found it to be comparable in scale to many small countries.

sometimes repetitive or risky (although seldom both), and they are subject to market pressures, and involve the exchange of goods for gil in the Auction House. This adds to the time commitment required to play the game well, and places the virtual-economic interests of different players against each other.

All players play in the same mechanics (though, of course, they can play different characters in different jobs.) However, not all players approach the game from the same context of play. The next section addresses the meta-game player positions. To do this, I describe some of the player types, the taxonomies and characterizations made of players by other players, which seem to recur in the online forums.

Situational constraints

It has been clear since early in the history of massively multiplayer games that different players were playing with different motivations. The first attempt to characterize players according to motivation was made by Richard Bartle, a designer of some of the first online virtual worlds[230]. He distinguished between "achievers," who are motivated to accomplish tasks and overcome challenges in the game; "killers," who seek to use the master of the game to demonstrate their ability to defeat (or, sometimes, help) other players; "socializers," who see the game's multiplayer functions as an opportunity to build friendships and interact with other players; and "explorers," who seek to understand

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[230] Richard Bartle, "Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs," *Journal of MUD Research* 1, no. 1 (1996), http://www.mud.co.uk/richard/hcds.htm. Bartle's model was studied in Nick Yee, "Motivations for Play in Online Games," *CyberPsychology & Behavior* 9, no. 6 (2006): 772–775.

and document the game as a whole. These player-types are also stances toward the play experience. Bartle developed his model specifically for one sort of game—the text-based MUD (multi-user dungeon), with the understanding that the stances toward the game of each type are contingent on the dynamics of the game itself: a game which does not give players the opportunity to battle each other is less likely to produce a player-type which would find that sort of play compelling, although the meta-motivation, the desire to project power/control/dominate other players, may still find some expression. The portability of these types of categories beyond the genres in which they were identified is limited, and the emergence of graphically rich games with extensive audio and visual assets produces at least one other axis of motivation—the aesthetic. A player motivated by aesthetic concerns who may either wish to experience the content of the game (perhaps a variant of Bartle's "explorer," but in a different register) or may wish to use that content for their own work, whether as cosplay (in which players and fans dress up as their favorite characters) or in-game role-playing or the creation of machinima (the creation of animated films using games.)

But player communities have created their own player types, which do not map on to the Bartle types at all. The player-created taxonomies of other players emerge from the expectations and noted differences among them, and are documented in the forums in which players discuss, analyze and complain about their experiences. In the English language forums, the primary distinction is not between the Bartle types per se, but rather between *casual* and *hardcore* players: between players who invest substantial amounts of time to the game, and those whose involvement is more intermittent, perhaps less

structured and consistent, and so forth. While at times these terms are directed against other players in ways that indicate a kind of friction, players do self-identify with both categories, suggesting that these types are not derogatory per se.

These categories manage expectations: a casual player is unlikely to be able to engage in those activities which require 8 to 14 hours of committed play (and these activities do exist.) When friction does occur, these types are often conflated with other characterizations. Hardcore players, perhaps frustrated with the lack of commitment and availability of casual counterparts, describe them as unreliable, uncommitted, and lazy:

> First, you have your casual endgame player. They've got a job pretty high, maybe even two. They've probably been playing the game for a decent amount of time, but they never really took it that seriously. Maybe they have a wife and kids or a job that takes up a lot of time so they only get to be on a few hours a night, not quite long enough for major events. Maybe they just refuse to let FFXI approach becoming a job and don't do anything in the game that they don't terribly like. Either way, they're a bit flighty as far as endgame players go – you never quite know when they'll have a busy few days and only be on for a half hour here and there, or just disappear entirely for a week or more. [231]

They generate a critique which focuses on the in-game performance of the player. Casual gamers who encounter expectations that they cannot meet may criticize the very emphasis that the hardcore gamer places on in-game achievement, often pointing to the demands of their out-of-game life as an indication of healthier priorities, real-world success, and so forth. (Sometimes this defense of lower commitment is called the "I have

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[231] "ereblog, "EreRant #7," *Ereblog*, April 11, 2008,

http://ereblog.livejournal.com/16232.html#cutid1.

a life" excuse.) What emerges is a presumption—and narratives that support them—that the more committed players are generally younger than their casual counterparts.

