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# Systems at Play: The Construction of International Systems in Social Impact Games

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University of San Francisco

**Systems at Play:  
The Construction of International Systems in Social Impact Games**

A Thesis Presented to  
The Faculty of the College of Arts and Sciences  
Master's Program in International Studies

In Partial Fulfillment  
Of the Requirements for the Degree  
Master of Arts in International Studies

by  
Jorge Albor  
December 2011

**Systems at Play:  
The Construction of International Systems in Social Impact Games**

In Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

in

INTERNATIONAL STUDIES

by  
Jorge Albor  
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UNIVERSITY OF SAN FRANCISCO

Under the guidance and approval of the committee, and approval by all the members, this thesis has been accepted in partial fulfillment of the requirements for the degree.

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## TABLE OF CONTENTS

<b>1. Introduction</b>	<b>1</b>
Methods	4
Terms and Concepts	8
<b>2. Educational and Rhetorical Play</b>	<b>12</b>
The Cultural Anthropology of Games	13
Games as Critical Pedagogy	16
Games as Rhetoric	19
The Value of Play	21
Conclusions	25
<b>3. <i>Inside the Haiti Earthquake</i></b>	<b>27</b>
Player Agency	30
Difficulty and Failure	33
Scale	38
System Design	41
Conclusions	44
<b>4. <i>EnerCities</i></b>	<b>48</b>
Player Agency	51
Difficulty and Failure	54
Scale	60
System Design	63
Conclusions	66
<b>5. <i>Fate of the World</i></b>	<b>69</b>
Player Agency	72
Difficulty and Failure	75
Scale	79
System Design	83
Conclusions	85
<b>6. Conclusions</b>	<b>89</b>
Player Agency	92
Subversive Play	96
Scale	100
Difficulty and Systems Fluency	106
Future Research	109
<i>Acknowledgements</i>	<i>111</i>
<i>Bibliography</i>	<i>112</i>

## Chapter 1: Introduction

The reach of videogames worldwide is stunning.<sup>1</sup> According to game designer and researcher Jane McGonigal, global players collectively invest roughly three billion hours weekly playing online games.<sup>2</sup> Strictly specifying “online” play, this number also disregards the billions of hours collectively spent playing off-line games. Games, and videogames in particular, are far too pervasive of an art form to be ignored. Accordingly, a wide breadth of scholarly work has arisen to understand, analyze and critique the digital games medium.

Over the last several years, I have split my time between analyzing videogames from a design perspective and studying international politics. Thus, I have come quite naturally to a burgeoning field of games studies that explores the dual realm of international affairs and videogames. I started playing videogames when I was seven years old. However, it was only in college that I began to connect the visually splendid digital worlds on my television screen to the real world, with its political, ideological, and social phenomena, and to delve into the scholarly work on videogames. The shooter genre, awash in military themed stories glorifying US led violence, suddenly appeared far too unsettling to play blindly. Videogames, of all shapes and sizes, engage with, critique, and perpetuate particular discourses and ideologies. Some, I delightfully discovered, actually confront real world issues head on. Works by Ian Bogost, Kurt Squire, and a growing retinue of online games writers, laid the groundwork for my multidisciplinary approach to videogames that addresses both rhetoric and the study of global

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1 There is a continuing debate amongst game designers and game journalists regarding the spelling of videogames. Some choose to separate the term into two words as “video game” while others choose to use the conjunction. For this paper I will be joining those who write the name as one word to reflect the unique nature of the medium as more than the sum of its parts. The term “video” alone is also a relic of the eighties and is largely a descriptive misnomer today.

2 Jane McGonigal, “Gaming Can Make A Better World,” *TED Talk*, February 2010, [http://www.ted.com/talks/jane\\_mcgonigal\\_gaming\\_can\\_make\\_a\\_better\\_world.html](http://www.ted.com/talks/jane_mcgonigal_gaming_can_make_a_better_world.html).

affairs in order to explore how game designers can best address global systems through play.

Throughout the body of literature on games, a consensus has emerged regarding the educational and persuasive capacity of games, which has led to the creation of the so called “serious games” industry. Broadly defined, a “serious” game is any game that serves a purpose beyond the creation of entertainment. This definition encompasses a wide array of disparate digital media. Simulations that include ludic elements, from military to hotel management training games, fall into this category. One approach to serious games, gamification, seeks to turn normal activities into games to achieve everything from better health to smart financial management. Others use a game interfaces to crowd source scientific research that may one day cure cancer, such as *Foldit*. Assessing the global reach of these games is difficult, particularly when incorporating free-to-play games and too-common inadequate measurement practices. Some have pegged the serious games industry at over \$150 million, a minuscule fraction relative to traditional games. Regardless, with new projects launched weekly, the demand for social impact games is undoubtedly growing. Thus, it has become increasingly important to ask how game designers effectively create digital texts on serious subject matter.

Some serious games are designed to both educate and persuade, distinct from purely didactic interactive experiences, which aim solely to teach facts or traditional school lessons like math or science. These “social impact” games aim to garner attention for and spread information about an important public issue while also changing public opinion and behavior. These goals can exist in addition or opposition to the goal of creating entertainment. Many of these games seek to address problematic real world systems, from climate change to gender violence. By using games to educate and persuade, designers and institutions working within the serious

games industry take on the risks and rewards inherent to the medium. Meaning, created through a conversation of sorts between designers and players, can veer widely as a result of an assortment of design decisions, as well as player perceptions and an assortment of non-design related contexts. Players may accept the meanings established by the designers. However, they may also interpret a designer's intended rhetoric differently than expected, or even subvert this rhetoric. Alternatively, persuasion may take place unknowingly. Players may not recognize the impact of play on their understanding or behavior, or may attribute such changes to other sources. Indeed, audience studies suggests user responses range from acceptance to rejection and subversion frequently and naturally. Social impact game designers, working in a medium driven by a high degree of player agency, have an assortment of concerns unique to games. Designers must account for both diverse player responses and player input when fashioning experiences. Therefore, a large body of knowledge is required to ensure intelligent game design and to avoid creating counterproductive procedural rhetoric, a term I will shortly describe.

I seek to explore how game makers conceive of and navigate the intersection between digital systems and real world systems by asking, how can social impact game designers shape procedural rhetoric to effectively address complex real world systems within digital systems? The existing literature on games as tools for education and persuasion repeatedly addresses the benefits and dangers of digital systems and simulations. As games increasingly become a part of mainstream media, they are also becoming popular tools to engage players, particularly youth, with heretofore uncharted subject matter. From domestic politics to sustainable agriculture, serious games are reaching a wider audience and are becoming invaluable components of larger corporate, non-profit, and governmental education and persuasion campaigns. Accordingly, it has

become paramount to understand how games both intentionally and unintentionally shape behavior and opinion with procedural rhetoric unique to the medium. Like Prometheus' fire of legend, games hold great destructive as well as restorative power. This paper is a modest attempt to explore how to effectively shape and create social impact games to strengthen the burgeoning and increasingly important industry.

## **Methods**

The number of social impact games that address real world political issues are minuscule relative to the entertainment games industry at large. However, the range and variety within this small but growing field is still too expansive to be exhaustively mapped and representatively sampled given the limitations of this paper. Therefore, I will focus on three case studies in order to deepen the exploration of the game design elements and creative issues that arise when addressing global systems within social impact games.

These three case studies were chosen to meet specific criteria and are not meant to embody the entirety of social impact games currently available or in production. All three of my case studies were chosen because they specifically address international and large-scale processes as part of complex global systems. In addition, each case study models to a significant degree of complexity the global system they seek to address. Accordingly, I largely ignore the many abstract games that tangentially address global or domestic systems.

My three case studies include *Inside the Haiti Earthquake*, produced by PTV Productions in association with TVOntario, *EnerCities*, produced by Paladin Studios with funding and support from the European Commission, and *Fate of the World*, produced by the UK-based Red-

Redemption. Several similarities and differences make these three case studies particularly interesting and conducive to study. Firstly, all three games were created in different countries with different target audiences. *Inside the Haiti Earthquake* was a Canadian venture targeting adults, particularly aid donors, of both Haitian and non-Haitian backgrounds both in and outside of Canada. *EnerCities*, on the other hand, was funded by the EU and produced in the Netherlands, and targeted young secondary school students across Europe. *Fate of the World* was created in Oxford, UK and targets largely adults and young adults everywhere with a particular penchant for videogames. While Red Redemption did draw on the expertise of its faculty, the studio holds no affiliation with Oxford University. All three titles are created by and for a largely Western audience. Additionally, while the first two are browser-based games available free of charge to anyone with an internet connection, the latter must be downloaded for a nominal price and requires a substantially more powerful computer to run. Similarly, *Fate of the World* was a completely self-funded for-profit effort, while both *EnerCities* and *Inside the Haiti Earthquake* received significant funding from governmental sources. Notably, while *EnerCities* addresses sustainable development within a strictly “first-world” environment, *Inside the Haiti Earthquake* and to a lesser extent *Fate of the World*, explore “third-world” environments. Accordingly, the lessons these games may provide for the design processes of other social impact game design teams will vary.

Each of these games share design principles and deviate from each other in significant ways. *Inside the Haiti Earthquake* addresses international disaster relief in the wake of the devastating 2010 Haiti earthquake and takes a comparatively small-scale approach to the material by portraying the response to the earthquake through the eyes of three individual

characters. *EnerCities* and *Fate of the World* both address sustainability and climate change. While the former focuses solely on sustainable development in one fictional city, the latter is a game of immense scale, giving players a gods-eye view of the world and addressing global climate change, third-world development, international politics, economics, and technological progress while allowing players to shape global policies and actions. With just three case studies, the lessons I draw are by no means meant to be representative. However, the similarities and differences between *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World* allow me to more deeply analyze a range of different persuasive and educational strategies that contemporary social impact game designers are using for games about crucial international public issues.

My inquiry into the construction of persuasive and educational social impact games requires a broad examination of design processes and outcomes. In order to thoroughly dissect how each game addresses its subject matter within a digital system, I predominantly rely upon a semiotic analysis of these games as texts, which demands a comprehensive method of interrogation that touches upon game construction from concept through the play, incorporating player and designer alike. This approach to games draws upon the work of media researchers such as Stuart Hall, who “proposed that consumers’ interpretation of media is an intrinsically social and interactive process in which audiences act not as passive *consumers* of media persuasion, but rather as active *producers* of perceived meaning.”<sup>3</sup> Indeed, as Justin Lewis explains, theories of audience resistance to media persuasion include key assumptions that hold true in games as well:

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3 Elizabeth C. Hirschman and Craig J. Thompson, “Why Media Matter: Toward a Richer Understanding of Consumers’ Relationships with Advertising and Mass media,” *The Journal of Advertising*, Spring, (1997), 45.

first, audiences are seen as active rather than passive; second, media texts are seen as potentially ambiguous rather than monolithic (they can, in other words, be interpreted in different ways by different people). But the conclusions they draw do *not* suggest that audience activity or textual ambiguity diminish media influence. They simply make that influence more complex and diffuse.<sup>4</sup>

Thus, the game's design does not necessarily produce expected outcomes. Media and games researcher Henry Jenkins mirrors this approach with his understanding of game design as a form of narrative architecture in which players create meaning through the exploration of structure systems.<sup>5</sup> Likewise, Hunicke, LeBlanc, and Zubek's influential "MDA framework" for game design highlights the mechanical, dynamic, and aesthetic conversations between players that construct games and meaning.<sup>6</sup> Indeed, like all creative works, designer intent plays a significant but not altogether solitary role in the creation of meaning. Rather, designers and players negotiate meaning by conversing through play within a defined rule-based system. Additionally, my limited sample of players for each game may fail to articulate some of each game's embedded rhetoric, as players outside my sample may have produced different meanings. However, designer and player insight remains invaluable. Accordingly, my textual analysis is supplemented with qualitative interviews with both game designers and players.

All of the three design teams are relatively small relative to the entertainment games industry at large. Many social impact game development teams range in size from teams of two to teams of thirty. Therefore I have collected only a limited purposive sample of games designers involved in the creative process for *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World*. This data is not meant to represent a complete interrogation of their design process and

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4 Justin Lewis, *Constructing Public Opinion*, (New York: Columbia University Press, 2001), 86.

5 Henry Jenkins, "Game Design as Narrative Architecture," *First Person: New Media as Story, Performance, Game*, Noad Wardrip-Fruin and Pat Harrigan, Ed., (Cambridge: MIT Press, 2004).

6 Robin Hunicke, Marc LeBlanc, and Robert Zubeck, "MDA: A Formal Approach to Game Design and Game Research," (2004), <http://www.cs.northwestern.edu/~hunicke/MDA.pdf>.

history, but to provide insight into how and why particular design elements were incorporated into each game. Similarly, interviewing a large representative swath of players would prove too time consuming and unproductive for a paper of this scope. Therefore, my limited convenience sample of a handful of players for each game is neither representative of player demographics nor a statistically significant sample of each game's player base. The supplemental player interview data reveals some of the many values, feelings, and experiences each game can illicit with its given design choices. Where relevant, design documents and related reports are used to further analyze the processes by which these games model and address real world systems within digital systems. Lastly, although my designer interviewees have worked on their respective games in a variety of roles, as producers, directors, writers, programmers and more, I include each of them within my "designer" category as contributors to their respective projects. While the names and professional titles of these interviewees remain anonymous, the members of small teams such as these often fill various roles and offer a great deal of design input throughout a project.

### **Terms and Concepts**

Before proceeding further, a thorough explanation of certain terms and concepts may prove valuable. First and foremost, even the definition of "game" remains disputed. For the purposes of this paper, I will rely on the following definition of digital games provided by Jesper Juul, videogame theorist and Professor at the New York University Game Center:

A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the

outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable.<sup>7</sup>

Two important points stand out from this widely used, albeit contested, definition. First, games are systems composed of rules which set the conditions of play. Therefore, all games, regardless of their subject matter or genre model some sort of system. *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World* all incorporate actors and elements from existing real world systems into their digital systems. Second, player interactivity or agency is a fundamental component of the play experience. How designers influence and make room for player agency differs between games and dramatically shapes how individuals understand and interact with the game system. Without excluding alternative definitions, these two concepts are useful in examining how and why games are constructed to achieve particular design goals. It is important to note that Juul's definition does not include "fun" or "enjoyment." While many designers strive to make entertaining games, creating "fun" is just one way to make players "feel attached to the outcome."<sup>8</sup> Indeed, the pursuit of fun was not a major design goal of every designer participating in my study. Similarly, although the designers of *Inside the Haiti Earthquake* often refer to their creation as a simulation, not a game, it still meets Juul's qualifications.

As a multidisciplinary medium, games express meaning with both textual and visual rhetoric with which we are familiar from other mediums. Social impact games can, and frequently do, offer players chunks of educational texts or persuasive images. Additionally, games uniquely express meaning through game mechanics, what game designer and researcher

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7 Jesper Juul, "The Game, the Player, the World: Looking for a Heart of Gameness," *Level Up: Digital Games Research Conference Proceedings*, Marinka Copier and Joost Raessens, ed., (Utrecht: Utrecht University, 2003), <http://www.jesperjuul.net/text/gameplayerworld/>

8 Juul, "The Game," 2003.

Ian Bogost calls “procedural rhetoric.”<sup>9</sup> While Bogost’s method of analysis receives further attention in chapter two, this concept is crucial to the analysis of social impact games. Through the act of play itself, the dynamic interaction between players and digital systems, games convey arguments and assumptions. By analyzing visual, textual, and procedural rhetoric, with particular emphasis on game mechanics, the rules that compose the system, we may interrogate how social impact game designers effectively address real world systems within digital systems, potentially improving the social impact games industry.

In most cases, many relevant game terms are self-explanatory or will be briefly described as we explore each case study. However, several major concepts pertinent to most games should be discussed here for those less familiar with the medium. Much of my analysis involves an interrogation of “gameplay,” the interaction between player input and game mechanics. This is distinct from “play experience.” While playing a game may involve watching animated footage or reading text, gameplay specifically refers to a game’s interactive experience. “Cutscenes” refer to visual interludes between gameplay, often used to express the passage of time or physical movement through a space. “Decision trees” and “dialogue trees” refer to the method by which many games shape branching narratives, allowing players to make certain choices which then lead to other choices and so on. A “user interface” or “UI” is both the visual and structural means by which players interact with the game system. This includes non-gameplay elements such as menu design and gameplay elements such as the layout of on-screen information. UI design is an understated but incredibly important component of game design. Lastly, “win conditions” and “lose conditions” describe the circumstances by which players complete a game satisfactorily or

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<sup>9</sup> Ian Bogost, *Persuasive Games*, (Cambridge: MIT Press, 2007).

not. While games often include minor obstacles, win and lose conditions refer specifically to the game as a whole. Win and lose conditions vary wildly and may change over time during gameplay, creating multiple win and lose conditions.

Examining designer contributions and perceptions, player experiences, and the design elements of *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World*, I aim to expand our understanding of social impact game theory and design. I begin in chapter two by exploring the intersection between two growing bodies of academic literature on the educational and persuasive potential of games. Chapters three through five focus on each case study in turn, beginning with PTV's *Inside the Haiti Earthquake*, followed by Paladin Studio's *EnerCities*, and concluding with Red Redemption's *Fate of the World*. Within each chapter, I explore how each game's scale, approach to agency, difficulty, and systems complexity creates particular procedural rhetoric, how designers shaped this rhetoric, and what sorts of values and responses players have experienced. In my conclusion, I draw lessons from the similarities and differences between each case study to discuss how designers effectively, and ineffectively, address global systems within social impact games.

## **Chapter 2: Educational and Rhetorical Play**

This literature review explores the primary body of work analyzing how games educate and persuade. I draw an important distinction between the twin purposes of education and persuasion, reflecting the disconnect between the two bodies of work on games. I will be drawing from a multidisciplinary body of work coming from anthropology, psychology, education, and games studies. The dominant school of critical academic thought on serious games focuses on the educational risks and rewards of the medium, with particular emphasis on the incorporation of games and games-based learning into the school system. The largely academic and industry produced literature on the persuasive power of games emphasizes the authorial and player-controlled power of games rhetoric, the expression of meaning through designer and player negotiation and interaction. Importantly, the two bodies of work share many concerns regarding the dangers and opportunities of digital systems and simulations. However, a significant gap in the literature exists at precisely this point of contact. How do educational and persuasive systems effectively model and/or deconstruct real world systems, political, social, environmental, or otherwise? My research will address both learning and persuasion as they relate to the intersection between digital systems and real world systems. I begin this chapter with an exploration of the cultural anthropology of games, primarily drawing on anthropological and sociological disciplines to explore how games create spaces for people to assess values. I continue by examining games as critical pedagogy, exploring how players can assess, evaluate, and critique existing real world systems. I then discuss games as rhetorical texts, specifically exploring how game designers and players interact to produce procedural rhetoric. Lastly, I

conclude with an examination of the educational value of play, exploring several paradigms from education texts that apply games to the learning process.

### **The Cultural Anthropology of Games**

Miller approaches the persuasive power of games with concern regarding games that indoctrinate and inculcate.<sup>10</sup> Miller explores the anthropological considerations of games in her own work, advocating for the analysis of games as performative folklore, a navigable culturally significant experience. Through play, individuals explore socially and historically significant digital spaces that address, reflect, and replicate real world systems and ideologies. Accordingly, researchers can study videogames as historical texts and play can provide ethnographic insight. Briefly, Miller also touches upon an absolutely crucial element of digital games that relates to the persuasive power of games. Like all folklore, she states, videogames can “inculcate values, demonstrate behaviors, and transmit beliefs, thereby creating and perpetuating particular social formation and actions.”<sup>11</sup> Learning, as Egenfeldt-Nielsen attests, has its own set of risks. Games may implicitly validate and promote particular values, ideologies, beliefs, and behavior, concealing the process of indoctrination. Uncritical players may be susceptible to the persuasion of game folklore; engaged in the performative process, players may overlook and underestimate a game’s persuasive potential.