There are somewhat different typologies circulating in Japanese bulletin boards.[232] The most dedicated types are called "haijin," or "disabled/crippled person" players, are extreme shut-ins with few commitments or engagements in the real world:

> . . . what they call "Haijin" ... Basically an addict. Usually have quit their full time jobs, neglected friends, family all of Real Life. Yet they are uber players ingame, multiple lvl 75 jobs, a few KIRIN deaths to their name, and have multiple multimillion gil equipment....from Noble's Tunic to Joyeuse.
>
> They don't like eachother. The Kanji, or the Chinese characters used to for the word "Haijin" is literaly, "Wasted Person".
>
> Most of them are college age or older. Probably in their mid 20s all the way to 40s.[233]

They differ from the English-language characterization of a "hardcore" player in that there is not a presumption of a surplus of leisure time due to youthful freedom from responsibilities. They may, indeed, be older (corresponding to the worst examples of *hikikomori,* or shut-ins) or they be *freeter*—chronically underemployed people of varying

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[232] The analysis of player types in Japanese-language forums is drawn from the observations of a native informant who participates in them: Miki Yamada to William Huber, "From Uchipu - FFXI Post," January 28, 2005.

[233] Hellriser, "Plz Check This Out ~ ~ Copy from Other Server," *Allakhazam.com: Final Fantasy XI*, January 29, 2005, http://ffxi.allakhazam.com/forum.html?forum=35&mid=110702475290124990&h=50.

ages who work at temporary or part-time jobs. The more casual gamers are sometimes described as *mattari*, mild slacker-types, whose motivations are more exploratory[234] and who may "sabotage" a party. Another category—sometimes a derogatory one, though there is some self-identification—is the "global-kun", the xenophile player who actively seeks out non-Japanese groups and friendships.[235]

Some differences between Japanese and North American typologies can attributed to structural differences in the two societies, specifically regarding differential availability of leisure time. Japanese universities are less demanding than American counterparts, while the Japanese secondary education system is more demanding. American high school students in many public school districts have a surplus of leisure time which diminishes with age; Japanese youth have more structured schedules until they complete their secondary education and complete their university entrance examinations. After these examinations, there is a surplus of leisure time available until they enter a full-time career. This is admittedly a crude sociology, and would require more rigorous analysis before it could be put forward with any authority, but the claim I am making is that structural, rather than simply cultural, factors are significant in

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[234] "Death don't mean much to them, but the joys of entering a new zone they've never been to, and enjoys the social activities. They would be the most likely ones to first explore the Promyvions, LOVES map quests, and enjoys doing various quests in general. Most casual players would probably fall into this category." Yamada to Huber, "From Uchipu - FFXI Post."

[235] Hellriser, "Plz Check This Out ~ ~ Copy from Other Server."

producing players, and that the production of players is inseparable from the production of leisure time.

When characterizations cross linguistic or national divides, they become less granular. Some Japanese players include statements in their comments that they are uninterested in participating in parties that use English. This has caused some friction between Japanese and, particularly, American players. According to a number of sources, Japanese players dislike the play style of American players. One of the producers of FFXI notes that American (to a lesser extent, European) players do not evince the same commitment to long-term play sessions as Japanese players, and enter parties less prepared. American players, in turn, accuse Japanese players of elitism. There are other factors at work which distinguish Japanese and American players: the average American player is 22 years old, while the average Japanese player is 27 years old. Also, Japanese players are in a single time zone, while English language players range across over a dozen time zones. As a result, the windows of available leisure time vary more widely among English-language players. And, while my own inclination is to minimize primarily cultural explanations when structural or historical ones are available, there are differences in etiquette and communication between Japanese and Western players: despite sharing many of the commodities of play—game platforms, games—different cultures of play persist.

The relative esteem generally accorded to Japanese players is one of the elements that mark *Final Fantasy XI* as a Japanese space—in the view of the players, as well as the protestors. The Final Fantasy franchise is consistently among the best-selling games in

Japan, and its aesthetics are consistent with other Japanese role-playing games (emphasizing very richly delineated characters, hybrid visual references, progressive narrative structure, well-articulated game-worlds, and so forth.) We see that the categories of player experience emerge from the interaction of two factors: the affordances created by the authored space of the game, and the real-world circumstances of the player. I have given little attention to a distinctive player-position, that of the China-based professional player. Yet even among leisure players, the real-world circumstances which shape their stance to play-time and play-work are the product of social relationships which determine the relative value of their play-work time. Players collectively might be seen as secondary co-authors of the experiences of the game, but seldom in ways that could be considered deliberative or autonomous.