As folkloric or cultural artifacts, games can reveal how popular media invokes and perpetuates historic motifs. Wills highlights this phenomenon in his analysis of the perpetuation

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10 Kiri Miller, “Grove Street Grimm: Grand Theft Auto and Digital Folklore,” *Journal of American Folklore* 121, no. 481, (2008).

11 Miller, “Grove Street Grimm.”

of Western mythologies through videogames.<sup>12</sup> The games he cites act as simulations of the Western mythos, both adhering to and abandoning historical realities. The study of virtual worlds can teach students about the real world and how we construct and perpetuate our own cultural mythologies. Rejack discusses the educational implications of games and history as well, arguing that playing a game with at least some historical authenticity is a form of historical reenactment, giving players unique insight into actual events by simulating history.<sup>13</sup> Social impact games are no different in this regard, and may shed light on historical or modern perceptions on political and social issues.

Dyer-Witherford and De Peuter make an argument that most games procedurally vindicate and perpetuate the “empire” of global capitalism.<sup>14</sup> The games industry itself, they argue, is situated firmly within a system of exploitative production and consumption, and this ideological bias extends into popular game design, both intentionally and unintentionally. Squire makes a similar argument about the procedural rhetoric of *America’s Army* and *Full Spectrum Warrior*, two U.S. Army developed first-person shooter games that reaffirm and recreate military values and biases through gameplay.<sup>15</sup> Players, particularly those groomed to enjoy the first-person shooter genre, may unknowingly ingest military dogma. Squire and Dyer-Witherford, however, leave room for games to construct counter-hegemonic procedural rhetoric. Squire believes critical students can reject or even re-appropriate a game’s rhetoric for their own

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12 John Wills, “Pixel Cowboys and Silicon Gold Mines: Videogames of the American West,” *Pacific Historical Review* 77, no. 2, (2008).

13 Brian Rejack, “Toward a Virtual Reenactment of History: Video Games and the Recreation of the Past,” *Rethinking History* 11, no. 3, (2007).

14 Nick Dyer-Witthford and Greig de Peuter, “Empire@Play: Virtual Games and Global Capitalism,” *CTHEORY* 4, (2009). See also Stephen Kline, Nick Dyer-Witthford and Greg de Peuter, *Digital Play: The Interaction of Technology, Culture, and Marketing*, (Montreal: McGill-Queen’s University Press, 2003).

15 Kurt Squire, “From Content to Context: Videogames as Designed Experience,” *Educational Research* 35, no. 8, (2006).

educational benefit.<sup>16</sup> Dyer-Witheford and De Peuter also cite “protest games,” politically charged games designed to interrogate and criticize normative behavior, as indicative of the politically radical power of games; so too does games theorist Gonzalo Frasca.<sup>17</sup> Flanagan explores these possibilities as well, praising efforts to design games that encourage critical thought and performance through subversive art.<sup>18</sup> Digital spaces can become sites of contestation, in which meaning laden digital systems can be tested, prodded, and dismantled to suit the needs of activist players. Alternatively, designers may produce systems which more critically or realistically portray real world systems. Social impact game designers, my subjects of interest, attempt to create critical games that seek to exploit both the educational and persuasive capacities of the medium.

However, the radically subversive game is a minority of socially and politically associated serious games. Most social impact videogames mean to inform, evoke critical thought, and encourage real world involvement or behavior change without attempting to shatter structural norms or mislead players. Documentary and news games are two subsets of serious games that create digital systems with the intention of maintaining some objectivity and level of realism. Raessens encourages the creation of documentary games, lauding their ability to persuade, analyze, and preserve elements of historical events.<sup>19</sup> While the narrative limitations of documenting history may confine interactivity in games, Raessens’ work accurately describes the educational potential of factual historical information conveyed in games. To Bogost, Ferrari and

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16 Squire, “Replaying History.”

17 Gonzalo Frasca, “Ideological Videogames: Press Left Button to Dissent,” *The Ivory Tower*, 2003, [http://archives.igda.org/columns/ivorytower/ivory\\_towerNov03.php](http://archives.igda.org/columns/ivorytower/ivory_towerNov03.php)

18 Mary Flanagan, *Critical Play: Radical Game Design*, (Cambridge: MIT Press), 2009.

19 Joost Raessens, “Reality Play: Documentary Computer Games Beyond Fact and Fiction,” *Popular Communication* 4, no. 3, (2006).

Schweizer, news games can achieve the same potential. In their recent work on news games, the authors describe approaches to games journalism that mirror Ritterfield and Weber's paradigms of games-based learning.<sup>20</sup> While games can certainly draw attention to the news and encourage personal investigation, the medium can best explore the dynamic systems that create and contribute to current events. By relying on the expertise of investigative journalists, game designers can interrogate real world systems and facilitate their digitized recreation for educational and persuasive purposes. Players, then, can explore the systems behind news headlines and experience a non-linear but nevertheless pertinent and illuminating narrative experience.

### **Games as Critical Pedagogy**

Researchers such as Kurt Squire occupy the vanguard of games learning by seizing upon the interactive nature of games to highlight the power of interacting with systems through digital simulations. Squire and Barab studied the use *Civilization III*, a videogame about politics and global domination, as an educational tool to engage underserved youth in learning world history.<sup>21</sup> Historical simulations demand a comprehensive knowledge of geographic facts and a mastery of historical concepts. Likewise, students must grapple with the interactions between historical processes and “understand relationships among geographical, political, economic, and historical systems.”<sup>22</sup> Playing within historical systems proved incredibly useful for students,

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20 Ian Bogost, Simon Ferrari, and Bobby Schweizer, *Newsgames: Journalism At Play*, (Cambridge: MIT Press, 2010).

21 Kurt Squire and Sasha Barab, “Replaying History: Engaging Urban Underserved Students in Learning World History Through Computer Simulation Games,” *Proceedings of the 6th International Conference on Learning Sciences*, (Madison, 2004).

22 Squire and Barab, “Replaying History.”

educating the participants on the interrelated dynamics that shape history as we know it, while the games based learning triggered peer-to-peer teaching and critical thinking, as students reflected on their experiences and approaches to gameplay.<sup>23</sup> However, relevant to Miller's concern regarding inculcation, Squire et. al. note that *Civilization III* encouraged a particular materialist understanding of history amongst his students, a feature embedded within the game mechanics themselves that isolates geographical resource allocation and exploitation as the key unit of historical analysis.<sup>24</sup>

Raphael et. al. take an approach similar to Squire's in their exploration of games for civic learning, praising educational games that create interactive models of social systems.<sup>25</sup> As designed ethical systems, Sicart joins Raphael in lauding complex digital systems.<sup>26</sup> Like Miller and Squire, Raphael notes the risks of the so called "black box" problem, in which players interact with a system without questioning the game's hidden assumptions. Turkle cautions practitioners across all disciplines against succumbing to this problem in *Simulation and Its Discontents*, arguing that simulations are so alluring that we forget they cannot possibly recreate real world systems perfectly and are therefore inherently biased and misleading.<sup>27</sup>

Designers, by making particular design decisions, always alter the shape of the real world system they seek to model. Remaining conscious of such dangers demands a great deal of effort and reflexive thinking on the part of both designers and players. Systems-based literacy, a term put forward by Walsh to describe how students "play and configure" digital games, is useful in

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23 Kurt Squire and Henry Jenkins, "Harnessing the Power of Games in Education," *InSight* 3, no. 5, (2003).

24 Squire and Barab, "Replaying History."

25 Chad Raphael, Christine Bachen, Kathleen-M. Lynn, Jessica Baldwin-Philippi and Kristen McKee, "Games for Civic Learning: A Conceptual Framework and Agenda for Research and Design," *Games and Culture* 5, (2010).

26 Miguel Sicart, *The Ethics of Computer Games*, (Cambridge: MIT Press), 2009

27 Sherry Turkle, *Simulation and Its Discontents*, (Cambridge: MIT Press), 2009.

addressing simulation concerns.<sup>28</sup> Systems literate players are better equipped to critically deconstruct digital models. As Raphael briefly discusses, games could encourage healthy reflexivity by revealing their core assumptions, such as divulging the mechanical components of gameplay, thereby increasing players' systems literacy. As players begin to understand the implicit components of a digital system, they may increase their ability to comprehend and interrogate other complex systems. While a useful term, "literacy" implies a binary relationship between being literate and illiterate, or knowing and not knowing how a game system functions. "Systems fluency" more accurately illustrates the concept because it describes a gradient of player knowledge about a game system. Systems fluency can also describe one's knowledge about real world systems. This distinction is important, as it makes room for knowledge variants, helping us understand how players and designers maintain different fluency levels with one or more systems.

Serious games do not necessarily engender increased systems fluency or reflexive thought. Game designers who seek to exploit simulation bias for their own ends may simply remain unaware of the hidden assumptions within their own games. Galloway touches upon this subject briefly, drawing a clear distinction between "realistic-ness" and realism, the former referring to games emphasizing visual fidelity and the latter to those that "reflect critically on the minutia of everyday life, replete as it is with struggle, personal drama and injustice."<sup>29</sup> From Galloway's perspective, digital simulations that achieve desired rhetorical ends, be they striving for the sensation of realism or otherwise, need not adhere to reality. Abstract design may in fact

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28 Christopher Walsh, "Systems-based Literary Practices: Digital Games Research, Gameplay and Design," *Australian Journal of Language and Literacy* 33, no. 4, (2010).

29 Alexander Galloway, "Social Realism in Gaming," *Games Studies* 4, no. 5, (2004).

meet one's rhetorical needs. Wood, citing Frasca, makes similar claims regarding social simulations.<sup>30</sup> Even when players formulate their own goals or adjust a simulation's very structure, their actions are still predicated on their initial interactions with the game and the continued input from the game and/or the designers. Game creators maintain rhetorical influence, even when their control is subverted through player inter-action. Lee also explores the ability for socio-political games to exploit game conventions to persuade and convey meaning.<sup>31</sup> Lee highlights games that seek to persuade while players lose, such as *Kabul Kaboom* and *September 12<sup>th</sup>*, subverting both gaming and rhetorical conventions in pursuit of persuasion. When games utilize failure to persuade, they express meaning mechanically the moment players lose agency.

### **Games and Rhetoric**

While many educational texts consistently raise concerns about what games might teach players, the body of literature surrounding a variety of persuasive, and often political, subset of games better articulates how game mechanics convey meaning. Ian Bogost, researcher at Georgia Tech University, offers the most thorough and articulate dissection of videogames as persuasive media. In accordance with Juul, Bogost describes all games as formal systems composed of discrete executable actions, or operations.<sup>32</sup> Rather than analyze games as authorial controlled and deterministic singular systems, he approaches game systems as the almost random collection of interacting nodes. In his words, “the difference between systems of units and systems as such is that the former derive meaning from the interrelations of their components,

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30 Stewart Woods, “Loading the Dice: The Challenge of Serious Videogames,” *Games Studies* 4, no. 1, (2004).

31 Shuen-shing Lee, “I Lose Therefore I Think? A Search for Contemplation amid Wars of Push-Button Glare,” *Games Studies* 3, no. 2, (2003).

32 Ian Bogost, *Unit Operations*, (Cambridge: MIT Press, 2008).

whereas the latter regulate meaning for their constituents.”<sup>33</sup> These unit operations are more than just game mechanics themselves, the rules that govern play, but the interaction between them. They are the operative components of a digital system. In practical terms, videogames are composed of individual game mechanics, operations and design elements that deserve critical attention as they collectively construct the digital systems in which we play and produce meaning. Rather than focus on the system as a whole, an approach many games and education scholars employ, Bogost proposes an alternative framework for games analysis. Accordingly, as systems themselves, digital games offer unique experiences to address real world systems.

As rule-based systems, games express particular meaning through game mechanics, what Bogost calls “procedural rhetoric,” the act of persuasion through unit operations, a unique expressive form.<sup>34</sup> Bogost specifically addresses the educational potential of games, expanding on Gee’s discussion of simulated experiences by highlighting the potential insight into a simulation experience games can offer and the specific creation of very particular meanings.<sup>35</sup> Videogames, as Bogost describes them, make specific, experiential, procedural arguments through play. Games can make multiple and even contradictory arguments, implicitly or explicitly, within their system. In relation to games-based learning, Bogost articulates perfectly why that lack of systems literacy, what he also calls “procedural literacy,” poses risks for the efficacy of educational games. Players may assimilate factual information without gaining the “ability to reconfigure basic concepts and rules to understand and solve problems, not just on the computer, but in general.”<sup>36</sup> Players with high systems fluency may understand and interrogate the

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33 Bogost, *Unit Operations*, 4.

34 Bogost, *Persuasive Games*, 2007.

35 Ibid., 241.

36 Ian Bogost, “Procedural Literacy: Problem Solving With Programming, Systems & Play,” *Telemedium*, Winter/Spring, (2005), 32.

digital space they occupy, revealing and testing a game’s rhetorical assumptions and arguments, engaging with the material in much the same way a student may engage with a text. Indeed, this educational engagement within digital systems may transcend games and help players critically examine real world systems as well, a potentially beneficial strategy for social impact game designers.

### **The Value of Play**

Ritterfeld and Weber focus their work on the ways in which games can be used as educational tools.<sup>37</sup> They put forward three explanatory paradigms to explain the educational potential of games – motivation, reinforcement, and a blending of education and entertainment – which reflect common approaches to educational games.<sup>38</sup> The motivation paradigm approaches games as vehicles for information. As objects of entertainment, the logic goes, games provide venues through which students may become interested in educational material. A game designed primarily to entertain, for example, might incorporate optional educational information into the game itself, often textual, or merely encourage and assist students to pursue information on their own. In both circumstances, while the game may motivate players to do so, players must ultimately make the decision to learn, to continue their education and seek out knowledge secondary to the game.

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37 Many of the works cited here set aside the sensationalist controversies regarding videogames and violent behavior, and I will follow suit. I stand in agreement with Ritterfeld and Weber who believe studies on violent videogames hold no analytical relevance for the potential of the games medium. See Ritterfeld and Weber, “Video Games for Entertainment and Education,” Vorderer P., Briant J., Ed., *Playing Video Games – Motives, Responses, and Consequences*, (Mahwah: Lawrence Erlbaum, 2006).

38 Ritterfeld and Weber, “Video Games for Entertainment and Education.”

The reinforcement paradigm takes the opposite approach by inserting game elements into strictly educational experiences. Ritterfield and Weber cite a reward system as an example, a system in which student progress through curriculum is rewarded with points, virtual goods, animations, or even time spent playing the “gamey,” or ludic portions of an educational game just for fun. This strategy, commonly referred to as “gamification,” has received both praise and criticism. While proponents like Jane McGonigal praise the motivational power of game-like reward systems, others such as Ian Bogost have harshly condemned gamification, calling it “marketing schlock” and “exploitationware.”<sup>39</sup> Ritterfield and Weber question the efficacy of both paradigms, as they both add entertainment or education to the other sequentially, missing out on the implicit educational potential of a combined approach instead. Neither strategy capitalizes on the expressive power of games. Learning, they suggest, possesses the most effect when educational information is fundamentally a part of play, incorporated within the digital system itself.

Taking an approach commonly found in developmental science, Corbeil finds the act of play itself inherently educational.<sup>40</sup> Isolating exploration and imitation as the two foundations for learning, Corbeil describes play as evolutionarily advantageous, offering players, primarily children, an opportunity to explore and imitate in a fictional environment, thereby learning in the process. Digital recreations of real world systems may offer a similar exploratory learning environment. The same characteristics of play that encourage learning for children, he states, can also exist in serious digital games for adults. As long as game designers cater to adult mentalities,

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39 Jane McGonigal, *Reality is Broken*, (New York: Penguin, 2011), and Ian Bogost, “Persuasive Games: Exploitationware,” *Gamasutra*, 2011, [http://www.gamasutra.com/view/feature/6366/persuasive\\_games\\_exploitationware.php?page=4](http://www.gamasutra.com/view/feature/6366/persuasive_games_exploitationware.php?page=4).

40 Pierre Corbeil “Learning from Children: Practical and Theoretical Reflections on Playing and Learning,” *Simulation Gaming* 30, no. 163, (1999).

he suggests the educational potential of videogames operates across all ages evenly. Rodriguez mirrors Corbeil's and Ritterfield and Weber's thoughts in his exploration of "the playful" and "the serious."<sup>41</sup> Rodriguez visualizes two approaches to games as educational tools, first combining Ritterfield and Weber's two paradigms into the viewpoint that games simply make educational experiences more joyful and thus, appealing. Mirroring Corbeil's assessment of play, his second approach and the one he most subscribes to, is the viewpoint that play is important to learning because the subject to be learned is in some ways inherently playful. The goal of a social impact game designer, then, is to draw out the ludic, or playful, elements from serious subject matter, to find the components of real world systems that can be explored by players in an engaging digital system.

Egenfeldt-Nielsen discusses the power of games-based learning from both an educational perspective, which commonly envisions games learning as beneficial, and what he calls a psychological perspective, which commonly sees games as potentially malignant.<sup>42</sup> While he states the two disciplines differ on what the medium teaches, these two approaches share the belief that games can serve as effective learning tools. McGonigal offers almost fanatical praise for videogames and the ways in which play does a better job at satisfying certain human needs than the traditional mundane components of life.<sup>43</sup> While her work falls more soundly within Ritterfield and Weber's reinforcement paradigm, again a proponent of the gamification model, McGonigal nevertheless adamantly supports play as an inherently rewarding act. As she understands it, play can make the world a better place if the right games provoke real people to

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41 Hector Rodriguez, "The Playful and the Serious: An approximation to Huizinga's Homo Ludens," *Game Studies* 6, no. 1, (2006).

42 Simon Egenfeldt-Nielsen, "Can Education and Psychology Join Forces: The Clash of Benign and Malign Learning from Computer Games," *Nordicom Review* 2, (2005).

43 Jane McGonigal, *Reality is Broken*.

make real change.

Although James Paul Gee argues less vehemently than McGonigal, he offers the most comprehensive and well articulated body of work on videogames as tools for learning. Gee's "thirty-six principles of educational psychology" reaffirm many of the aforementioned approaches to games and learning.<sup>44</sup> Games naturally employ a variety of teaching methods, from demanding meta-level thinking on the part of players to the simple act of repetitive practice. The very construction of most games inherently teach. Gee also touches upon Corbeil's concern with experimentation and imitation. Digital games in particular, Gee argues, are well suited for learning as they can adapt with the player, incorporate her input, fine-tune the experience, and encourage critical thought in a myriad of ways.<sup>45</sup> Normative gaming elements themselves, such as incremental progress, bottom-up skill development, and multiple route exploration, fit naturally within his principles of educational psychology. Importantly, he also lauds the ability for games to simulate and illuminate specific experiences. In so doing, well designed games provide a venue for players to think critically and reflectively about game systems and even their own cultural models.

Three particular learning principles stand out from Gee's selection as components of well designed games that in some ways take place outside of the game context. The Dispersed Principle, the Affinity Group Principle, and the Insider Principle describe the ways player share information, organize themselves around "shared endeavors, goals, and practices," and learn by

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44 James Paul Gee, *What Video Games Have to Teach Us About Learning and Literacy*, (New York: Palgrave Macmillan, 2003).

45 Here I use the gender pronoun "her" not only for gender inclusivity but to allude to the large, and growing, portion of female game players, roughly forty-two percent. Game designers may also keep this oft forgotten audience in mind for social impact game endeavors. See Entertainment Software Association, "Industry Facts," <http://www.theesa.com/facts/index.asp>.

producing and sharing game content with others.<sup>46</sup> As Gee states, game players “often experience a more intense affinity group, leverage more knowledge from other people and from various tools and technologies, and are more powerfully networked with each other than they ever are in school,” thereby engaging in a uniquely interactive yet social learning experience.<sup>47</sup>

Throughout all the literature on games and education, a common consensus appears regarding games-based learning. These scholars have praised the medium’s ability to motivate and reward students learning through traditional means, and recognized the act of play itself as a uniquely educational form of learning that exploits the adaptability, exploratory, and social components of games-based learning. Combined with the robust literature on games as persuasive tools, we encounter the intersection between two approaches to game analysis that are absolutely crucial to understanding how social impact games educate and persuade players while addressing real world systems.

## **Conclusion**

From news games to games-based learning, a wide consensus exists amongst scholars that videogames hold immense educational and persuasive potential. Games researchers across disciplines all recognize a range of risks and rewards inherent to digital systems and simulations. While a great deal of ink has been spilled mapping how we understand and play serious games, there remains a dearth of critical research on the creative process and its outcomes. What types of operations and processes effectively create particular procedural arguments within digital systems? How do social impact game designers understand their own level of fluency about real

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<sup>46</sup> Gee, *What Video Have to Teach Us*, (2003), 197.

<sup>47</sup> *Ibid.*, 194.

world systems and how does this affect the creation of its virtual counterpart? What principles and values do players experience as a result of social impact game design? How well do players transfer increased systems fluency from the digital realm to the external analog world? The research conducted by Joyce Neys and Jeroen Jansz comes closest to addressing these questions. The authors use both qualitative and quantitative methods, interviewing game developers and surveying players, to examine how political games engage an audience and measure the impact of this engagement on the audience.<sup>48</sup> Their results reveal that the act of creating and playing a political game may have lasting consequences for participants and thereby affect the real world. However, their work merely scratches the surface of serious games design research. This thesis is a modest addition to the field.

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<sup>48</sup> Joyce Neys and Jeroen Jansz, "Political Internet Games: Engaging an Audience," *European Journal of Communication* 25, no. 3, 2010.

### Chapter 3: *Inside the Haiti Earthquake*

In January 2010, an enormous seven point magnitude earthquake erupted in Haiti, just a short distance from the island nation's capital of Port-au-Prince. The natural disaster collapsed the country's already fragile infrastructure and devastated the developing nation's struggling economy. According to reports following the earthquake, an estimated 316,000 people died, with an additional 300,000 injured and well over one million displaced.<sup>49</sup> For the millions of Haitians struggling with the carnage, it was a nightmare. For a team of Toronto-based documentarians and interactive media designers, it was both a tragedy and the opportunity they were waiting for.

TVOntario (TVO), an educational media organization accountable to and predominantly funded by the Ontario Ministry of Education, had commissioned *Inside Disaster* well before the Haiti earthquake took place.<sup>50</sup> TVO produces a panoply of media both online and televised, supporting the goals of the Ontario Ministry of Education by producing educational material for both the school system and the public at large.<sup>51</sup> Although produced by PTV, a media production company in Ontario, the initial idea came from a veteran documentarian, whose interest in disaster relief sparked the concept for a documentary project. "I forged a relationship with the Red Cross," she states, and "convinced them to allow a camera crew to go with them the next time they deployed a disaster relief team."<sup>52</sup> The result was roughly 180 hours of footage to create and complement *Inside Disaster Haiti*, a three part multimedia project about disaster relief

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49 These numbers have since been contested by USAID and others, putting the final death toll between 46,000 and 85,000. See BBC, "Report challenges Haiti earthquake death toll," *BBC*, 2011, <http://www.bbc.co.uk/news/world-us-canada-13606720>. Regardless, the impacts of the earthquake were nonetheless appalling.

50 TVO, "About TVO: Main," [http://www.gopublic.org/?page\\_id=43](http://www.gopublic.org/?page_id=43).

51 TVO, "About TVO: Facts and Stats," [http://www.gopublic.org/?page\\_id=15](http://www.gopublic.org/?page_id=15).

52 Respondent 9, Interviewed by author, 16 August 2011.

in the wake of the Haiti earthquake.<sup>53</sup>

Three distinct media projects collectively form the *Inside Disaster Haiti* project, all of which work in tandem to address the tragedy in Haiti and the flooding of aid work into the country. The first component, the *Inside Disaster* web page, offered an assortment of resources for those interested in both the earthquake and in disaster relief in general, featuring in depth information about the natural disaster, the humanitarian response, the aid industry at large, donor education, and careers for those interested in aid relief.<sup>54</sup> A three part documentary series and feature film comprised the second component. Using footage shot entirely in Haiti, the documentary series is broken into three episodes, the first dealing with immediate emergency relief following the earthquake, the second addressing relief efforts two weeks or so after the earthquake as some of the more long-term problems begin to appear, and the third depicting the long-term process of recovery, taking place approximately six months after the quake.<sup>55</sup> The feature film builds upon this series, documenting the work of both aid workers and survivors. The final component, *Inside the Haiti Earthquake* and my topic of interest, is an interactive experience, a game according to Juul's definition, "designed to challenge the assumptions about relief work in disaster situations."<sup>56</sup>

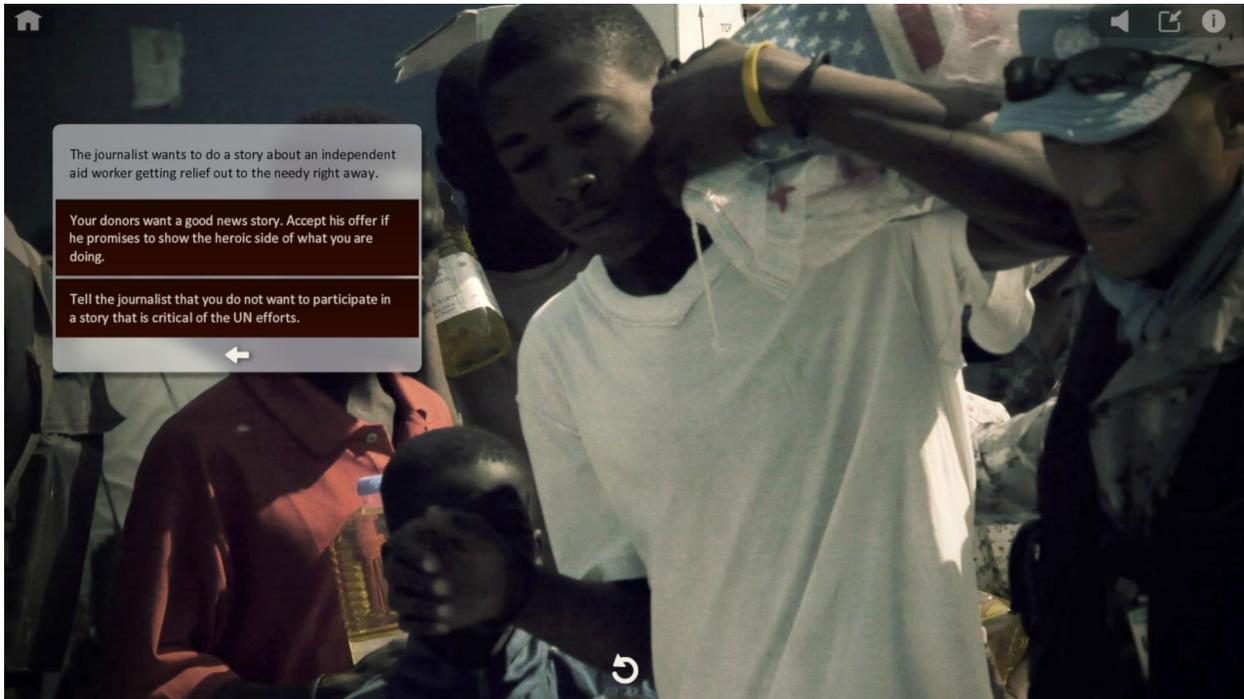
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53 Respondent 9, Interview, 2011.

54 TVO, "Inside Humanitarianism," <http://insidedisaster.com/haiti/inside-humanitarianism>.

55 PTV Productions, "Inside Disaster Haiti Press Kit," (2010), 4, [http://insidedisaster.com/outreach/IDH-PressKit\\_Dec2010.pdf](http://insidedisaster.com/outreach/IDH-PressKit_Dec2010.pdf).

56 PTV Productionz, *Inside the Haiti Earthquake*, <http://www.insidedisaster.com/experience/Main.html>.



Decision juncture, Screenshot, *Inside the Haiti Earthquake*

*Inside the Haiti Earthquake* uses the footage collected by the *Inside Disaster* film team to construct a “first-person simulation” of the events following the Haiti earthquake from the point of view of three actors: the survivor, the journalist, and the aid worker.<sup>57</sup> After selecting which actor to experience, players confront an assortment of decisions, from how to frame a story angle as a journalist covering aid distribution, to how to react to the destruction of your home and livelihood as a survivor in the wake of the earthquake. At various junctures, players make decisions, from a selection of two or three choices, which continue the story, revealing more footage and moving their selected actor through Haiti. Documentary cutscenes carry players between decision points and a voice over narration describes events and the outcomes of player decisions. Each portion of *Inside the Haiti Earthquake* is relatively short and accessible, playable

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<sup>57</sup> PTV Productions, “Simulation: Inside the Haiti Earthquake,” <http://insidedisaster.com/haiti/experience>.

in most web browsers. Despite the relative simplicity of the textual, and procedural rhetoric of *Inside the Haiti Earthquake*, the game addresses an immensely complex system at work.

### **Player Agency**

While *Inside the Haiti Earthquake* simulates the complexity of aid relief in Haiti after the earthquake, its narrative backdrop, as well as its location, is essentially interchangeable. As one player states, “this could have been a much smaller disaster that was recorded and this footage could very well still apply very much in the same way.”<sup>58</sup> The experiences of the survivor, aid worker, and journalist are never portrayed as purely “Haitian” experiences, nor do player decisions appear contingent on political or social realities in Haiti. The interchangeability of the disaster relief scenarios was an intentional and inevitable outcome of the constrained development process. “We didn't know who the characters would be, we didn't know what the disaster would be, and we didn't know where it would be,” describes one designer.<sup>59</sup> Work on both the documentary and the game necessarily began prior to the collection of footage. In order to ready the launch of such an expansive project so quickly following a disaster, the PTV team needed to prepare as much as possible. One designer describes how the early narrative approaches to the material were necessitated by a tight time line: “My job was to think about what are going to be the constants in any natural disaster and humanitarian relief operation that we would be able to find no matter where this event takes place in the world.”<sup>60</sup> The three actors

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58 Respondent 7, Interviewed by author, 24 August 2011.

59 Respondent 9, Interview, 2011

60 Respondent 15, Interviewed by author, 23 August 2011.

in the game represent three social roles the team felt consistently engage with each other throughout disaster zones.

Although not explicitly a documentary game, a genre that seeks to explore specific events and moments in time, *Inside the Haiti Earthquake* nevertheless shares many of the genre's burdens with storytelling. Player interactivity dramatically shapes the outcome of a game narrative. Educational and persuasive game designers often seek to impart specific lessons to players, even while player choice may alter such a plan. Yet in order to keep players engaged with an interactive experience, they must have a vested interest in the outcomes of their decisions. Player agency can fundamentally shift a game's procedural rhetoric, regardless of designer intent. "As soon as you give the user more control," explains another PTV designer, "you are also making all kinds of assumptions, and those assumptions may or may not be correct."<sup>61</sup> For example, if a player acting as the survivor were allowed to immigrate immediately to the neighboring Dominican Republic instead of staying in Port-au-Prince, the game may inadvertently undermine its efforts to explore survivor experiences with aid relief in Haiti. Of course if emigration were an option for disaster survivors in the game (which it certainly was for actual survivors), its presence would take players outside the internal system *Inside the Haiti Earthquake* seeks to represent. Thus, the design team crafted a tightly controlled narrative within a confined sphere of interest.

The decision to rely on documentary footage both constrained and opened up possibilities for the PTV team in regards to constructing an interactive narrative. In some ways, *Inside the Haiti Earthquake* is a minimally interactive experience, offering only a handful of options to a

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<sup>61</sup> Respondent 4, Interviewed by author, 24 August 2011.

player over a relatively short period of time. In all the roles, some of the pauses between footage clips offer no options at all. As several designers on the game describe, the decision to convey a sense of “truth” determined how liberally the game could deviate from the reality depicted in the documentary footage. “You need to have some kind of narrative story, but as soon as you start putting in that narrative story, you get into fictional land,” states one designer.<sup>62</sup> To avoid the creation of narrative holes, Michael Gibson, the game's lead writer, explains in his own case study on the project, the team “needed a linear structure where the content, the characters and events, could be interchanged but the functional sequence of the story remained consistent.”<sup>63</sup> Gibson, drawing on Vladimir Propp's *Morphology of the Folktale*, arranged a narrative structure that allowed players to “branch off and make choices, creating the illusion that the user is in control only to have the narrative fold back by an inevitable pre-scripted event.”<sup>64</sup> Strategic decisions, choices that result in significant change that do not loop back into a predetermined narrative, appear sparingly in the game. This narrative structure allows players to navigate scenarios each actor in the system may encounter without leading them astray until the point at which deviation results in specifically designed educational scenarios.

A food distribution encounter during the journalist scenario illuminates how this minimally interactive decision tree shapes *Inside the Haiti Earthquake's* procedural rhetoric. During a distribution effort, documentary footage shows a surge of civilians pushing against a barricade until it collapses, knocking a woman to the ground, to be trampled underfoot. Two choices then confront players: continue shooting the scene for your story, or drop the camera and

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62 Respondent 4, Interview, 2011.

63 Michael Gibson, “The Haiti earthquake Experience A Case Study,” (2010), 2, Accessed October 2011, <http://www.zap.ca/HAITI%20EARQUAKE%20EXPERIENCE%20ICIDS.pdf>.

64 Gibson, “The Haiti Earthquake Experience,” 2.

rush to the woman's aid. If players keep shooting, the footage continues and the narrator describes the mindset of a detached or emotionally distant journalist. If players come to the woman's aid, the scene transitions to briefly show a medical center and a group of singers who have invited the journalist into their tents as a thanks for the player's kindness. However, the player must also confront their failure to fulfill their duty as a journalist. "You saved the woman's life, but lost your story," describes the game, offering just one option: "Go back and film the event like a journalist." At this point, the game returns to the aid distribution site, folding back into the linear narrative. Although players cannot deviate from the narrative very much, each decision taken provides players with compelling footage of survivors. Additionally, describing the singular choice of "filming like a journalist," conveys the conventional understanding of a journalist's job, forcing players to question the role of journalism in disaster zones and the occupational constraints on journalist behavior. The detached behavior of a "true" journalist, the game states, is a personal moral dilemma deeply embedded within the system of disaster relief.

### **Difficulty and Failure**

Failure and difficulty play a crucial role in games as both entertainment and educational media. Players may lament a game's easiness while others may critique it for being too hard, both of which can sour one's mood towards an interactive experience. As Jesper Juul describes, "a game should be neither too easy nor too hard."<sup>65</sup> Failure may both enhance an educational experience and make play more entertaining.<sup>66</sup> As Juul discovers in his study, "failure serves the

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65 Juul, Jesper, *The Video Game Theory Reader 2*, ed. Mark J. P. Wolf, Barnard Peron, (New York: Routledge, 2009), 247.

66 I follow Juul in referring to single player games. The theory of failure and difficulty in game design is rich and complex, and becomes even more so when including player versus player competitions.

deeper function of making players readjust their perception of a game. In effect, *failure adds content* by making the player see new nuances in a game.”<sup>67</sup> When interactive media models real world systems, new perceptions and nuances arise concerning the media's subject matter. Gibson mirror's Juul's assessment in describing PTV's approach to *Inside the Haiti Earthquake*: “Our belief was that failure is the best teacher because it stings and makes us sit up and pay attention and demand to know what we did wrong.”<sup>68</sup> In games of all sorts, failure can act as an educational catalyst.

Failure and difficulty are not rhetorically neutral elements of digital systems. How and why players can and cannot fail shape particular procedural arguments. With this in mind, it is important to note that *Inside the Haiti Earthquake* lacks many of the “hard failures” common in games. For this reason, one designer distances *Inside the Haiti Earthquake* from others in the medium. “It's more or less an interactive documentary,” he states.<sup>69</sup> Another designer agrees, stating, “We tried to make it feel more like real life than a game.”<sup>70</sup> As a result, minor failures, occurrences in which the game presents less than satisfactory outcomes, become irrevocable aspects of the play experience and therefore paths towards knowledge. Mistakes are frequent and permanent, the game suggests, and therefore those with the most experience are best suited to handle the complexity of aid relief in disaster zones. This “ignorance to knowledge” structure explains the rationale behind PTV's decision to reject the insertion of Red Cross/Red Crescent into the game, although they were a major part of the documentary. As two designers describe, the Red Cross were doing what they deemed as a “good job”, and therefore there was “no point

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67 Juul, *Video Game Theory*, (2009), 237

68 Gibson, *The Haiti Earthquake Experience*, 2010, 2.

69 Respondent 4, Interview, 2011.

70 Respondent 15, Interview, 2011.

in using them,” as it would break the learning path designed for players.<sup>71</sup> However, although it may contradict the stated explanation, it is important to note the working relationship PTV formed with Red Cross for purposes of filming the documentary. At the very least, such relationships may give the impression that leaving the Red Cross out of *Inside the Haiti Earthquake* was politically motivated. One can imagine the desire to leave Red Cross out of material that may criticize their work.

The rhetoric of experience and the high frequency of less than ideal outcomes in disaster situations were intentionally incorporated into *Inside the Haiti Earthquake*. The structure of the game, as one designer describes, tries to capture the everyday experience of actors so as to move players “from ignorance to knowledge.”<sup>72</sup> Accordingly, various unit operations shuffle players towards suboptimal decisions. Gibson describes this process in greater detail:

“In essence, we needed the simulation to set up a realistic set of circumstances that would lead the user into making a false assumption and a strategic mistake. If the user by chance or otherwise chose the correct strategy then we needed the simulation to, in essence, negotiate with her to change her mind based on the exigencies of the moment.”<sup>73</sup>

Gibson continues with an example of the game's Aid Worker beset by external pressures to distribute aid quickly, before first sorting resources based on verifiable needs assessments. For example, a crowd of civilians asks why relief items “are being stored when there are so many desperate people?” and at another point, players receive a text message from the character's fictional organization, “Mission of Mercy” asking them to send images that put an optimistic face on their work, in an effort to help with the constant funding pressure with which many non-profit organizations consistently struggle. With constant pressure to cave to short-term

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71 Respondent 15, Interview, 2011 and Respondent 9, Interview, 2011.

72 Respondent, Interview, 2011.

73 Gibson, *The Haiti Earthquake Experience*, 2011, 2.

expectations, the game leads all but the most resolute players towards suboptimal outcomes, shaping a procedural rhetoric that expresses how the complexities of disaster zones can act as incredible burdens on inexperienced aid workers. If players play *Inside the Haiti Earthquake* again, altering their decisions accordingly, they begin to mirror the strategies of aid workers who attempt to disperse resources after thorough needs assessments according to a long-term strategic plan. By shepherding players along a path beset by negative outcomes, players' own practices mirror those of experienced aid workers who must confront the challenges of disaster relief time and again and slowly adapt according to lessons they learned on the ground.

Information, in both *Inside the Haiti Earthquake* and in games in general, becomes an integral component of game difficulty. In Juul's discussion of videogame difficulty, he touches on the important perceptual difference between believing failure is caused by one's own actions and believing failure is caused by a game itself.<sup>74</sup> Players who blame themselves for failure are given a learning opportunity in which they can analyze and adjust their own behavior. Players who instead blame a game's system rarely have any way to change the system. As Juul states, “although players do not want to fail, they may nevertheless enjoy it when feeling responsible for it.”<sup>75</sup> Although the multifarious reasons players may or may not feel responsible for specific choices are too expansive to discuss thoroughly here, lack of information definitely evokes sensations of failure. Players who lack enough information to assess why they failed may blame the game for their failure, even when their decision led to the negative outcome. Without sufficient information, one may simply be unable to assess why failure happened in the first place. Games that obfuscate their digital system may inadvertently increase the sensation of

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<sup>74</sup> Juul, *Fear of Failing?*, 2010.