Designing intersubjectivity in games

Neither space nor intersubjectivity are usually thought of as being authored as such. We may see it as designated, designed, or produced, but authorship usually refers to some relationship between a text (however that is understood) and an entity, whether an individual or an aggregate or even a process. The ambiguous status of the digital game as both a system for supporting an activity and a system of inscriptions producing representations and simulations places its spatial aspects into the domain of the authorial, at least in the senses we describe at the beginning of this dissertation. Multiple senses of the spatial can be generated in the practice of the development of games, from the most straightforward representations of a space, using various projective and cartographic techniques, to those senses of space which are clearly relational: the space which

obligates its inhabitants in one way or another, placing distinct demands on them, and revealing the differences them. Spatial game authorship become design within the relational style when these spaces host differently-situated players.

In the 1990s, art historian Nicholas Bourriad published an influential essay on something he identified as relataional art, a possiblity in the field of aesthetics which opens up after the Second world War:

> The possibility of a relational art (an art taking as its theoritcal horizon the realm of human interactions and its social context, rather than the assertion of an independent and private symbolic space) points to a radical upheaval of the aesthetic, cultural and political goals introduced by modern art.[236]

Bourriaud identified a series of projects, focusing on those of the 1990s, in which this aesthetic was mobilized. While the term is used to describe a range of projects with very different goals and motivations, they all seem, as Claire Bishop describes it, to "use people as a medium.[237]" A vigorous debated opened up among certain art theorists and critics[238] about the ethical and aesthetic value of these practices (and especially about the

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[236] Bourriaud, *Relational Aesthetics*, 14.

[237] Bishop, *Artificial Hells*, 39.

[238] Grant Kester, "Dialogical Aesthetics: A Critical Framework for Littoral Art," *Varient* 9 (1999): 2000; Kester, *Conversation Pieces: Community and Communication in Modern Art*; Grant Kester, "Response to Claire Bishop's 'Another Turn'," *Artforum* (May 2006); Claire Bishop, "Antagonism and Relational Aesthetics," *October* (2004): 51–79; Claire Bishop, ed., *Participation* (London: Whitechapel, 2006); Bishop, *Artificial Hells*.

relationship between ethics, aesthetics and politics, and the relationship between those categories and avant-garde activity.)

A reverse, mirror-version of this discussion transpired within game studies. In a 2008 column for Gamasutra Magazine, later expanded and included his collection "How to Do Things with Videogames," Bogost proposed bypassing the stale question of the cultural status of games and its relationship to categories of art by considering, instead, the question of style within game design. As described in chapter one, his conception of "style" was an argument about the nature of form in game design: the proceduralist style was described as locating "meaning" within the procedures and mechanics of the game, rather than in the creation of atmospherics, writing, character design, or virtual architecture. He included within this style games such as Rod Humble's "The Marriage," Jonathon Blow's "Braid," and Jason Rohrer's "Passage." They shared certain characteristics: what he calls the "abstraction of instantial assets" (somewhat incorrectly: the assets are iconic and stylized, rather than abstraction, and it is not really accurate to describe the iconic as abstract without some qualification; in as much as play requires an index to an activity, actual pictorial abstraction--working in the pure picture plane-- may only be possible in backgrounds and details); "authorship," (both discursively and in terms of voice: the game is figured as a personal expression from the designer to the audience); introspection (the context of the delivery of the game, the language used to prime the player's interaction, and the aesthetics of any opening animations and music call the player to, at least at some point in their interaction with the game, perhaps immediately after, reflect upon the processes of the game and integrate them back onto

inner experience.) These characteristics are recognizable, and not controversial in as much as they do seem to inform an approach to game design that aspires to a kind of poetics of play. These poetics rely on a certain configuration of the player, particularly insofar as the game is calling for an introspective posture: the player is presumed to be alone, pensive, thoughtful. The art-gamer is called to a mode of reception we associate with the reading of literature, the viewing of an art-house film, the viewing of a painting in a traditional art museum, in which the attention of the viewer winnows out distractions and settles into the object, withdrawing from peripheral activity (especially social demands.[239]) To the extent that a game does not call forth this mode of reception—to the extent that, like *Final Fantasy XI,* it produces conditions in which players can make demands on each other, can pursue the lusory goals of the game only in collaboration with others, and are given tools to facilitate communication (even across languages), it can be described as a co-producing and co-authoring the relationships among its players.

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[239] In the documentary film *Indie Game,* Jonathon Blow is depicted as visibly disappointed at a young man's carnivalesque reception of *Braid*. It is implied that an experience of the game which does not center on the recognition of the "personal statement" of the designer is a defective reception. In Lisanne Pajot and James Swirsky, *Indie Game: The Movie*, Documentary, 2012.