<sup>75</sup> Ibid.

unfair difficulty amongst players, souring players to a potentially enlightening experience. In circumstances in which designers want to maintain a rhetoric of unfairness so as to blame a real world system, a policy of transparency may arm players with the fluency to critically examine the digital representation of said system.

While information barriers may consistently act as poor design elements in entertainment media by unintentionally diminishing player agency, information barriers do not function so clearly in social impact games. The “ignorance to knowledge” rhetorical structure of *Inside the Haiti Earthquake* necessitates the obfuscation of information to a significant degree. One designer describes the intent behind this design element when she states, “We deliberately blocked off information because you don't always know what the other path would be.”<sup>76</sup> By restricting player information, *Inside the Haiti Earthquake* isolates player choice and shapes a procedural rhetoric that portrays the profound lack of foreknowledge and predictive capabilities of actors working within disaster zones. Amongst all my player interviews, lack of foreknowledge about player decisions significantly affected their player experience. “Sometimes you don't always understand the consequences of the actions you are going to take,” one player describes.<sup>77</sup> Although he continues by stating a player may benefit from more foreknowledge, he also recognizes the rhetorical benefit of ignorance: “Then again, you really get a taste of what bad decisions cost.”<sup>78</sup> In this particular digital system, the obfuscation of information Jull might describe as poor game design shapes a procedural rhetoric that describes disaster relief as besieged by information gaps, modeling a real world system in which knowledge is not readily

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76 Respondent 15, Interview, 2011.

77 Respondent 7, Interview, 2011.

78 Ibid.

and quickly available and costs time, patience, and even human suffering; an insight which regularly confronts aid workers, whose knowledge or the lack thereof profoundly affects the lives of disaster survivors.

## Scale

A game's scale greatly constrains design choices and player experience. In the case of *Inside the Haiti Earthquake*, the game's approach to scale is inextricably bound to the game's rhetoric. The depiction of “truth” or “authenticity” was a primary concern throughout the development process for all the designers’ interviewed. The pursuit of personal sense of scale shaped one designer's artistic goal in both the documentary and the interactive game. Her use of actual documentary footage played a crucial role in shaping the play experience. As she describes, both the film and the game were “similar in what they are trying to do,” sharing an experiential format.<sup>79</sup> The goal of the game was to “put [players] in the shoes of someone in a disaster zone.”<sup>80</sup> Another designer reiterates this pursuit of a personal scale in relation to the individuals documented in the game's footage: “It was important to us to make a product that people working with us in Haiti would think was authentic.”<sup>81</sup> The process for the editor demanded consistent attention to the “human story” within the footage.<sup>82</sup> From another designers perspective, the intent was to “make it personal,” without making it fictional.<sup>83</sup>

Much of this personal scale stems from the presentation of documentary footage. In most cases, the camera represents a first-person view of the events unfolding. In the case of the

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79 Respondent 9, Interview, 2011.

80 Ibid.

81 Respondent 15, Interview, 2011

82 Ibid.

83 Respondent 4, Interview, 2011.

journalist, the interface occasionally portrays a lens display on the screen, conveying an experience in which the player literally stands behind the camera. All of the players I interviewed expressed an appreciation of real footage and the effect it has on personalizing the story, in both its depiction of real events and its minimization of traditional game interfaces. As one player states, “I appreciated the way that they shot the video and put it together. It seemed kind of intimate in a way.”<sup>84</sup> To this player, the minimalistic interface also enhanced the gravity of the subject material: “There wasn't a big HUD or text over the screen. It made it seem less frivolous.”<sup>85</sup> Another player articulates well the emotional resonance of documentary footage in an interactive experience, a very rare feature in the medium: “It adds some gravity to it to understand that this isn't some artist's impression. This isn't a reconstruction. This is people who are actually desperate enough to push over a barrier and trample a woman to have water and food.”<sup>86</sup>

All of the designers I spoke with articulated the importance of documentary footage for the game. One designer describes the game as more “visceral” as a result of the footage.<sup>87</sup> By conveying the small-scale and emotionally resonant implications of disaster relief with both visual and procedural rhetoric, *Inside the Haiti Earthquake* reveals how human emotions can actually impede rational choice and lead to decisions that do more harm than good. As one designer describes, “good intentions are not enough.”<sup>88</sup> The visual approach to *Inside the Haiti Earthquake* works in conjunction with its mechanical construction to shape procedural rhetoric

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84 Respondent 18, Interviewed by author, 4 October 2011.

85 A HUD, or “Heads Up Display,” is a design term referring to the collection and presentation of over-laid on-screen information. Ibid.

86 Respondent 7, Interview, 2011.

87 Respondent 4, Interview, 2011.

88 Respondent 15, Interview, 2011

that relies on a small-scale environment to discuss the complexities of the system of international aid relief.

This emotionally resonant material worked in tandem with the mechanical processes of *Inside the Haiti Earthquake*. The survival scenario, for example, begins within a context of destruction, thereby establishing the selection of choices within disaster zones as of the utmost importance. As one player states, “they didn't preface it with 'this is a normal day in Haiti.' The first decision was your most important.” Similarly, the footage of desperate Haitian survivors envelops decisions in the Aid Worker story arc, which compounds the pressure for players to distribute aid immediately and thus receive the game's suboptimal outcomes.

The pursuit of a personal scale for *Inside the Haiti Earthquake* shapes the game's rhetorical outcomes. When modeling a complex real world system, achieving a low-level scale demands the intentional excision of design elements. It is tempting as a designer, one respondent describe, “to take the god's eye perspective” and implement a “Farmville type scenario.” She continues, “what we tried to do with this project was the exact opposite of that.”<sup>89</sup> By inhabiting the roles of particular individuals in a disaster zone, the scale of the disaster is comprehended from the point of view of this low-level actor. “I think it's easy to lose sight of the scale of the disaster with the way that the game is presented,” one player describes.<sup>90</sup> In relation to the information and difficulty, the small-scale approach also shapes a rhetoric that portrays the fallibility and influence of single actors in disaster zones. The structural or organizational large-scale mistakes and successes of actors within a disaster zone are set aside to explore the decisions and outcomes of heavily constrained individuals. Accordingly, *Inside the Haiti*

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89 Respondent 15, Interview, 2011.

90 Respondent 7, Interview, 2011.

*Earthquake* does not, and indeed cannot, model large-scale aid relief from UN agencies, national governments or the Red Cross that incorporates reflection about larger geopolitical or institutional politics. Similarly, the game does not model the medium-scale effects foreign aid workers have on local economies or domestic perceptions of dependence and its political implications. The agency of national or international organizational and collective actors remains absent.<sup>91</sup> Modeling such large-scale components of the system of international disaster relief would require a departure from the personal scale, thereby altering the game's rhetorical intent.

### **System Design**

All digital systems employ strategic simplifications of the real system they seek to model. In the case of *Inside the Haiti Earthquake*, this digital system and its contrivances, greatly influenced by its scale, shape procedural rhetoric that depicts a strategic selection of complexities and the effects they have on disaster relief. It is important to note PTV never sought to explore every aspect of disaster relief in detail. As one designer states, their modest goals were “to show some of the humanity of everyone involved in these situations.”<sup>92</sup> In terms of increasing each player's system fluency, they “wanted people to have a critical apparatus to look at how media behaves in disaster zones, and how humanitarians behave in disaster zones,” and to give players “some sense of the survivor perspective.”<sup>93</sup> Each designer I interviewed expressed this same level of recognition of the limitations of the project. As another designer elucidates, film goes cannot understand “the entire system by watching a film,” and players cannot understand the

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91 We could imagine, for example, a game that incorporates the actions of the Haitian government or other foreign relief efforts. However, such a game would accomplish different design goals than those sought by PTV.

92 Respondent 15, Interview, 2011

93 Ibid.

entire system of emergency aid distribution by playing a game.<sup>94</sup> Even with her first-hand experience in Haiti and her work on the game and documentary, she still states “I don't understand the entire system.”<sup>95</sup> Nevertheless, the aspects of a real world system modeled within digital systems are well worth examining, as they both intentionally and unintentionally shape a game's core assumptions in regards to the system they seek to address.

In addition to the national, political, and institutional context in which designers work, the absence of certain design elements greatly shapes a game's rhetoric. One US player, for example, was particularly struck by the absence of US actors in *Inside the Haiti Earthquake*: “It's interesting to see a huge event happening in the world without a US presence when in reality the US had a pretty heavy presence.”<sup>96</sup> Although the designers certainly intended non-Canadians to experience the game, this player's understanding of the game may reflect a dissonance between the team's target audience and player context. For example, we could imagine the same sentiment regarding other foreign actors who all played roles in Haiti following the earthquake. Another player remarked on the surprising absence of politicians. “You don't get a sense of how Haiti the country as a political entity is handling it,” she states.<sup>97</sup> One designer notes the absence of the Haitian government from the game, as well as military personnel in general, who do have a “large presence” in both Haiti and developing countries in general when disasters strike.<sup>98</sup> The adherence to documentary footage partially explains the absence of some of these actors. As this designer states, documentarians will simply “never get access” to high-level government officials. Similarly, as another designer explains, the design team was wary of “not wanting to

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94 Respondent 9, Interview, 2011.

95 Ibid.

96 Respondent 18, Interview, 2011.

97 Respondent 11, Interviewed by author, 6 October 2011.

98 Respondent 9, Interview, 2011.

betray people's trust” by presenting footage differently than the survivors and aid workers understood at their time of consent.<sup>99</sup> .

However, as I have discussed earlier, the decision to include three roles, the Survivor, Aid Worker, and Journalist, was a strategic choice made prior to filming based upon what the design team perceived as consistently important actors in any aid relief effort. These actors align with the team's design goals very well and often play crucial roles throughout all disaster zones. Indeed, the potential harm aid workers and journalists can inflict on survivors does appear in reflective literature regarding Haiti disaster relief. One report in particular mirrors the rhetoric of *Inside the Haiti Earthquake* when giving advice to future aid workers: “Put yourself in the victim's shoes, and ask yourself if this is the best way to help those in need. Work with an experienced relief agency and leave the media at home.”<sup>100</sup> The scale and desired rhetorical outcome had as much to do with the game's design as the representative limitations of the documentary footage. One designer elucidates one of the benefits of this approach: “When you start getting into big systems it starts to become enormously complex. In the process of doing so, you have to make simplifications that change the truths of what you are doing.”<sup>101</sup> Rather than capture the large-scale system of the economic, political, and social repercussions of disaster and foreign aid relief over a long period of time, *Inside the Haiti Earthquake* focuses on the interactions between ground-scale individual actors, reflecting some of the complexities of the large-scale context in which they find themselves.

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99 Respondent 15, Interview, 2011.

100 Daniël J. Van Hoving, MMED, Lee A. Wallis, MD, Fathima Docrat, MMBCCh, Shaheem De Vries, Mphil, “Haiti Disaster Tourism – A Medical Shame,” *Prehospital and Disaster Medicine* 25, no.3 (May 2010).

101 Respondent 4, Interview, 2011.

## Conclusions

As a low-scale system that personalizes the interrelations between particular individual actors in disaster zones, *Inside the Haiti Earthquake* approaches its subject matter with all the benefits and limitations of interactive media. Although separated into three story arcs, the game incorporates some events and characters into each individual's experience. The depiction of a chaotic food distribution scenario appears in all three arcs, for example. Similarly, journalists, aid workers, and survivors all appear in each other's narrative, and often act as outside pressures that constrain player choice. By placing three actors in the same environment, the game models a system of interaction between these important figures. In order to understand the whole scenario, players must experience each story arc. "I feel like the NGO and the reporting scenarios link together fairly well," one player describes, "because they are somewhat interested in the same thing and neither is invested in the actual situation as the survivor."<sup>102</sup> Another player describes his new-found interest in playing the journalist after encountering a journalist as an aid worker. After doing so, he explains the learning effect such an approach had: "I had never really thought about the implications of journalists and aid workers being together, that the journalism can impact the aid process so much. And just walking away with that one understanding makes me feel like I get those situations a great deal better."<sup>103</sup> By separating the depiction of aid relief into three personal story arcs, the game presents a rhetoric in which individuals, be they survivors, aid workers, or journalists, must step outside their own roles within a given context to achieve a broader understanding of aid relief. The player's reliance on a broad understanding of all three

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<sup>102</sup> Respondent 18, Interview, 2011.

<sup>103</sup> Respondent 7, Interview, 2011.

actors supports PTV's goal of representing the inherent difficulty and complexity of disaster situations.

While playing all the characters best achieves the team's learning outcome, players must decide which character to play and in which order. One designer states anecdotally that “most people choose the journalist, then the humanitarian,” and that “the survivor is the least trafficked.”<sup>104</sup> Because the decision regarding which characters players will control happens at the game's outset, PTV could do little to lure players into stepping outside their comfort zone into the shoes of a survivor. This designer describes some of the dangers such a structure creates: “there is a way to play it to only reinforce the perspectives you already have.”<sup>105</sup> Players who experience only the journalist's perspective, for example, may interpret detached behavior as a positive value without putting the experience in the context of a survivor and aid worker's perspective. As one player describes of the journalist, “you're almost like a robot.”<sup>106</sup> Players with built-in biases may select the role that most vindicates their beliefs, perhaps wary of role-playing another's ethnic, cultural, or class context. Designers walk a precarious path when giving players the opportunity to disregard their intended rhetoric and must design around such possibilities accordingly. The team specifically shaped the story, particular the presence of other characters in each narrative arc, while keeping in mind the interaction between actors. However, in any documentary, one designer states, “sometimes you miss out on some of the nuances of what's been said.”<sup>107</sup> Another designer expresses this same acceptance when she states, “people

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104 Respondent 15, Interview, 2011.

105 Ibid.

106 Respondent 18, Interview, 2011.

107 Respondent 4, Interview, 2011.

are always going to interpret information in different ways. All you can do is put the information out there.”<sup>108</sup>

Of greater concern, perhaps, are the ways that the producer's own biases shape the design expression of meaning. Examining the discourse embedded within *Inside the Haiti Earthquake* reveals PTV's unique approach to both storytelling and aid relief. The film and documentary experience of the team greatly affected the linear and individually focused narrative created within the game. We might also point to national trends to locate *Inside the Haiti Earthquake* within a larger discourse of aid relief. Canada has a long tradition of publicly-funded documentary media. Canada also invests a relatively large portion of its GDP to foreign aid compared to the United States, although significantly below the United Nations target in recent years.<sup>109</sup> The Canadian International Development Agency (CIDA) also holds a close relation with the International Red Cross/Red Crescent. CIDA does not, in fact, issue emergency financial aid to governments but instead distributes financial resources to existing non-profit organizations, such as the Red Cross.<sup>110</sup> CIDA also conducts needs assessment reports in the wake of disasters, following the Red Cross's own resource distribution strategy and mirroring the aid relief discourse reflected in the game.<sup>111</sup> Considering CIDA partially funded the production of *Inside the Haiti Earthquake*, we can understand the game as a contribution to a discourse of foreign aid that emphasizes the value of large aid relief organizations and the efficacy of NGOs in general. *Inside the Haiti Earthquake*, intentionally or unintentionally, justifies and explains,

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108 Respondent 9, Interview, 2011.

109 Bill & Melinda Gates Foundation, “2010 Annual Letter from Bill Gates: Rich Countries' Aid Generosity,” (2010), <http://www.gatesfoundation.org/annual-letter/2010/Pages/rich-countries-foreign-aid.aspx>.

110 Foreign Affairs and International Trade Canada, “How the Government of Canada Responds to Natural Disasters Abroad,” <http://www.international.gc.ca/humanitarian-humanitaire/faq.aspx?view=d>.

111 Foreign Affairs and International Trade Canada, “How the Government of Canada Responds.”

through procedural rhetoric, the operational discourse used by its country of origin to distribute disaster relief. This is not to say engaging in such discourse negatively affects the game's rhetorical outcomes. The design team appears quite conscious of their own assumptions, both those included and not included in the game. “When you get into something with that detail,” one designer explains, “you have to be very careful about your own politics affecting the game and your own assumptions affecting the game.”<sup>112</sup> Real world discourses affect the construction of texts, including procedural ones, with and without designer knowledge. It behooves social impact game designers to remain aware of the popular discourses in which they operate.

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<sup>112</sup> Respondent 4, Interview, 2011.

## Chapter 4: *EnerCities*

While PTV and the development team behind *Inside the Haiti Earthquake* hesitate to call their interactive experience a game at all, Paladin Studios, the developers behind *EnerCities*, embrace the title of 'game,' allowing the “game-focused” approach to greatly shape the way they design this explicitly educational project. *EnerCities* tasks players to sustainably develop a city beginning with one building and a finite amount of natural and financial resources. The game scores players based on the city's level of happiness, economic power, and environmental friendliness. By constructing energy, residential, financial, and environmental buildings within a grid-based system, players increase their city's population and size, while also increasing its environmental footprint and energy consumption. Very much in the genre of “city management games,” *EnerCities* asks players to balance numerous measurements of success over a period of many years.

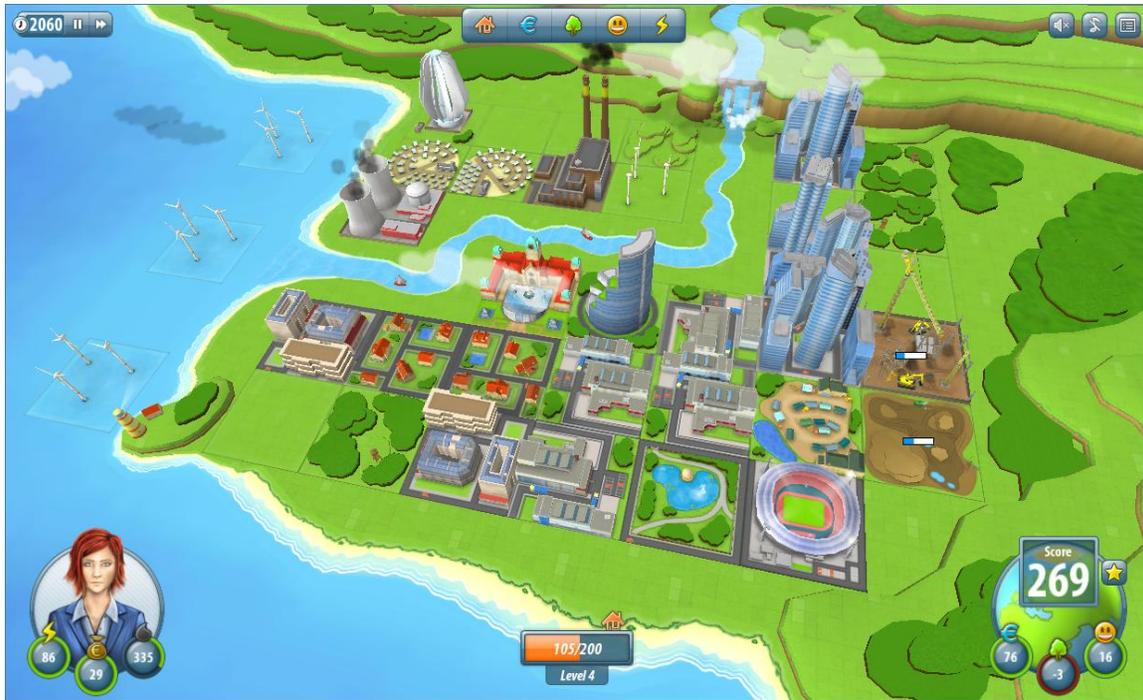
The development process for *EnerCities* began in 2007 with the European Commission's Intelligent Energy Europe program, which was established by the executive body of the European Union (EU).<sup>113</sup> The Intelligent Energy Europe program is dedicated to improving the regions energy efficiency by investing in organizations and projects that adhere to three main goals: “Promoting energy efficiency and encouraging the rational use of energy sources; Increasing the use of new and renewable energy sources as well as encouraging energy diversification, [and] Stimulating energy efficiency and renewables in the field of transport.”<sup>114</sup>

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113 European Commission Intelligent Energy Europe, “About the programme,” [http://ec.europa.eu/energy/intelligent/about/index\\_en.htm](http://ec.europa.eu/energy/intelligent/about/index_en.htm).

114 European Commission Intelligent Energy Europe, “Intelligent Energy – Europe: for a sustainable future,” <http://ec.europa.eu/energy/intelligent/>.

As a recipient of these funds, these objectives shape the foundational goals of *EnerCities*, a free-to-play game about sustainable urban development.



Top-down city view, Screenshot, *EnerCities*

Erik Knol, a friend of Paladin Studio co-founder Dylan Nagel and the owner of the consultancy firm Qeam, who had been working with the European Commission at the time, initiated *EnerCities*. Knol's faith in educational games captures his motivation behind initiating the project:

In our view, serious gaming is a potentially powerful tool, enabling youngsters to grasp the complexity of topics as sustainability and energy conservation and stimulating energy-conservation awareness, attitudes and behaviors of youngsters in a fun way, inside and outside the classroom.<sup>115</sup>

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115 Erik Knol, Peter W. De Vries, "EnerCities, A Serious Game to Stimulate Sustainability and Energy Conservation: Preliminary Results," *eLearning Papers*, (July 2011), 1.

With fifteen to twenty year olds in mind, the entertainment appeal of games fit into their approach perfectly.<sup>116</sup> Both Paladin Studio co-founders possessed shared experience working with non-entertainment-focused simulations. One such project involved creating a “multiplayer environment” and “offshore simulator” for ships that tow oil rigs.<sup>117</sup> While the team awaited approval from the European Commission for nearly a year, numerous other energy and environment-focused games hit the market, all of which only confirmed the team's chosen direction. “They were more informative rather than games,” one designer describes, “so we felt there was quite a bit of room for an entertainment game.”<sup>118</sup>

It is no surprise the two project leads took to the entertainment angle so quickly since both have a rich experience in the traditional games industry. However, the collection of supervisors picked by the European Commission, largely composed of education professionals, also influenced the construction of *EnerCities*. While the relationship between Paladin and the EC was largely amicable, particularly “in the first six to twelve months,” the goal of creating a primarily entertaining social impact game, one designer explains, “didn't always match really well with the goals of [the] consortium members.”<sup>119</sup> The teachers overseeing Paladin's work, hailing from Greece, England, Germany, Netherlands, and Slovenia, “wanted to stuff as much information as possible and it literally took a number of face to face meetings to convince them to separate these two.”<sup>120</sup> After three prototypes, consortium input, and nearly two years' worth of work, the outcome is a board-game-like online game, available in six languages, that has been

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116 EnerCities, “Stimulate Energy Awareness of Youngers with Serious Gaming,” <http://www.energycities.eu/project/>.

117 Respondent 19, Interviewed by author, 13 October 2011.

118 Respondent 19, Interview, 2011.

119 Respondent 6, Interviewed by author, 13 October 2011.

120 Respondent 6, Interview, 2011, and EnerCities, “Stimulate Energy Awareness of Youngers with Serious Gaming,” <http://www.energycities.eu/project/>.

played by thousands of students across Europe, mostly in a classroom context. As this designer describes it, “it's not a serious game first and foremost, but first and foremost it's a game that also stands on its own.”<sup>121</sup> Despite, and partly because of its focus on fun, *EnerCities* is an excellent example of how games produce educational and persuasive content while shaping a unique procedural rhetoric.

### **Player Agency**

Like *Inside the Haiti Earthquake*, the narrative skin over the mechanical structure of *EnerCities* inextricably shapes the game's rhetoric. As one designer states, “you can play *EnerCities* in an excel sheet if you want to.” Indeed, as a particularly abstract model of sustainable development, the game's approach to shaping player narrative and interaction reveals a great deal about the game's assessment of urban development, sustainability, and nature. Paladin Studio's approach to abstraction over factual fidelity mirrors Ritterfeld and Weber's motivation paradigm of educational games.<sup>122</sup> *EnerCities* describes itself as a game about personal control over a growing city: “*EnerCities* is about building your own metropolis. The main goal is to keep your city sustainable and grow your population to 200.”<sup>123</sup> The player is the arbiter of growth, and as the arbiter, can shape the development narrative. “What type of *EnerCities* player are you?” the game asks, “Are you a tycoon hungry for money or a true nature lover? Do you want the best for your population, or are you only interested in the latest technologies?”<sup>124</sup> Here the questions are described as binaries, conveying that the pursuit of

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121 Respondent 6, Interview, 2011.

122 Ritterfeld and Weber, “Video Games for Entertainment and Education.”

123 *EnerCities*, “How to Play,” 2011.

124 *Ibid.*

income and the preservation of “nature” are inherently oppositional. One player called this a “false binary.”<sup>125</sup> While this assessment holds some validity, the game both allows and encourages a strategic management of all four pursuits, allowing players to offset the environmental and social impact of urban development through the construction and improvement of certain buildings. While I will discuss the intricacies and outcomes of the game's win conditions shortly, the important element to note here is that the *EnerCities* narrative, both the aesthetics and the declarations of player agency, serve the purpose of highlighting the game's disjunction from reality, creating a narrative that, unlike *Inside the Haiti Earthquake's* use of documentary footage, distances itself from the real world system it seeks to model.

Player interactivity in *EnerCities* involves questions about pure strategic economic investment. At the beginning of the game, players have access to one hundred units of currency within their “cash reserves,” indicated by a golden pouch imprinted with the euro symbol. This value is, of course, an abstraction, as cities could do very little with such empty coffers. During the first stage, or Level 1, eight square grids appear on the map on which players can construct a variety of buildings. Each building fits into one of five categories: Residential, Economic, Environmental, Well Being, and Energy, all of which produce or decrease certain resources and measurements of progress. At this early stage, the first buildings cost either eight or ten units of currency to construct, but only one during this particular stage, Light Industry, another abstraction of industrial growth, increases player income over time. *EnerCities* expresses the passing of time with a year counter, beginning in 2010, that moves forward one year every fifteen seconds. Over time, albeit not according to year cycles, Economic buildings can increase

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<sup>125</sup> Respondent 18, Interview, 2011.

revenue. The City Hall for example, a unique starting building, increases player cash reserves by two each year, while Light Industry increases cash reserves by four and Heavy Industry increases income by ten. As players hit each growth target and increase their level, new tiles and buildings become available. Although all of these buildings consume a number of resources and must be built according to perceived needs and outcomes, players generally purchase higher level buildings as they become available. Additionally, the city-wide policies implemented through the City Hall building, such as establishing an “Electric Card Grid” or “Eco-Tourism Program”, cannot be overturned or eradicated, which establishes a rhetoric that presents a linear model of sustainable growth. Thus, although players retain some agency, play progresses along a relatively linear narrative path from low-income and low-growth to high-income and high-growth.

While the lead designers of *EnerCities* recognize the limitations of their approach, they also argue that this abstraction adequately expresses the game's rhetoric. As one designer states, “I think what we needed to have done is impose some limitations on the player choices and also to add some randomness to those player choices.”<sup>126</sup> The lack of randomness minimizes the amount of unknown risk involved with player decisions, as players can calculate the precise effect of their actions. While players may encounter surprising outcomes based upon their decisions, these outcomes are nevertheless predictable. Thus, the *EnerCities'* narrative remains consistent yet less dynamic, less responsive to varied and random input, than its creators could have envisioned. A player created resource disaster can occur; however, the context in which players find themselves remains consistent. In the rhetoric of *EnerCities*, the knowledge and capacity to minimize the environmental impact of growth and move towards renewable resources

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126 Respondent 19, Interview, 2011.

is available; however, implementing this knowledge and capacity requires growth, and especially economic growth, and political will.

This approach to a consistent player story arc fits into Paladin Studio's approach to abstraction, distancing *EnerCities* from blunt scientific numbers. The miniature toy-like aesthetic of *EnerCities*, a stark departure from earlier prototypes that modeled the player's city with intricate fidelity, appears as much an outcome of technical limitations as an intentional departure from a simulation aesthetic – expressing to the player that the values represented in the game are simplified abstractions of their real world counterparts as much as the tiny colorful buildings of City Hall. Mirroring some of the concerns addressed by Turkle and the black-box problem in which the core assumptions of simulations remain hidden, one designer explains why the team veered away from presenting more realistic values to players: “You have the issue of being correct. You kind of make a simulation that suggests correctness, so they need to be correct. They need to be absolutely accurate.”<sup>127</sup> Although technical limitations certainly constrained the game's depiction of real world systems enmeshed within climate change and sustainable development, the pursuit of a general narrative of development, in which players encountered a heavily structured and clean model of sustainability, shaped a uniquely interesting rhetoric.

### **Difficulty and Failure**

Some of the most interesting design elements of *EnerCities* are the unit operations that construct win and lose conditions and shape the game's difficulty. As stated previously, players achieve victory in *EnerCities* by attaining a population of two hundred. Essentially, players win

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<sup>127</sup> Respondent 19, Interview, 2011.

by filling their city with people. This is a curious win condition, as it largely stands alone from the rest of the game's rhetoric of sustainable development. As one player states, this goal can seem somewhat arbitrary, although “it seems like the simplest and cleanest measure of a city or town.”<sup>128</sup> “It's weird that it's a win condition,” another player told me.<sup>129</sup> “For me, winning would be creating a city that is basically self-sustainable.”<sup>130</sup> In order to grow to a population of two hundred, players must also invest in economic and residential buildings, which requires intelligent management of resources and energy consumption, resulting in a secondary goal of sustainability. However, population growth is not an abstraction of sustainable development itself. By setting a population marker as its win condition, *EnerCities* creates a potentially contradictory argument: population growth is desirable and yet naturally leads to population density within limited space that results in potentially harmful environmental consequences. The population win condition appears to be a game design contrivance intended to facilitate the entertainment value of *EnerCities* while also putting players into the difficult task of mitigating growth. As one designer states, “We need to give players a harder time the more their cities grow.”<sup>131</sup> As players construct buildings that create larger populations, it becomes increasingly important to mitigate the environmental impact of construction, perhaps by building a park, while balancing other needs, such as the construction of energy producing buildings, such as nuclear power plants. In order for players to experience the environmental impact of growth, the game demands players recreate a context in which a town becomes a city, while offering policies and constructions to minimize the detrimental effects of this growth, creating procedural rhetoric

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128 Respondent 7, Interview, 2011.

129 Respondent 18, Interview, 2011.

130 Ibid.

131 Respondent 19, Interview, 2011.

that both reaffirms and criticizes a model of reactionary sustainable development.

Although *EnerCities*' win condition defines the parameters of play, the game also formulates and tracks player scores, offering a compelling secondary goal. As one designer explains, these scores can be posted on an online leader board and compared with other students in a classroom environment, “thus enhancing the gameplay experience and increasing the likelihood that gamers will return by creating an element of competition.”<sup>132</sup> Unlike *Inside the Haiti Earthquake*, the scoring system also creates tiers of success. A scoring system, as Juul has argued, allows for multiple difficulty experiences, permitting low-skilled players to achieve victories while allowing committed players to strive to improve themselves.<sup>133</sup> As one designer describes, the game is simple yet “hard to master, because it's really hard to get a high score, but it's really simple to finish the game.”<sup>134</sup> I consider myself quite fluent with games in general; yet my own high score never topped 450 points, while the top ten scores of all time break 1300.<sup>135</sup>

The team “tried to make [*EnerCities*] as accessible as possible,” explains one designer, while also making sure that the game allowed for higher-level, or high-skill, play. For example, players can upgrade most buildings if they so choose, or enact city-wide policies through their City Hall. However, doing so is not required to win. Those players who pursue higher scores, however, need to utilize all their options to their advantage, often making strategic decisions as to which to invest in – for example, efficient energy plants or costly but environmentally friendly building upgrades. As this designer states, “Status was their motivation to continue playing, but ultimately, to reach that high score they had to adopt certain tactics and strategies, thereby

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132 Erik Knol and Peter De Vries, “*EnerCities*, a serious game to stimulate sustainability,” 4.

133 Juul, “Fear of Failing?”

134 Respondent 19, Interview, 2011.

135 *EnerCities*, “Highscores,” <http://www.energicities.eu/highscores.php?time=alltime>, Accessed 20 October 2011.

familiarizing themselves with the subject matter.”<sup>136</sup> At the same time, the students the team observed also supported their peers in improving their scores: “Some of the faster kids help the slower kids understand stuff.”<sup>137</sup> While the scoring system may elicit excitement or engagement, its rhetorical outcomes are less evident. Upon multiple playthroughs of the game, the simple yet difficult nature of *EnerCities* conveys a dichotomy of short-term versus long-term sustainability. While it may be easy to manage growth up to a point, the game claims, effective sustainable development requires a complex management of time and resources. Also, as another designer indicates, “It’s not very clear how the score is calculated for some people.”<sup>138</sup> Each of the players I interviewed confirmed this difficulty in understanding how the game generates score. The final score actually combines measurements taken when each of the four levels, or stages, are completed by attaining a certain population quota. These measurements also include “victory points” awarded when certain conditions are met, such as having a booming economic, which cannot be observed until the end of the game, and an unclear measurement of how quickly players completed the game. Although this obfuscation of information may increase the *EnerCities*’ difficulty, it also constructs a procedural rhetoric that conveys the difficulty in assessing “success” in relationship to sustainable development.

Although the “Natural resources” measure only indirectly affects player scores; it nevertheless plays a large part in shaping *EnerCities*’ difficulty. Beginning with a value of one thousand, “Natural resources” are an abstract representation of any and all non-renewable natural resources. Although nuclear power plants in the game consume these Natural resources,

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136 Respondent 6, Interview, 2011.

137 Ibid.

138 Respondent 19, Interview, 2011.

indicating they may represent a variety of material including uranium, many of the game's early design documents refer specifically to oil.<sup>139</sup> Play begins with one thousand units of Natural resources. This amount can never replenish. All buildings, save for energy plants using renewable resources (such as windmills) and all environmental buildings (such as parks), consume this limited resource. If players ever run out of Natural resources, their economies all but collapse; Economic buildings cease producing revenue, energy plants that require natural resources cease producing energy, and even grids housing residential and wellbeing buildings grow dark (although to little effect). Each of the players interviewed first lost as a result of resource depletion, as I did the first time I played the game. In fact, as one designer anecdotally explains, “That's the very first way everybody loses.”<sup>140</sup> Resource exhaustion is perhaps *EnerCities's* most clear mechanical argument. “The reason we added natural resources the way that we did,” another designer explains, “was because this is one of the main messages of the game.”<sup>141</sup> Develop a society based on renewable resources, the game suggests, or face dire consequences.

Interestingly, players cannot create a completely sustainable city and still win the game - it is simply mechanically impossible. Although players can upgrade most buildings to minimize their consumption of natural resources, the vast majority, even when fully upgraded, will always consume this limited supply of resources. Suburban homes, which the game claims are more efficient than urban residences, can be developed with improvements such as solar roofs and more effective insulation so that they consume zero resource points. However, there are simply

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139 Paladin Studios, *EnerCities Game Design, EnerCities Player's Manual*.

140 Respondent 6, Interview, 2011.

141 Respondent 19, Interview, 2011.

not enough grids on the map, or currency in the town's coffers, to build a city entirely of suburban homes. Additionally, regardless of improvements, residences will always lower a player's environmental score. Oddly enough, entertainment stadiums, when fully upgraded with bus stops, subway stations, and thermal storage, are both environmentally and resource neutral – creating a bizarre rhetoric (perhaps an oversight) in which large-scale entertainment facilities act as components of a sustainable development plan. When players do achieve victory, managing to hold on to at least some resources, *EnerCities* progress still occurs along a temporal path. If we imagine the town continuing to exist after reaching its desired population, complete resource collapse will still occur at some point in the future. Natural resource depletion, the game suggests, is a complete inevitability. Although the game does offer resource neutral energy plants, the technology to create an indefinitely sustainable large-scale civilization does not exist.

An interesting rhetorical accident comes out of *EnerCities*'s modeling of natural resource depletion. As one designer said, “Some of the best players, meaning players with the highest scores, have a sneaky way of playing the game regularly and then right before the end of the game, they destroy all their buildings for parks and forests,” thereby driving up their Environmental and Wellbeing scores.<sup>142</sup> This designer calls this a form of exploitation.<sup>143</sup> By replacing Economic buildings, players can essentially subvert the game's established rhetoric and recreate a different approach to sustainable development. The act of exploitation creates its own form of procedural rhetoric, constructing a model of sustainable development in which large economies can compensate for their environmental and social trespasses suddenly and decisively through the top-down reallocation of resources. However, in order to still achieve the win

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142 Respondent 6, Interview, 2011.

143 Ibid.

condition, this sudden shift must occur only after achieving desired growth. This rhetoric neatly matches development discourses that portray developing nations on an industrial path of modernity who cannot afford to enact environmental regulations until they “catch up” to the rest of the industrialized world. In a remarkable instance of kismet, the rejection of the established rhetoric of *EnerCities*, which rewards simultaneous growth and investment in sustainability, mirrors the rejection of international pressures to implement environmental regulations by some developing nations, including the US.<sup>144</sup> The exploitation of *EnerCities* may create a contradictory procedural argument to the game's rhetorical intent.

## Scale

Like *Inside the Haiti Earthquake*, technological limitations and the pursuit of accessibility influenced the scale of *EnerCities*. As a European Commission funded project, the intent was to put *EnerCities* in classrooms around Europe, some of which had minimal computer resources. As one designer explains, the game “had to run on all kinds of old machines and old computers that they would have in Eastern Europe.”<sup>145</sup> This naturally “limited the scale of the game.”<sup>146</sup> Early prototypes for *EnerCities* varied in scale and abstraction a great deal, moving from a two dimensional side-scrolling game to a “much too complex” simulation heavy experience.<sup>147</sup> Referring to their approach to scale, one said said: “I think this is the most

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144 This international reluctance by the world's major polluters remains evident today in the continued posturing between the United States, China, and India at the recent UN climate change talks in Durban, which nevertheless saw significant improvements in our global response to climate change. See Jim Ball, “Durban: Progress for the Planet,” *Huffington Post*, 20 December 2011, [http://www.huffingtonpost.com/rev-jim-ball/durban-progress-for-the-planet\\_b\\_1150722.html](http://www.huffingtonpost.com/rev-jim-ball/durban-progress-for-the-planet_b_1150722.html).

145 Respondent 6, Interview, 2011.

146 Ibid.

147 Ibid.

important decision to make when making a game like this.”<sup>148</sup> The outcome is a mid-level approach to scale, utilizing an abstract representation of a town to create generalizable lessons regarding sustainable development everywhere. Players begin *EnerCities* with just one building, City Hall, and expand their town's territory and add new constructions. By tying spatial expansion and the growth of player cities with the progression of time, *EnerCities* modifies its scale slightly during play. Because most constructions consume natural resources and energy over time, it behooves players to invest in upgrades early to minimize risk later in the game. As one player states, “It is hard to industrialize without messing up nature.”<sup>149</sup> Thus, *EnerCities* creates rhetoric in which sustainable development becomes an ongoing project, one that demands long-term thinking before growth outpaces preparation.

Although players can upgrade low-scale details of residential buildings, such as lighting options, the game lens never burrows down into individual decisions of consumers and homeowners. “There is the micro versus macro choice,” explains one designer. “We said we wanted to improve awareness,” he continues, “so we are not going to drown them with good behavior where you need to change the light bulbs.”<sup>150</sup> That being said, the Paladin Studios did contemplate the values and sensations engendered by a more intimate scale. The design team “went through a number of iterations to figure out that scale.”<sup>151</sup> Early design documents depict citizens and advisers, each with their own personality and demeanor.<sup>152</sup> “We went to the whole state, to village, and then settled on the current perspective,” one designer explains. “I would have loved to add citizens to it,” another adds, “you need to care for those people who live there,

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148 Respondent 19, Interview, 2011.