CONCLUSION

Since the creation of *Space War* in 1961, the conditions in which video games have been produced have gone through a series of changes. These changes are coeval with trends in the development of the technologies upon which the games are played, the computational tools used to produce them, the availability of a widening range of software tools, programming languages, and development methodologies which were created in response to these new tools. They also accompany the transformation of global networks of work and capital, the attempts by much of the global culture industry to buttress and expand the structures of intellectual property legislation, and the growth of use-produced content (e.g. fan fictions, mods, remixes, and mash-ups.)

In these five decades, new modes of authorship for these games have emerged, consolidated, and then been displaced by subsequent ones. The idea of *authorship* has served as a kind of lodestone for the above analysis of games and meaning. By characterizing the game *in toto* as a system of created representation produced in order to be decoded in multiple registers of interpretation allows us to tentatively consider how those systems were authored. The problem of "authorship" –and its fussier cousin, auteurship—has enjoyed a fraught history since Roland Barthes described the fading, receding presence of the author in the modernist text, even as Andrew Sarris and Andre Bazin, each in their own way, sought to isolate certain key figures in the production of film in the studio system as authoritative (Sarris) or mobilize the idea of authorship to free film-makers from the most suffocating constraints of that system (Bazin.) Games have generally not enjoyed a status as authored items, with some telling exceptions.

Michel Foucault's idea of an *author function* suggests that authorship appears as relevant to a field of cultural activity when there discursive needs for that role: to assign blame or responsibility for a text, to characterize a trajectory or development of a style, or even to ascertain legal rights. I described the emergence of digital games in the beginning of this dissertation as discontinuous in many ways from the traditions of non-digital games: the design of a non-digital game mostly relies on the conceptual production of a rule-system which is sustained in the language and activity of the game participants, aided by materials and designated spaces of play. The production of digital games relies on the transcription of those rule-systems into computationally mediated software-based systems which manage their behavior, their appearance, and their representationality. They are reproduced and disseminated over networks—retail or electronic—in the conventional commercial model. When videogames became viable as goods in the marketplace, the conditions which could sustain variform configurations of authorship appeared. But this market-driven basis for authorship was not autonomous of the material and technological circumstances in which digital games were developed.

The history of game authorship can be divided into a sequence of periods in which a new model would see widespread deployment (though the older models do not necessarily become impossible—even today, designers create and distribute games much in the way that they were created in the 1970s.) The decade following the development of *Space War* in 1961 could be described as ""non-authorial" phase, in which the game itself was not treated as conceptually distinct from the platform on which it ran. They were novelties: the source code for *Spacewar* was shared among researchers at university

computer labs around the world. The development of the game was promoted as a way to demonstrate the capabilities of the system on which it ran: the tech demo was a kind of performance in which the virtuousity and expertise of programmers and engineers would be demonstrated to impress visitors—and often funding sources—to research laboratories. Although publics might hold dramatic expectations and excitement about the possibilities of computing, they were often disappointed when they saw mid-century computers at work, doing very little that was visually interesting. The team which created *Spacewar* believed that an effective demo had certain features:

> "A good demonstration program ought to satisfy three criteria:
>
> 1) It should demonstrate, that is. it should show off as many of the computer's resources as possible, and tax those resources to the limit:
>
> 2) Within a consistent framework, it should be interesting, which means that every run should be different:
>
> 3) It should involve the onlooker in a pleasurable and active way—in short, it should be a game."[240]

No established workflow existed for the design and production of computer games: *Spacewar* was designed and developed in workshop conditions. The goal of the project was the creation of a demo, not a product—and, of course, the amusement of the creators and their friends.

Computer game design and development became a segment of the culture industry in the 1970s. The first half of the 1970s could be called a "pre-authorial" phase

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[240] J M Graetz, "The Origin of Spacewar," *Creative Computing*, August 1981, 61.

in which the conditions by which computer games as semi-autonomous content had not yet consolidated, although preludes to a more recognizable form of authorship did appear. Will Crowther's *Adventure* was released in 1975 as the outgrowth of a personal project he had begun the previous year. An avid spelunker, player of *Dungeons and Dragons,* and programmer, he wrote the game to reach out to his daughters in the wake of his divorce. Like *Spacewar*, the game spread through a network of researchers, students and enthusiasts. Despite its apparent resemblance to earlier "literary machines"[241] and the personal motivation of the designer, it was not generally received as an author's statement or concept. Since then, the biographical aspect of Crowther's work has become part of the game's ongoing reception, but there was no institutional mechanism or apparatus to establish this relationship between producer and product at the time of its release.