149 Respondent 18, Interview, 2011.

150 Respondent 19, Interview, 2011.

151 Respondent 6, Interview, 2011.

152 *EnerCities*, Assorted Design Documents, Accessed 2011.

or at least for the city, and it's really something that helps.”<sup>153</sup> Nevertheless, small design elements reflect this concern for a personable environment. Small cars navigate the tiny streets of *EnerCities*, boats navigate the river running through the town, and birds fly over wildlife reserves. Additionally, an assistant named Alex welcomes players to the game. For some players, this mid-level approach to scale felt unnatural. One player states, “It was a little bit awkward actually. The city never really got big enough for how I am used to cities looking.”<sup>154</sup> “I felt connected in the sense that I imagine a government official feels connected,” he adds, “it felt like a job.”<sup>155</sup> According to De Vries and Knol's research, other players “experienced very little difficulty in connecting” the game's “global stance” with specific “energy-related behaviors in the household.”<sup>156</sup> One designer describes their intent clearly when he states, “Some of the improvements are, I think, the missing links between the very top level perspective and the household perspective,” to encourage players to think “maybe it's an interesting idea to have a look at my own situation, but in the context of something bigger.”<sup>157</sup> Paladin Studio's mid-level approach to scale greatly shapes its educational and persuasive outcomes, offering a top-down point of view while offering some insight into personal decisions regarding sustainability.

This combination of high-scale and low-scale design elements also creates an assortment of interesting rhetorical outcomes. According to *EnerCities*' mechanics, sustainable development necessarily demands the influence of high-level actors. As one player observes, “the message is

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153 Respondent 19, Interview, 2011.

154 Respondent 18, Interview, 2011.

155 Ibid.

156 De Vries, Knol, “Serious Gaming as a Means to Change Adolescents' Attitudes Towards Saving Energy; Preliminary Results from the *EnerCities* Case,” (paper presented at the EDEN Annual Conference, Dublin, 2011).

157 Respondent 6, Interview, 2011.

that a government can affect change from the top down.”<sup>158</sup> Another player found this message particularly unnatural, stating “you can't just go and install better insulation in everyone's home. People do that on their own.”<sup>159</sup> Indeed, the suburban residents of *EnerCities* will never install energy efficient light bulbs of their own accord, thus, the responsibility must fall in the hands of the player, who acts as an immensely influential city manager. “You can regulate the environment through policy rather than politics or popular outcry,” an observation offered by one player, interesting given the origin of this game in the European Commission's top-down search for game developers to work precisely on changing the perceptions and behaviors of EU citizens. The scale of *EnerCities* better explores what can be done to foster sustainability, not specifically how it can be done. Indeed, the player acts out a fantastical rhetoric in which leaders need not concern themselves with policy reversals, opinion polls, or juridical disputes. While achieving high scores may be difficult, the process of developing more sustainable infrastructure in *EnerCities* appears remarkably easy.

## **Systems Design**

Paladin Studio's emphasis on simplicity and accessibility indelibly shaped its model of systems of development. As discussed earlier, the team specifically veered away from modeling accurate figures. One designer describes the logic behind this decision: “the more realistic you make the model, of course the more accurate it is, but in a way, the more realistic you make the simulation the less you grasp the concept. You don't really get the gist of it.”<sup>160</sup> Another designer

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158 Respondent 18, Interview, 2011.

159 Respondent 7, Interview, 2011.

160 Respondent 19, Interview, 2011.

describes *EnerCities* as “more of a platform to start the learning process,” than an accurate simulation of the environmental impacts of development. Indeed, if the game had incorporated information the teachers had wanted to include, he describes, “it would completely confuse people.”<sup>161</sup> Information is instead abstracted. Energy production disparities reflect general differences between, for example, windmills and solar plants, not accurate quantitative differences. Similarly, the drop in Wellbeing produced by nuclear power plants represent a very simplified portrayal of public opinion regarding nuclear power, particularly considering an increased resistance to nuclear power in Western Europe. This level of abstraction, while not minutely accurate, expresses perceived generalities to players. “I appreciate the simplicity of it,” one player states, “because a game like that, anyone who has played any kind of sim or strategy game knows how complicated those games get so quickly.”<sup>162</sup> By abstracting and simplifying its system design, *EnerCities* creates a relatively approachable take on sustainable development.

Although *EnerCities* is certainly not one of the most complex digital systems, it still retains a great deal of unit operations that intricately interact with each other. Despite the team's effort to abstract the subject matter to its “core essence,” one designer states, it still “ended up with a lot of parameters and I think that's the most confusing part of the game.”<sup>163</sup> Early design documents reveal scrapped system variables such as oil spills, nuclear melt downs, various resource reserves, day and night cycles, air pollution, and more.<sup>164</sup> Regardless, the existing elements consistently impact each other and the ongoing score. Heavy Industry produces high revenue but consumes a great deal of natural resources and energy, which creates a mechanical

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161 Respondent 6, Interview, 2011.

162 Respondent 18, Interview, 2011.

163 Respondent 19, Interview, 2011.

164 Paladin Studios, “EnerCities Game Design,” Accessed September 2011.

incentive to replace these buildings as a player's resource allotment dwindles. Similarly, the CO2 Taxes policy increases revenue but lowers the economy score of Economic buildings, primarily Heavy Industry, forcing players sensitive to their score to adjust their play style accordingly; this further establishes a procedural rhetoric in which Heavy Industry, while useful for accruing revenue, must be replaced by a more efficient economy before the world hits a natural resource crisis. The long term effects of player decisions, as one player accurately points out, require you to “pre-plan what it is you are going to do,” reemphasizing the rhetoric of long-term strategic thinking. According to Knol and De Vries's study, “students were also aware of the need for balancing multiple parameters.”<sup>165</sup> Although the game does not model in great detail all the intricacies of building a sustainable city, its design elements nonetheless function together to establish procedural rhetoric that emphasizes the interconnectedness of environmental policies, economic growth, and energy production.

Regardless of intent, what *EnerCities* does and does not model inextricably shapes the game's rhetorical outcomes. “The game is a little world in itself, and the world has its own rules,” one designer aptly explains, and these rules define much of the game's educational and persuasive outcomes.<sup>166</sup> Population, again, creates an interesting argument through play. Residential buildings create populations; therefore citizens do exist in direct correlation with the supply of homes. However, although large urban dwellings, necessary to maximize population per tile, lower environmental scores based upon the consumption habits of its residents, the game fails to model the environmental effects of high density living. Thus, the urban context of slum cities, for example, does not exist in the world of *EnerCities*. *EnerCities* creates only one

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<sup>165</sup> Knol, De Vries, “EnerCities, a serious game.”

<sup>166</sup> Respondent 19, Interview, 2011

Western-based model of development. Similarly, the Eco-Tourism policy consumes cash reserves over time, which claims eco-tourism remains unprofitable, an interesting argument which stands in contrast to strategies implemented by some developing countries, such as Costa Rica, that seek to profit from ecological preservation. Some design elements, such as the disproportionately higher cost and effect of industrial upgrades versus residential upgrades, convey that industry must hold a greater burden of behavior change, may prove interchangeable regardless of geographic region. Although *EnerCities* was specifically designed for a European audience, and can therefore be forgiven to some extent for its Western-centric model of sustainable development, its procedural rhetoric nevertheless stems from a complex and sometimes contradictory or misleading system, producing a unique educational and persuasive game.

## Conclusions

Emphasizing “fun” as a design goal, Paladin Studios has incorporated selective elements of real world systems not to drown players with information, but to offer “a small world in a micro fashion.”<sup>167</sup> This approach, as one designer describes it, is replicable:

The real world is a very complex system, that's why it's not fun; because there are so many ambiguities you can never understand. It's very opaque. But if you create a model of that world, or any system, and you make the rules clear, then, I wouldn't say it's a game, but you're well on your way to creating a game.<sup>168</sup>

As a game, this small world model, this entertaining abstraction of a real world system, serves not to indoctrinate, as the designers see it, but to inspire. Like Ritterfield and Weber's motivation paradigm, the ludic components of *EnerCities*, regardless of their rhetorical outcomes, seek to

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<sup>167</sup> Respondent 19, Interview, 2011.

<sup>168</sup> Ibid.

act as an entry point for, in this case, European students. As one designer exclaims, “I think that games are especially great [when] acting as a catalyst.”<sup>169</sup>

As an educational catalyst, *EnerCities* does appear successful. One player I interviewed found his growing familiarity with the programs and technologies described in the game “one of the best things about it.”<sup>170</sup> Knol and De Vries find significant behavior change amongst their students sampled, in affirmation with designer statements: “it can be said that the *EnerCities* game operated in many cases as the eye-catcher to inspire students about sustainability and energy saving.”<sup>171</sup> Although the authors make note of the social and educational contexts that may have affected the learning outcomes for these students, the game nevertheless plays a significant role in behavior change and awareness building. Even on subjects not addressed in *EnerCities* itself, Knol and De Vries found a shift in attitudes “towards performing specific energy-related household behaviors, i.e., attitudes towards turning off the TV after use instead of using the standby function, and taking shorter showers.”<sup>172</sup> Although this data does not necessarily reveal a rising level of systems fluency amongst players, the design goals of *EnerCities* appear nevertheless successful. As one designer states, “If you have a system, you can make a game.” What type of rhetoric this game makes about the system it seeks to represent, however, holds far more importance than the existence of the game itself.

Like the discourse of *Inside the Haiti Earthquake*, the discourse of *EnerCities* very much fits within larger discourses of European-centric demographic concerns, first-world sustainable development, and political engagement. Much of the persuasive unit operations of *EnerCities*

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169 Respondent 6, Interview, 2011.

170 Respondent 7, Interview, 2011.

171 Knol, De Vries, “*EnerCities*, a serious game,” 10.

172 Knol, De Vries, “*Serious Gaming*,” 4.

serve the intended function of creating an entertaining play experience, which both confines and liberates the play experiences possible in certain ways. Population growth as a win condition, for example, both describes and validates dominant liberal models of growth. The game also provides a clear win condition to players that requires them to manage this growth sustainably. In this case, the pursuit of entertainment defines the game's rhetorical context: how can society, given its history of growth, minimize the impact of massive energy consumption and environmental degradation? Its concern with population may also reflect European concerns regarding “demographic shifts” and diminishing birth rates in the face of immigration, as one player astutely points out, an issue currently absent from the political zeitgeist of many non-European nations.<sup>173</sup>

As a product funded by the European Commission, *EnerCities* may appear intentionally within a wider development discourse. The context in which *EnerCities* explores sustainable development mirrors urban development that caters towards first-world nations. Sustainable development in the developing world may look far different than sustainable development in *EnerCities*, which does not model slum dwellings, organizational capacity, employment gaps, and the like. Similarly, the fact the game models top-down policy change as opposed to community driven sustainable development mirrors and justifies existing narratives in which development, environment, and economic policies all belong in the purview of central governments that adjust social behavior through their own initiatives. Quite interestingly, *EnerCities* portrays and validates the very discourse that allowed this game to come into existence in the first place.

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<sup>173</sup> Respondent 18, Interview, 2011.

## Chapter 5: *Fate of the World*

Whereas *EnerCities* abandons statistical accuracy regarding its subject matter, *Fate of the World*, a game developed and published by Red Redemption Studios in Oxford, UK, utilizes a vast collection of scientific data to create a digital system that models a complex array of issues ranging from global climate change to food crises to civil unrest. Designed for the PC market, *Fate of the World* is the spiritual successor to *Climate Challenge*, Red Redemption's previous flash based game produced for the BBC. *Climate Challenge*, still playable online, offers an “introductory route into climate change and some of the issues this creates for governments around the world,” centering the game around the climate change debate from a European perspective, allowing players to implement policies that affect emissions, sustainability, and the regional economy.<sup>174</sup> *Fate of the World* expands this approach to a global level, allowing players to manipulate certain social, environmental, and economic aspects of twelve world regions. “What we wanted to do was expand on the concepts that we introduced with *Climate Challenge*,” explains one designer, while doing so “in a way that's informed by scientific research.”<sup>175</sup>

Even more than *Climate Challenge*, *Fate of the World* incorporates a massive amount of data from a collection of scientific resources. In the early phases of development, this data formed the backbone for prototypes. These prototypes helped hone and clarify Red Redemption's design approach. The team discarded early concepts such as an isometric game for the handheld Nintendo DS system, as well as relatively linear and narrative heavy models.<sup>176</sup> As another

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174 British Broadcasting Corporation, “Climate Challenge,” [http://www.bbc.co.uk/sn/hottopics/climatechange/climate\\_challenge/aboutgame.shtml](http://www.bbc.co.uk/sn/hottopics/climatechange/climate_challenge/aboutgame.shtml).

175 Respondent 3, Interviewed by author, 31 August 2011.

176 Respondent 12, Interviewed by author, 19 September 2011, and Respondent 8, Interviewed by author, 27 October 2011.

designer states, “After prototyping, it became very clear to us that we were uniquely positioned to make an ambitious strategy game about climate change.<sup>177</sup> The adherence to factual data sets Red Redemption's game apart from both traditional entertainment-focused games and a wide swath of social impact games.



Policy cards, Screenshot, *Fate of the World*

The team's previous experience with climate change, as well as their “close association with many people at Oxford University, shaped their pursuit of a complex interactive model of the development, political, social, and environmental effects of global climate change. For example, as one designer states, “normally you don't employ a special researcher” for projects such as these. Red Redemption did employ a researcher for the project. The team also participated in their own research, often selecting facts and subject matter based upon aspects of the game system to be addressed that week, engaging in discussions on subjects as varied as

<sup>177</sup> Respondent 8, Interview, 2011.

animal extinctions and resource depletion.<sup>178</sup> The team's early adherence to research data and the incorporation of research into the core system design from the beginning shaped the eventual complexity and dynamics of *Fate of the World*.

Like the developers of *Inside the Haiti Earthquake*, many of the designers I spoke to emphasized the team's concern with ensuring the fidelity of their digital system with real world data, even during the immensely iterative design process. As in *Climate Challenge*, players in *Fate of the World* can deploy certain policies, using select cards, to alter the environmental model subtly but significantly. With a wide array of cards designed for use in the game's twelve global regions, monitoring and adjusting the system, particularly in accordance to the evolution of gameplay, could be a difficult task. The team eventually brought an independent game design consultant to hammer out gameplay details. During this period, one designer describes, “the actual core systems were mostly there, but it was pretty sterile.”<sup>179</sup> Many of the dilemmas, this designer continues, were the result of a team largely entangled with system design: “[we] not wanting to betray people's trust.” could have moved away from our goal of showing something true about climate change,” he explains, regarding the readability of such a complex changing system, “but that would have lost our goal.”<sup>180</sup> Adhering to data required the construction of an interactive system that combined both entertaining gameplay with a complex system composed of a myriad of interdependent parts. One designer describes the team's goals:

We aimed to be part of the evolution of games for change, by focusing on making good gameplay out of an honest and deep treatment of an important subject. So we didn't want to make a game that wasn't really about the subject, where the subject is just dressing. Our goal then was to expand commercial videogame genres to include games about

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178 Respondent 12, Interview, 2011.

179 Respondent 2, Interviewed by author, 16 September 2011.

180 Respondent 8, Interview, 2011

serious things. Once we knew we were making a game about climate change, that meant we wanted to let players truthfully interact with it.

With such ambitious goals, the process demanded an immensely adaptive approach to design.

“The vision changed quite regularly,” one designer explains; “It was almost the time constraint that finalized the vision.”<sup>181</sup> Since launch, *Fate of the World* has continued to go through iterations, offering players significant patches and new content, including a new model of international migration, drawing an ever closer relationship between the interactive game system and the real world system it seeks to address.

### **Player Agency**

Like *EnerCities*, *Fate of the World* veers away from linear narratives, offering players instead an interactive system in which strategically constrained choices shape the game's rhetorical outcome. It is important to note that *Fate of the World* is an immensely complex and variable experience with many of its mechanical details hidden within its code. Accordingly, detailing every design element and player decision option within the limits of this paper would be a futile and wasted effort. Instead, the game's unit operations are best explored judiciously in the context in which they arise. In regards to interactivity and narrative, the card system offers particularly interesting insight into *Fate of the World's* structure and rhetoric. When players first start the game, several play scenarios are possible, all of which, with the exception of the scenario about Africa, allow players control over all twelve of the world's regions. For a nominal fee, players may recruit up to six “Agents,” who can enact the policies chosen by the player. However, the cards also cost money, which dwindles a supply of abstract currency that grows or

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<sup>181</sup> Respondent 12, Interview, 2011.

shrinks depending on the Gross-Domestic Product of global regions. Thus, players are constrained both by the game's finances and policy cap. This design was implemented to create an environment of, as one designer describes, “simple choices but where the combination of choices would be complex.”<sup>182</sup> For some players, this limitation on player interactions appears disruptive. As one player states, “It feels a bit artificial about how many cards you can play in a region. You often want to play more than six cards at some point in the game.”<sup>183</sup> Another player found the limitations persuasive, stating: “It made sense to me that if you want to tackle a problem with limited resources; you have to pick what you do. You can't do everything.”<sup>184</sup> Indeed, like *EnerCities*, constraints on interactivity serve both to facilitate ease of play while also shaping a rhetoric in which policy decisions are shaped by financial and political capacities. Addressing global warming and its ongoing effects, the game suggests, demands much more than just will, but resources.

An interesting extension of the resource-related procedural argument relates to *Fate of the World's* model of economic development. Financial limitations constrain player choice. The amount of currency players have to spend is determined by the collective GDP of the world. Nearly all aspects of the game affect regional GDP, from drops in fuel production to natural disasters that devastate regional agricultural production. The effects of global warming may also dramatically impact the economic well-being of large swaths of the game's digital world. As regional economies falter, so too do the player's financial resources and, accordingly, the number of policies players can employ. Thus, players have a mechanical incentive to maintain healthy

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182 Respondent 3, Interview, 2011.

183 Respondent 16, Interviewed by author, 14 August 2011.

184 Respondent 13, Interviewed by author, 22 September 2011.

economies in the face of global warming, and to also grow the economies of all regions, including those that are economically and politically unstable. This unit operation of dependency on GDP creates two significant procedural arguments. First, although it may not be entirely necessary to game success, the well-being of the developing world is intimately tied to the long-term success of managing the crises that come with climate change. Those wishing to address global climate change in the world, the game suggests, must pay particularly close attention to the developing world's emissions and to their economic viability. Secondly, by modeling a system that can exacerbate negative economic impacts of climate change, *Fate of the World* creates a procedural rhetoric in which actions taken immediately disproportionately affect the long-term efficacy of future plans. As one player states, “The sooner we act, the greater effect it will have.”<sup>185</sup>

The economic model of *Fate of the World* bolsters its persuasive claim to long-term thinking. Like *EnerCities*, *Fate of the World*'s decisions are temporally bound. As a turn-based strategy game, players make decisions in one round and then see the effects of their actions in the following round. The game begins in the year 2020 and each round represents a five-year cycle. Where *EnerCities* creates a rhetoric that praises long-term thinking by forcing players through time in one year increments, *Fate of the World* players make their decisions leisurely before leaping through time in larger increments, creating similar, albeit slightly different, procedural rhetoric. Both games demand long-term thinking, asking players to predict the effect of their actions over a longer-scale narrative of time. *Fate of the World* also conveys a belief that policy decisions, while not permanent, are nevertheless immensely significant undertakings. Players

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<sup>185</sup> Respondent 13, Interview, 2011.

must commit to policy decisions and their outcomes when time shifts so dramatically, which again stress the importance of immediate responses to problems current on the horizon. By beginning the game ten years from now, the game offers a pressing take on decision-making. Ten years hence, the game suggests, the constraints on our decision making power and the detrimental effects of climate change may already be too difficult to manage. “It's an important part of the message,” confirms one designer; “Now is when we need to make big changes.”<sup>186</sup>

### **Difficulty and Failure**

Since launch, Red Redemption has adapted *Fate of the World* to make the game more approachable for its audience. The latest addition of *Fate of the World* launched this past October 2011 introduced an Easy Mode, which attempts to ramp down difficulty by increasing support for the Global Environmental Organisation (GEO), the organizational avatar for the player, and global stability. My player data and my own play experience come from earlier versions of *Fate of the World*, including the pre-launch beta. Accordingly, any assessment of the game's difficulty should not reflect the game perfectly in its current iteration. That being said, the alterations in game difficulty in the latest iterations of *Fate of the World* reflect a consistent perception of difficulty from consumers and designers alike. “It is notorious as such,” one designer describes of the game's infamous difficulty.<sup>187</sup> “It has always been a problem,” explains another.<sup>188</sup> Many of the player respondents noted their first impressions with the game involved confronting this high level of difficulty.

All of the game's win conditions require players to reach a certain year without

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<sup>186</sup> Respondent 3, Interview, 2011.

<sup>187</sup> Respondent 2, Interview, 2011.

<sup>188</sup> Respondent 12, Interview, 2011.

succumbing to various lose conditions, each of which become exacerbated by a complex modeling of real world systems. The Fuel Crises scenario, for example, requires players reach the year 2120 without allowing the global Human Development Index (HDI) to fall below .5, the GEO to be banned from eight regions or more, global warming to rise three degrees above pre-industrial levels, and losing control of a region housing the GEO headquarters. These win and lose conditions immediately draw attention to these measures of success, notably HDI, a composite index that attempts to measure human development through life expectancy and literacy among other factors, which stands in contrast to powerful development narratives that position GDP as the singular most important measurement of developmental success. As a result of these measures, the game exacerbates its difficulty. “The developing world seems to get quite badly screwed over,” states one player.<sup>189</sup> Another player describes his surprise at dealing with India as a region that succumbs to a wide array of problems early and often. “I find it curious because people talk about India like it's an industrial superpower,” he states, “but you go into the game and it's worse off than it is now,” as a result of its high population, low HDI, and high emissions.<sup>190</sup>

*Fate of the World's* model of conflict also creates a dilemma for the game's developing regions. Four regional attributes define the characteristics of a region, including militancy (an abstract measurement of aggression towards other nations) and stability. The Middle East, North Africa, and Southern Africa are both relatively unstable and militant regions, which can lead to internal conflict and unrest. Conflict, as modeled in the game, may lead to drops in production and both political and genuine famines. As a result, these regions may become even more

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189 Respondent 16, Interview, 2011.

190 Respondent 13, Interview, 2011.

unstable. Within its core mechanics, *Fate of the World* creates a procedural rhetoric that depicts a cyclical nature of conflict based on economic and social determinants as opposed to ideological convictions. The game suggests poverty, not ancient hatreds of political greed, drives global conflict.

Much of *Fate of the World's* difficulty, as the designers understand it, comes from the studio's adherence to data. "We went back and forth on being realistic," explains one designer<sup>191</sup> Given the general predicted estimates established by their research, the team even erred on the "generous side" because, as this designer states, "the real data made the game really hard to play."<sup>192</sup> The inclusion of a system of fossil fuel usage and depletion in particular added to the difficulty of *Fate of the World*. "The game was far more trivial until we put it in," another designer describes, "It's like we had the rock but we didn't have the hard place."<sup>193</sup> This incorporation of predicted fuel production and consumption greatly shaped player experiences. As one player states, "It was really surprising. It's hard to put out how much six billion people are going to use every year."<sup>194</sup> Peak fossil fuels, another player describes, "seems more important than climate change."<sup>195</sup> The team's commitment to truth, or "honesty" as one designer calls it, created a unique and complex system that demands an utmost amount of care from players to find and locate the small pieces of rhetoric, and individual design elements that exacerbate the problems caused by fossil fuel dependency and climate change.<sup>196</sup> "Ultimately what we found," one designer explains, "was that while it had a more difficult barrier of entry,

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191 Respondent 3, Interview, 2011.

192 Ibid.

193 Respondent 2, Interview, 2011.

194 Respondent 13, Interview, 2011.

195 Respondent 16, Interview, 2011.

196 Respondent 3, Interview, 2011.

those who did dig deeper gained a more rich understanding of the complexity of the system.”<sup>197</sup>

In addition to mechanical difficulty, information access also shaped *Fate of the World's* level of difficulty. *Fate of the World* features a vast collection of statistical data, measuring everything from fuel consumption over time to declining literacy and industrial toxicity levels. Players can also plot graphs of this data, assessing the relationships between figures according to the game system. “I didn't feel like I got a good introduction to the stat telemetry,” states one player.<sup>198</sup> “Not enough explanation is the biggest thing,” another player points out.<sup>199</sup> Others call the information “obscure” and “opaque.”<sup>200</sup> Although the interface and stat telemetry has changed significantly since launch, the designers I interviewed each noted information management as a major hurdle during the design process. One designer offers an excellent explanation for this outcome, citing both design choices and development constraints:

We were always worried about the game containing lectures. We felt that would be taken quite negatively by a lot of our players. The result is that in many ways we throw players in at the deep end with only the slightest bit of help (in the form of a long and hard to read in-game encyclopedia). The lack of access was less a design decision and more a side-effect of rushed development.

While informational barriers may have lowered the game's accessibility, *Fate of the World's* rhetoric remains consistent. Policy makers, the game suggests, do not always know the outcomes of their decisions, and strategic implementation of policies demands a great deal of research. In an ever-changing environment, one designer explains, player policies may alter the system “but maybe not in the way they expect.”<sup>201</sup> Many of the players I interviewed overcame these information barriers by accessing community resources or delving head on into the game's

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197 Ibid.

198 Respondent 1, Interviewed by author, 18 August 2011

199 Respondent 14, Interviewed by author, 25 August 2011

200 Respondent 10, Interviewed by author, 11 August 2011, and Respondent 16, Interview, 2011.

201 Respondent 8, Interview, 2011.

statistics and even code. “Even when you lose, it's not like you get punched in the face and you lose, you are playing all those decisions” one player elucidates. “This is hard,” he continues, “but this is interesting.”<sup>202</sup> Confirming this assessment of *Fate of the World*, one designer states, “A game you win easily doesn't make you think, while a game you struggle to win does make you think.”<sup>203</sup>

## Scale

Even more so than *EnerCities*, *Fate of the World* takes a large-scale approach to addressing its subject matter. As the name suggests, players manage the entire world from a gods-eye point of view, far above the mid-level scale of a town as depicted in *EnerCities* and the personal-scale depicted in *Inside the Haiti Earthquake*. The lens through which players address climate change bluntly expresses the severity of the subject matter. As one player states, “While playing the game, I got a good scope of just how big the problem is,” tempering his earlier assumptions about solving climate change through technological advancements.<sup>204</sup> Taking such a large-scale approach to the subject matter also confines *Fate of the World* in significant ways. Most world regions, for example, necessarily combine several nations into conglomerations of peoples with disparate motivations, goals, personal and collective histories. The North Africa region, for example, envelops everything from Somalia to Morocco. The details that differentiate the two nations and how they individually address and are afflicted by the consequences of climate change become subsumed within the abstraction of a greater whole. “The attitude system

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202 Respondent 20, Interviewed by author, 26 August 2011.

203 Respondent 2, Interview, 2011.

204 Respondent 13, Interview, 2011.

and the needs of regions went through quite a lot of changes,” one designer explains, having scrapped several concepts to illuminate regional differences.<sup>205</sup> “While it was interesting stuff,” he continues, “it added too much choice, complexity, too many axes of things to think about.”<sup>206</sup> Describing the oddities of incorporating South Korea and China into the same group, one designer explains, “It's the best simulation we can make with our limited resources.”<sup>207</sup> As another designer explains, “there was a lot of concern” regarding the decision to collect the world into regions, each determined predominantly by their shared climate change vulnerabilities.<sup>208</sup> “If we want people to relate to these effects,” this designer explains, “how do we express the human concern?”<sup>209</sup>

Given the limits of their resources, the designers attempted to round out their limitations with design choices that reflect, in some ways, the small-scale elements of global climate change. If a region's HDI plummets, for example, or if in-game events negatively affect the contentment of a region, GEO protests and riots may occur. These riots themselves demand player attention, as they can increase the chance of war in a region and lower a region's HDI over time. In a simple and clear form of procedural rhetoric, international policies and programs, the game suggests, intimately affect the perceptions and happiness of civilians, an integral component of successful global climate change management. Riots may also lead to disappearance of GEO Agents, reflecting the human scale at which policies are enacted. Even so, one designer explains, “we did want to have a more personal connection with things going on in

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205 Respondent 3, Interview, 2011.

206 Respondent 3, Interview, 2011.

207 Respondent 2, Interview, 2011.

208 Respondent 12, Interview, 2011.

209 Ibid.

the world.”<sup>210</sup> The portrayal of regional and global news reports after each turn, such as “Water Stress Afflicts China,” offer “a more plural view,” this designer describes, granting players regional insight into smaller-scale affects of climate change.<sup>211</sup>



News headlines, Screenshot, *Fate of the World*

The system of animal extinctions modeled in the game also reflects unit operations that exist at the intersection between large-scale and small-scale concerns. Depending on a species' vulnerability in relation to global temperatures, players may briefly encounter a report at the beginning of each round that describes the extinction of one animal. “I suppose [the extinctions] were there as a point of emotional resonance,” one designer states.<sup>212</sup> Initially, these extinctions were part of a “biodiversity model,” that conveyed the significance of natural capital, another

210 Respondent 3, Interview, 2011.

211 Respondent 3, Interview, 2011.

212 Ibid.

designer explains, giving players “a practical reason to care other than just 'we like fluffy animals.’”<sup>213</sup> Instead, extinctions, while potentially emotionally resonant, serve as small-scale indicators of large-scale conditions. As one player describes them, extinctions are a “metric of how well you're doing” in *Fate of the World*.<sup>214</sup>

Like *EnerCities* and *Inside the Haiti Earthquake*, the scale of *Fate of the World* fundamentally shapes the game's procedural rhetoric. Making decisions from above conveys, as one player asserts, that “we do need a global entity” to address the political, social, and economic effects of climate change.<sup>215</sup> Additionally, the time length, as discussed previously, contributes to the game's large-scale approach. Given enough technological investment, players even have the opportunity to launch space ships to acquire extraterrestrial resources. Considering the time it takes to achieve such lofty goals in-game, *Fate of the World* suggests such dreams are admirable yet ultimately unfeasible. One player describes precisely this confrontation between his beliefs about technological advancements and the game's mechanical rhetoric, stating, “I no longer think it's going to be in time to solve any problems.”<sup>216</sup> By emphasizing large-scale effects of climate change and player decisions necessitated by five year jumps through time, one designer describes, “the scale of the game doesn't quite do justice to the 'less dramatic' effects.”<sup>217</sup> As another designer confirms, “the problem is that from space, even things that are very big for people's lives can appear very subtle.”<sup>218</sup> However, the global scale of *Fate of the World* does

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213 Respondent 12, Interview, 2011.

214 Respondent 13, Interview, 2011.

215 Respondent 20, Interview, 2011.

216 Respondent 13, Interview, 2011.

217 Respondent 12, Interview, 2011.

218 Respondent 8, Interview, 2011.

convey the large-scale nature of the problem, if not its minute effects. As this designer states, “it is important and effective in that role.”<sup>219</sup>

## System Design

Although *Fate of the World* incorporates a bevy of research data on climate change, development, and international politics, strategic design decisions still shaped the types of procedural rhetoric conveyed within the game's complex digital system. Of course the data utilized did not always fit nicely into the game design model. As one designer points out, “often the data was incomplete or differently reported in different places.”<sup>220</sup> Another designer reiterates this fact, stating: “there is a lot of areas of research where the research was not as put together,” which entailed creating a “reasonable curve” given the data.<sup>221</sup> One designer explains his approach to the data: “In general I was content to bring to life what's the most conservative but likely scenario,” while also “trying to portray the consensus as much as possible.”<sup>222</sup> As one designer describes it, the team “normalized a lot of the data,” building models that would be later tested against the “established predictions.”<sup>223</sup> To create what one designer calls “a big dynamic model, or rather a number of models hooked together,” Red Redemption required a critical assessment of the real world system models from a game design perspective. The team did not model certain aspects of climate change, one designer describes, “because they weren't significant enough or they weren't core enough to the problem.”<sup>224</sup> CO2 equivalents, this designer

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219 Ibid.

220 Respondent 8, Interview, 2011.

221 Respondent 12, Interview, 2011.

222 Respondent 2, Interview, 2011.

223 Respondent 3, Interview, 2011.

224 Ibid.

describes, are just one example of a simplification of complexity in an already immensely complex digital system. Necessarily, another designer states, “there is always going to be a certain amount of blurring.”<sup>225</sup> Since launch, the team has added and refined their system, by adding a migration scenario, for example, that models the transnational movement of people as a result of climate change.

More than individual unit operations alone, the complex system as a whole produces interesting educational and cognitive outcomes. As one player exclaims, “there's just so many things to address.”<sup>226</sup> The interdependence between operations sparked the interest of one player about HDI measurements: “If you raise HDI it helps other things. It compounds so well you want to develop as much of the world as possible.”<sup>227</sup> Alternatively, detrimental outcomes of player choice also shape learning outcomes. For example, one designer details, some players would “move to electric transport and wonder why temperature is increasing,” when the model of resource production and consumption in one region may result in the increased consumption of high-emission coal to satisfy the fuel needs of a newly established electric car network.<sup>228</sup> As players test the system, one designer explains, “you start seeing where things break.”<sup>229</sup> High-level play as described by my player interviewees necessitated the use of the game's statistics to draw correlations between disparate models and player actions. As one designer states, “this is the kind of stuff that happens when you put competing systems together.”<sup>230</sup>

The digital system modeled by *Fate of the World* also incorporates what some might

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225 Respondent 2, Interview, 2011.

226 Respondent 1, Interview, 2011.

227 Respondent 13, Interview, 2011.

228 Respondent 2, Interview, 2011.

229 Ibid.

230 Ibid.

consider unethical political practices. Politics cards, despite not directly addressing climate change, nevertheless serve as implements of power within a system of climate change management. Players may increase stability in a region, for example, by providing security assistance or, when a region succumbs to war, by declaring martial law. Players can also go so far as to fund an insurgency campaign, covertly sterilize a population, or even release a gene plague that kills off a percentage of a region's population. None of this is to say *Fate of the World* condones such actions. While not addressing the moral implications of these politics cards, the cost of implementing many of them is quite exorbitant and they offer relatively little benefit in relation to their cost. “Fund Deep Black Ops,” for example, costs players two hundred units of currency, one of the most expensive cards in the game, just to make some of these more controversial policies possible. The cards could also be interpreted as satirical, particularly in the comically named “Dr. Apocalypse” scenario, which tasks players to subtly destroy the world instead of saving it and actually measure the player's level of “Evil.” These policy options, the game suggests, are not preferable solutions, but dangerous last-ditch efforts to address problems we should address immediately with less invasive means.

## **Conclusions**

Red Redemption's approach to scale, difficulty, and player agency largely defines the educational and persuasive outcomes of *Fate of the World*. In a complex digital representation of multiple real world systems, difficulty, regardless of player choice, seems a natural outcome of real world complexity. *Fate of the World*, despite offering a variety of policy cards, exists firmly within a wider discourse that understands climate change as long-term global dilemma that

demands coordinated international effort over a broad stretch of time. The game's adherence to research data places it within a discourse that emphasizes quantitative measurements and scientific approaches to climate change and persuasion. As a large-scale model of global climate change and politics, *Fate of the World* makes a scientific argument, not a moral argument, for addressing many of the world's problems that exacerbate the deleterious effects of climate change.

It is quite possible that players may interpret the ethically dubious politics cards, or any cards for that matter, independently from the mechanical arguments they make. One player thought the game lacked even more complex “violent options,” such as forced deportation.<sup>231</sup> Another was in horror when making “some very tough fairly anti-humanitarian decisions” he felt were inevitable.<sup>232</sup> Indeed, in particularly unstable regions, politics cards become particularly powerful tools to reinstate stability. Within my small sample of players, opinions on particular models varied greatly. One player disapproved of *Fate of the World's* modeling of uranium-reliant nuclear power, while another denied its assessment of anthropogenic global warming, yet still states the game was as “apolitical as a game like that can get.”<sup>233</sup> One player, frustrated with solar cell mechanics and a few other design elements, modified the game to his liking.<sup>234</sup> Despite the embedded rhetoric, and the data-driven design paradigm, meaning is still negotiated between players and creators.

The designers seemed particularly attuned to the process of interpretation, revealing an understanding of the game as an interactive system that strives to incorporate scientific data into

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231 Respondent 10, Interview, 2011.

232 Respondent 16, Interview, 2011.

233 Respondent 16 Interview, 2011 and Respondent 14, Interview, 2011.

234 Respondent 1, Interview, 2011.

an experiential form. “We tried to stick clear of ideology as much as possible,” explains one designer.<sup>235</sup> The game offers a negotiable environment, this designer continues: “This is the perceived trend, there are numerous ways of dealing with it, and we tried to give as wide a range as possible.”<sup>236</sup> When approaching these systems, “you have to always question your prejudices.”<sup>237</sup> Another designer reiterates this description of *Fate of the World* as a space for player exploration of real, digital, and perceptual models of climate change management: “In many ways, learning the game is about assessing assumptions. Many of our players knew nothing of climate science but were willing to experiment and learn from the game in order to beat it.”<sup>238</sup> *Fate of the World* offers the chance “to test your assumptions and test what you logically think will be reasonable approaches to the problem.”<sup>239</sup> Mirroring Paladin Studio's approach to educational game design, another designer expresses the experiential value of such an interactive space: “communicating all the very small details we care very much about because we are involved in it is actually less important to the game than the overall experience and the overall impressions because that is what people walk away with.”<sup>240</sup> Although all player interviewees expressed the niche value of *Fate of the World* due to its complexity and sheer difficulty, this approach resonates in their own take on the game. “Everything is more fun and more interesting if you can actually play around with it yourself instead of reading it in a

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235 Respondent 2, Interview, 2011.

236 Ibid.

237 Ibid.

238 Respondent 3 Interview, 2011.

239 Ibid.

240 Respondent 12, Interview, 2011.

textbook,” one player comments.<sup>241</sup> In an appropriate reaffirmation of one designers description of the game, one player states, “it's like your own little sandbox for the future.”<sup>242</sup>

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241 Respondent 4, Interviewed by author, 8 August 2011.

242 Respondent 13, Interview, 2011.

## Chapter 6: Conclusions

I began this thesis asking an expansive question with no simple answers: how can social impact game designers effectively address real world systems within digital systems. This chapter explores several answers to this question. I begin with some significant similarities and differences between *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World* that point towards particular industry practices and research topics the industry and academics may find fruitful. I then discuss four significant findings rooted in theory and my own research. First, player agency, the methods by which players interact with a digital world, holds value only in relation to design goals and should be shaped in service to the experiences and rhetoric designers seek to create. Second, social impact game designers should consider subversive play behavior during the design process to minimize the occurrence and effects of inadvertent and counter-productive rhetorical outcomes. Third, a design team's approach to scale defines the values and experiences available to players. Fourth, the scale and complexity of a digitally modeled system correlates to its level of difficulty and accessibility, and therefore transparency, which encourages systems fluency, should be a design goal of social impact game developers. Lastly, I conclude with a brief discussion of future research methods and inquiries. While many of these concepts may appear difficult to implement, my goal is not to scare away potential game designers, but to encourage future developers to design intelligent and well constructed games to address important real world systems through play.

I selected these three cases studies due to their approach to international and large-scale processes. They also model systems of complex interaction, be they between actors on the ground in Haiti or political and economic forces across global regions. Outside of each game's

design, *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World* share interesting characteristics that offer insight into their use by players and their position within the growing social impact games industry. Although all three games were created in different countries with different target audiences, they each come predominantly from Western nations and largely cater to a Western audience. However, the designers have extended their games well beyond these borders. Both *EnerCities* and *Inside the Haiti Earthquake* are free to play online, significantly lowering their barriers to entry. Paladin Studio also offers their game in six languages and Red Redemption seeks to translate their game with the help of players, including one of my interviewees who is currently translating *Fate of the World* into Portuguese.<sup>243</sup> Indeed, compared to the games industry at large, a diverse array of players may access any of these three titles relatively easily.