A more classical mode of *auteurship,* in which a game would be associated with one or, at most, a few individuals (with those works produced by the same individual then being identified as sharing stylistic features) emerged in the mid-1970s. The first wave of game consoles in the early 1970s, such as the Atari Pong system, did not afford a

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[241] Nick Montfort, *Twisty Little Passages: An Approach To Interactive Fiction* (Cambridge MA: MIT Press, 2005), 66. Montfort describes the literary lineage of interactive works similar to *Adventure* but which were circulated in a literary context, such as the work of the French experimental literature group Oulipo While Oulipo was challenging and testing the limits of the authorial using aleatoric techniques and arbitrary constraints, Crowther's work was.

clear-cut distinction between the games as content and the game consoles as platforms: like the game arcade cabinets of the time, the design and engineering of a new game depended on a thorough understanding of the hardware, and generally involved the design of specialized circuitry for each game.[242] In this context, the design of the game as a text, semi-autonomous of the platform on which it ran, was proposed neither by the owners and managers of the companies for which these items were made, nor by the engineers and designers themselves.

In 1976, the California-based electronics company Fairfield Semiconductor International released a new console, the *Fairfield Channel F*, which used cartridges with programmable ROM (read-only memory) chips, instead of circuitry. Designers could create libraries of games by programming these chips without re-engineering the circuitry. The Atari VCS, released a few months after the Channel F, also used programmable ROMs for its games, and a business model emerged by which the costs of the development of a platform would be offset by licensing fees collected for each work.

The ability to create "titles" that used, rather than simply extended, the game hardware was not the only original development of the *Channel F.* While previous consoles such as the *Magnavox Odyssey* and the *Atari Pong* only supported play between human players, the *Channel F* provided enough computational power to support

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[242] An extensive study of the Atari VCS system and the conditions in which games were developed in the 1970s is in Montfort and Bogost, *Racing the Beam: The Atari Video Computer System*.

computer-based artificial intelligences against which a single human player could play. A game that is only playable with another player does not activate the sense of text: when the "other player" is the computer, it acts like a surrogate for the designer. The ludic opposition plays a role analogous to that of an authorial voice: the player's relationship with the computer as opponent is both the kind of dialogical relationship which constitutes interactive computing as described by Douglas Engelbart (cf. the second chapter of this dissertation) and an engagement with the author of the challenge. While the design of games to be played between human players may ultimately fall under the rubric of architecture, the design of a game in which a player is set against a computer— generally those which also have more diegetic content—produced among players a sense that the game itself was a locus of meaning, rather than acting as a foundation for a meaningful experience with their friends or family.

This did not translate immediately into the creation of auteurism within the field of game production, however. The programmers and designers at Atari who were responsible for some of the most successful games were still uncredited either in the games themselves or in the accompanying material which was packaged with the game cartridges. Warren Robinett, the designer of the game *Adventure*, famously included a secret level in his game, in which a player could see his name. The conditions under

which this "easter egg", the secret room, would be discovered were obscure enough that it wasn't actually discovered until Robinett had left Atari.[243]

The policy at Atari was to consider the game designers and programmers as workers-for-hire, rhetorically as well as organizationally. While the company's work culture was described as collegial and open in its earlier years, financial difficulties forced its founder, Nolan Bushnell, to sell the company to Warner Communications in 1977. In 1978, Bushnell was forced out of the company. Ray Kassar, the new president of Atari, maintained the policy of leaving designers uncredited, including David Crane, one of Atari's most prolific designer of successful titles:

> When we looked closely at that memo, we saw that as a group we were responsible for 60 percent of their $100 million in cartridge sales for a single year," Crane recalled. "With concrete evidence that our contribution to the company was of great value, we went to the president of Atari to ask for a little recognition and fair compensation. Ray Kassar looked us in the eye and said, 'You are no more important to Atari than the person on the assembly line who puts the cartridges in the box.' After that it was a pretty easy decision to leave.[244]

Crane and three of his colleagues left Atari in 1979 to join Activision, a new company formed by music industry executive Jim Levy. Activision would focus on the

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[243] Warren Robinett, "Adventure as a Video Game: Adventure for the Atari 2600," in *The Game Design Reader*, ed. Katie Salen and Eric Zimmerman (Cambridge MA: MIT Press, 2006), 711–712.

[244] Jeffrey Fleming, "The History Of Activision," *Gamasutra*, July 30, 2007, http://www.gamasutra.com/view/feature/1537/the_history_of_activision.php; Montfort and Bogost, *Racing the Beam: The Atari Video Computer System*, 99–100.

development and publication of games for Atari (and other) platforms, rather than producing its own platform. This business model accompanied a different approach to the crediting of work to designers: each designer was given prominent credits in the booklets which accompanied each game, and would be presented to the game-playing audience as distinctive artists, each with their own style. Along with this promotion of individual producers as auteurs, Levy coordinated the design of all of Activision's box art, maintaining a consistent identity (and palette, "using only the most saturated colors in its games, developing a consistent, distinct style for labels and boxes, and including the Activision logo (but not any programmers' names) on every game screen."[245] Individual authorship was promoted within a sphere of collective corporate identity: game-play and screen-design ascribed to the former; color and packaging to the latter.

From the late 1970s into the 1980s, more work was produced under this authorial model. Electronic Arts was founded in 1982 by Trip Hawkins, who left a position at Apple as a director of marketing to run the firm. Hawkins went farther in producing a culture of auteurship than Activision did, releasing games in packaging with promoted the names of the designers as prominently as the games themselves. Trade publications and magazines, such as *Creative Computing Magazine* (1974—1985), *BYTE Magazine* (1975—1998), *Compute Magazine* (1979—1994), and later *Nintendo Power* in the US (1988—2012) and *Famicom Tsūshin* (Later Famitsu: 1986—present) in Japan featured articles describing the designers responsible for the most popular games of their period.

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[245] Montfort and Bogost, *Racing the Beam: The Atari Video Computer System*, 100.

By the early 1990s, many commercial games required more labor than one individual could provide, or, eventually, even manage without delegation. As the scale of production increased, new modes of authorship emerged: a period of "collective authorship" took shape as teams of designers, and then studios, would be recognized as the site of style (and accountability.) Different roles within these larger teams would be credited with more or less priority in creating the success of these games. Among the most successful titles of this period, SquareSoft's *Final Fantasy*, was produced in 1987 for the Nintendo Famicom platform. Four designers, one programmer, two writers (one of whom, Hironobu Sakaguchi, also was credited as the lead designer/planner), and a composer are all given named credits for their contributions to the game. These roles have acquired the kind of complementary auteurist status that Sarris would attribute to key roles in the creation of narrative films (scriptwriters, cinematographers, editors, and actors,)

Contemporary game production is now highly distributed, sometimes geographically, sometimes temporally, and often organizationally. Over 400 people are credited for the development of the 2006 videogame *Final Fantasy XII*. 70% of the credited workforce is assigned a role in the production of art (the visual and audio assets of the game); 20% to game design, and 10% to engineering. In addition to industry-standard tools like Maya, Softimage, Photoshop, OTPiX and iMageStudio, the team used in-house developed tools, plug-ins and add-ons which reflect the specific workflow involved in producing the game. In a recent presentation at the Game Developer's Conference 2008, the coordinator for programming for *Final Fantasy XII*, general

manager Taku Murata stated that new tools being developed for future cross-platform development need to maintain a "detailed division of work."[246] This call for software to create well-defined production roles was accompanied by a need for tools that reflected the aesthetic priorities of Square-Enix's artistic directors.

The periodization of configurations of game authorship I describe above isn't exclusive: it is still possible to produce works as a solitary designer, and toys which embed game-logics into industrial design are still produced and distributed. But each of these models becomes possible at certain junctures in the history of digital games, and for a time becomes a dominant model for the industry, until new developments in technology, in labor relations and consumer markets make each subsequent model viable.

Yet through all these transformations, from *Space War* to *Final Fantasy XII,* the semiotic conditions of authorship have been stable in some regards. While the processes which produce the elements which players interpret have expanded by immense proportions, the dynamics of player-to-game semiosis have shown the more gradual development produce by the slowly nesting literacies of game players (literacies which need to be recapitulated by new generations of players.) Future work on specific moments and possibilities digital game authorship should pivot off of this framework.

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[246] Brandon Sheffield, "Q&A: Square Enix's Murata Talks Crystal Tools, Unreal Engine Initiatives," *Gamasutra*, April 15, 2008, http://www.gamasutra.com/php-bin/news_index.php?story=18246.

What remains to be seen is whether the idea of play, and its relationship to meaning, has been indelibly marked by its capture within software.

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