That being said, while I do not have access to player demographics, it is likely safe to assume players of each game are predominantly male from Western developed nations, if for no other reason than disproportional access to technology and leisure time of this group. My own small sample of players was indeed Canadian, Australian, American, and European. Although females made up several of my designer interviewees, all but one of my player interviewees were male. Considering the predominance of male consumers in the “hardcore” gaming sector of the games industry, I would assume male players disproportionately play the more complex *Fate of the World*. Similarly, the ages of all my player interviewees fell between twenty and thirty, younger than the industry average of thirty-seven, and at least half were college educated.<sup>244</sup>

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243 Respondent 13, Interview, 2011.

244 Entertainment Software Association, “Essential Facts About the Computer and Video Game Industry,” (2011), [http://www.theesa.com/facts/pdfs/ESA\\_EF\\_2011.pdf](http://www.theesa.com/facts/pdfs/ESA_EF_2011.pdf).

Considering my own data, it becomes painfully clear the industry would greatly benefit from more exhaustive research into the demographics of social impact games players.

When examining the social impact games sphere with these demographics in mind, we can place these three cases studies firmly into the dominant collection of Western developed games. As mentioned above, these three projects strive towards an impressive degree of inclusivity. Accordingly, this description need not undermine the valuable contribution these digital experiences make towards educational and persuasive critiques and assessments of real world systems. However, particularly when examining issues of development, politics, and aid in the developing world, we find a dearth of social impact games created by or in partnership with designers located in these regions or from the backgrounds of those people most affected. We could imagine, for example, a sustainable development game that takes into account local discourses on development in slum cities created in conjunction with local designers, NGOs and residents. There is, of course, a startling lack of capacity in many of the world regions *Inside the Haiti Earthquake* and *Fate of the World* seek to model, significantly slowing the progress and creation of such ventures. This is not to say Western designers cannot adequately address real world systems in non-Western regions. Indeed, *Inside the Haiti Earthquake* and *Fate of the World* do just that, but the social impact games industry as a whole would greatly benefit from a diverse assortment of designers, with a variety of personal backgrounds that inform their approach to system design, both in and outside the games industry, leading the creation of social impact game design projects that account for heretofore largely neglected audiences. Future research may also find valuable insight in the examination of demographics, play experiences, and procedural rhetoric from these broadly created games.

Player demographics differ when incorporating social impact games into educational environments. Paladin Studios specifically designed *EnerCities* for use in classroom settings, intentionally lowering the technological demands of their software to increase accessibility within schools with minimal resources. The demographics of players in classroom settings will naturally differ from the demographics of players who must purchase or pursue a game on their own time. Roughly forty-five percent of Knol and De Vries' classroom subjects who played *EnerCities* were female, potentially increasing the number of female players of games.<sup>245</sup> Play in a classroom environment may also dramatically alter the experience of players, both by engaging in a social environment with their peers, which may result in emergent sharing and collaboration, and by having a facilitator present before, during, and after a play session to further interrogate the game's subject matter. All of my player interviewees played the games at home. Therefore, my own data cannot take into account the potential effects of curricular context on the play experience. More expansive research projects should analyze the effects such varied and social contexts can have on rhetoric and systems fluency. Indeed, as “active *producers* of perceived meaning,” games research demands the analysis of players and the social, political, and economic contexts in which they play.<sup>246</sup>

### **Player Agency**

There is a thin line between a mere simulation and a game. A defining characteristic of Jesper Juul's definition for a videogame is that “the player exerts effort in order to influence the

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245 Knol, De Vries, “EnerCities, A Serious Game,” 6.

246 Hirschschman, Thompson, “Why Media Matter,” 45.

outcome.”<sup>247</sup> Simulations express a great deal of information merely through observation of their interconnected parts. While *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World* each differ in their approach to system design significantly, each simulates some aspects of the real world system they seek to address. Setting their system design goals aside, it is their constraints and controls on player interactivity that set these interactive experiences apart from static simulations and each other. One Red Redemption designer fluently describes a persuasive take on interactivity:

If simulations can be dynamic and can provoke individual experiences for players, then there's nothing wrong with a simulation as means of communicating knowledge. The key to experience, though, is interaction, and many simulations have poor means of interaction in terms of developing knowledge, personal narrative, and experience building. So while simulations are important, the experience is understood through mechanics and it is with that part of game design where teaching will emerge through player understanding of the system. Games do this by their very nature – by play we work out how to understand, use and exploit the mechanics to achieve goals. If these mechanics are strongly related to a subject that is being taught, then teaching will happen.<sup>248</sup>

I agree with this assessment of play as an inherently educational experience, one in which the mechanical constraints of a digital system may be tested and understood by the player out of necessity. Interacting with a system, and engaging to some extent in scientific experimentation and testing, failing in controlled situations, may provide a great deal of insight into real world systems. However, the term “poor means of interaction” I will explore in this section, as well as player maneuverability within the authorial game space.

How can we best assess a game's “means of interaction”? Why does player choice matter in the first place? According to James Paul Gee, “All deep learning involves learners feeling a

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247 Jesper Juul, “The Game, the Player, the World: Looking for a Heart of Gameness,” *Level Up: Digital Games Research Conference Proceedings*, ed. Marinka Copier and Joost Raessens (Utrecht: Utrecht University, 2003), <http://www.jesperjuul.net/text/gameplayerworld/>.

248 Respondent 3, Interview, 2011.

strong sense of ownership and agency, as well as the ability to produce and not just passively consume knowledge.”<sup>249</sup> Yet Gee offers no thorough definition of the loaded term “agency” itself. Does the amount of player choice directly correlate to a weaker or stronger sense of “ownership and agency”? In regards to my case studies, does *Fate of the World* offer a better learning environment than *Inside the Haiti Earthquake* because it contains more options for the player?

Philosophers outside the games industry may prove more useful in unpacking the term. In *The Ethics of Identity*, Kwame Anthony Appiah reaffirms John Stuart Mill's fervent belief in the value of liberty and the freedom to make and carry-out one's life plan.<sup>250</sup> Players may also value the creation and execution of plans. How, then, do limitations on player choice affect sensations of “agency” when designers constrain choice, say, by offering binary options as in *Inside the Haiti Earthquake*, or limiting the number of choice cards that can be played in a region in *Fate of the World*? Can players be said to have only “some” autonomy over their actions? In the real world, Appiah rejects such notions, suggesting they necessarily imply some impossible to imagine notion of complete autonomy.<sup>251</sup> Appiah's conclusion holds relevance to agency in games: “When is something a condition of choosing and when is it a constraint upon choice? Inevitably, how we answer is a matter of interest-guided judgment, of what standpoint we adopt.”<sup>252</sup> In game terms, it makes no sense to claim more player choice or less constrained player choice creates better or more educational play experiences. Rather, we must assess a game's “means of interaction” according to the type of educational and persuasive experiences

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249 James Paul Gee, *Good Videogames + Good Learning*, (New York: Peter Lang, 2007), 154.

250 Kwame Anthony Appiah, *The Ethics of Identity*, (Princeton: University Press, 2005).

251 Appiah, *Ethics of Identity*, 52.

252 Appiah, *Ethics of Identity*, 59.

they uniquely seek to create. We can, of course, analyze how particular design choices regarding player interaction do and do not effectively address real world systems, but the number of decisions alone hold little bearing on the effectiveness of educational and persuasive games. Thus, *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World*, ranging from a minimally interactive experience to a deeply complex and variable experience, each structure participation and affect change unique to their needs.

In each game, player choice structures foster particular procedural rhetoric. The themes of *Inside the Haiti Earthquake* mirror the procedural rhetoric of its choice structure quite well, constraining player choice in an immensely limiting scenario while also pressuring players, with visual and textual rhetoric, to succumb to the outside burdens similar actors find themselves in. One could argue *Inside the Haiti Earthquake* unnecessarily constrains player choice by inserting a lose condition, or failure experience, for the journalist, yet without this lose condition, the rhetoric that conveys an immense professional burden on journalists in disaster zones becomes significantly diluted. Failure experiences are core to pedagogical planning. The same argument could be made for the geographic boundaries imposed by *EnerCities* and *Fate of the World*. While the grids and regions represented serve mechanical functions, they also shape rhetoric that emphasizes the importance of geography by demanding players take into account physical space as it relates to growth, unrest, and other geopolitical concerns. In the case of *EnerCities*, the grid-based city forces players to maximize their efficiency within determined confines. This impedes the ability for players to create a city using only efficient suburban housing, a seemingly strange design choice for a game that seeks to raise awareness about sustainability. In the case of *Fate of the World*, the global regions convey the variable but universal application of detrimental climate

change effects, while also simplifying an already difficult to access experience for players. Of course these procedural arguments may not match the educational and persuasive goals of the team, but the point remains: constraints on player choice, the assortment of unit operations that define to what degree players can exert their influence upon the fictional world and its digital model of real world systems, are not inherently valuable or isolated game components. Rather, these limitations shape in particular and significant ways each game's procedural rhetoric, a fact social impact game designers should keep in mind. By selectively constraining and liberating player agency, aware of the rhetorical outcomes of such decisions, designers may shape the educational and persuasive power of their games to increase systems fluency among players and minimize the production of counter-productive rhetoric as a result of mechanics driven design decisions.

### **Subversive Play**

Regardless of the limitations designers put on player choice, there is always a chance players veer from the arranged path and in doing so subvert a game's intended rhetoric. Lewis, Jenkins, and others simultaneously recognize the expression of audience power through resistance, which nevertheless works within a medium's designed framework.<sup>253</sup> As an interactive medium by definition, multiple meanings are created through negotiation between designers and players. When put in the context of social impact games, there is a serious potential for players to undermine or subvert the intended educational and persuasive goals established by designers, perhaps resulting in a very different player perception of the real world system a game seeks to

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<sup>253</sup> See Lewis, *Constructing Public Opinion*, 87.

model than that intended by its creators. Across all three case studies, players were capable of approaching the play experience in different and perhaps unintended ways. As one PTV designer anecdotally describes, “most people choose the journalist” when first playing *Inside the Haiti Earthquake*, and “the survivor is the least trafficked” of all three perspectives.<sup>254</sup> For players to get the most nuanced understanding of how survivors, journalists, and aid workers interact with each other within systems of disaster relief, it behooves players to experience all three story arcs. However, each character is chosen and played separately, allowing players to neglect certain characters and subject positions. It is interesting to note that the Survivor is least played considering it asks presumably Western, and likely better off, players to inhabit the most culturally and experientially different persona available in the game. It comes as no surprise then when one designer states, “there is a way to play it to only reinforce the perspectives you already have.”<sup>255</sup> Players, particular those only experiencing the journalist track may receive precisely the self-affirming rhetoric the designers wish to avoid.

Similar examples of subversive play may occur in *EnerCities*. As discussed earlier, some of the high scoring *EnerCities* players “have a sneaky way of playing the game regularly and then right before the end of the game, they destroy all their buildings for parks and forests,” cleverly increasing their Environmental and Wellbeing scores without actually ending the game with a sustainable city.<sup>256</sup> These players exploit the ability to build over structures to artificially manipulate their score, which fundamentally alters the game's rhetoric. In their pursuit of a high score, players may construct a model of sustainable development in which strong economies

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254 Respondent 15, Interview, 2011.

255 Ibid.

256 Respondent 15, Interview, 2011.

supplant high-polluting industry suddenly and totally with environmentally friendly structures and policies, in some ways mechanically vindicating emissions trading by wealthy states. This process also mirrors a “catch up” paradigm of development in which cities or nations move towards sustainability only after establishing a strong economy. This approach to development undermines *EnerCities'* intended rhetoric in which long-term sustainability requires early strategic implementation of sustainable works.

*Fate of the World* players may similarly undermine the game's rhetoric. All the players I interviewed found one or two design choices to improperly model climate change or technology according to their own perceptions. I was particularly struck by one player going so far as to modify the game on his own, adjusting the efficacy of solar cells, completely unsupported by any developer created interface for such behavior, to better adhere to his beliefs.<sup>257</sup> By literally editing the developer created game parameters, players may create their own self-affirming procedural rhetoric. However, this approach offers a unique opportunity for games to enhance their players' systems fluency. While players may not always recognize the ludic consequences of their actions, adjusting minute game design elements requires an understanding of the game system and how it reflects the real world system the designers envisioned and subversive players envision. This very much reaffirms one designer's belief that “learning the game is about assessing assumptions.”<sup>258</sup>

In some ways, guarding against inventive players and subversive play seems like a futile effort. If PTV had forced players to experience all three character arcs in *Inside the Haiti Earthquake*, perhaps fewer players would have played the game in the first place. After all, time

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257 Respondent 1, Interview, 2011.

258 Respondent 3, Interview, 2011.

commitment remains a large barrier of entry, especially for social impact game designers who do not seek to create purely entertainment based games. Also, demanding players experience story arcs in a particular order may appear as a value judgment on the importance of each actor in disaster zones. Likewise, removing the ability for players to build structures on top of older ones in *EnerCities* may have fostered a false sense of permanence and pessimism when discussing sustainable development. In regards to social impact games, it may be enough to suggest game designers remain reflexive and aware of potentially contradictory rhetoric created by subversive play. As the MDA framework explains, designers influence player behavior and can foster a transparent environment that minimizes subversive play.<sup>259</sup>

The designers of *Inside the Haiti Earthquake* seemed aware of the limited success they might have on players experiencing just the journalist's perspective. Additionally, the team specifically incorporated the other two actors in each scenario to foster a better understanding of their interconnectivity while also potentially catching the interest of players who might be more inclined to continue the experience through another actor's eyes.<sup>260</sup> Interestingly, *Fate of the World* creates room for alternative approaches to their system in some regards by offering the satirical “Dr. Apocalypse” scenario, which allows players to test the digital system by actually trying to raise global temperatures. The recently released “Denialist” campaign also creates a space in which players who disagree with the assessment that global warming is largely produced by human behavior can test their assumptions within a system that still models development, politics, and resource extraction, and so on. In this way, *Fate of the World* fosters systems fluency by giving players the freedom to critically examine the digital system's

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259 Hunick, LeBlanc, Zubke, “MDA: A Forma Approach.”

260 Respondent 4, Interview, 2011.

component parts, whereas more authorial controlled experiences may foster systems fluency from the top down, shepherding players through a neatly constructed educational landscape. In regards to social impact games at large, it behooves designers to recognize and plan for procedural rhetoric that includes that which is created by players through subversive play, limiting or freeing players to engage in such behavior according to the educational and persuasive goals of their projects. Similarly, social environments, be it in a classroom or online, as implemented by *EnerCities*, may allow players to test their assumptions, which might otherwise appear as subversive play, with other players. However, keeping in mind the competitive drive social environments created for *EnerCities* players, there may also be a danger that fostering communal environments may incite subversive play. Further research into the educational and persuasive effects of social environments on social impact games would greatly enrich the literature on this subject.

## Scale

Designers from *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World*, although addressing different real world systems with variable approaches to scale, consistently referenced their approach to “truth,” “honesty,” or “reality,” each offering a very different approach to fidelity and game design. One designer for *Inside the Haiti Earthquake*, mentioned the risk of getting into “fictional land” when shaping narratives.<sup>261</sup> Another designer mentioned it was “important to us to make a product that the people working with us in Haiti would think was authentic.”<sup>262</sup> This authenticity, or avoidance of pure fiction for their stories, seems tied to the

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261 Respondent 4, Interview, 2011.

262 Respondent 15, Interview, 2011.

experience of actually being in Haiti in the wake of the devastating earthquake – both the difficulties and real human emotion that journalists and aid workers felt, and the courage and tenacity of Haitian survivors. Conjointly, the experiential nature of on-the-ground documentary film making, along with the experiences of a crew largely coming to the project with a film background, undoubtedly shaped the teams emphasis on “authenticity.” For PTV, an authentic play experience meant the creation of an interactive experience that conveyed, on a personal scale, the dilemmas faced by those in a disaster relief scenario. Importantly, it did not mean providing statistics and figures related to aid relief, nor did it imply the actual first-person tale of a real person and their reactions to the disaster in Haiti in the way a documentary film might. In the case of *Inside the Haiti Earthquake*, authenticity means a personal and experiential expression of the circumstances in Haiti following the natural disaster.

Paladin Studios, on the other hand, sought an entirely different form of authenticity in *EnerCities*. Rather than adhere to statistical data or create an intimate portrait of a few actors, the game seeks to convey an authenticity of relationships. Again, one designer explains the team's decision to veer away from statistical fidelity: “The more realistic you make the model, of course the more accurate it is, but in a way, the more realistic you make the simulation the less you grasp the concept. You don't really get the gist of it.”<sup>263</sup> A truly complex model of real world systems of urban development, pollution, and energy production would have bogged down the play experience with trite and unappealing figures, suggest the designers. For them, the ludic experiences of players were paramount. Fidelity meant conveying sensations and generalities specific to the subject matter rather than hard numbers that may have come off as distanced from

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263 Respondent 19, Interview, 2011.

real world concerns. By offering players kernels of abstract truth, players might make their own connection to reality, raising awareness about sustainability while possibly altering behavior as well. As De Vries and Knol find in their study, students playing *EnerCities* did change their own behavior, such as consuming less energy and taking shorter showers, even though this direct message is not conveyed in a specific small-scale manner to players. Authenticity in *EnerCities* pertains more to behavioral change through abstraction than cognitive change from learning new hard information about the real world system the game models, perhaps mirroring the discourse of European politics in which states negotiate to enact top-down policies to adjust consumer and industry behavior.

Red Redemption took another path with *Fate of the World*, offering players a large-scale vantage point over climate change, international politics, and development. While *Fate of the World* avoids a small-scale experiential definition of truth and authenticity, it does adhere to statistical fidelity, choosing to remain committed to a model of cognitive change based on incorporating a great deal of factual data into the digital model of real world systems. Where *EnerCities* strove to express “truth” through abstraction, *Fate of the World* offers players a system heavily constructed from factual data, granting insight into quite a few specifics, while at the same time avoiding this same fidelity within other game design elements. Although this adherence to “facts” may appear influenced by the team's proximity to and relationship with Oxford University academics, the root of the team's pursuit of facts appears to derive from personal design preferences considering the games-industry background of its producers and lead designers. Additionally, the game adheres to scientific data where applicable, but takes many opportunities to veer from the analog world in its gameplay design. For example, while the game

models the arctic methane release and the risks and rewards of aerosol use to lower global temperatures, it also wholly embraces the game contrivance of an established and immensely powerful Global Environmental Organization. Some players I interviewed went from praising the immensely detailed effects of certain in-game and real world technologies, much of which they investigated on their own, to stating: “things like the Tobin tax we can never do in real life” and “there's no way governments would come together” as they do in the game.<sup>264</sup> Indeed, all players I interviewed, regardless of their nationality, found the game optimistic in some regards and pessimistic in others, expressing both the overwhelming difficulties when facing real world systems of climate change and resource dependency and the hopeful idealism of facing these difficulties with a relatively trusted international organization and a reliable source of financial and intellectual resources.

Each varied approach to “truth” is greatly shaped by each game's scale, which in turn fundamentally defines the types of educational and persuasive experiences players can have with each game. *Inside the Haiti Earthquake* takes a very personal approach, literally telling the story of individual survivors, aid workers, and journalists through the eyes of someone on the ground in Haiti. PTV's scale reflects the team's concern with authenticity and the pursuit of an experiential environment in which players can examine common assumptions of disaster relief. The minimalist interface approach, the use of dramatic documentary footage, and the incorporation of small-scale experiences, such as listening to actual music sung by a group of survivors, despite the tragedy around them, elicits particular emotional responses from players. The game raises awareness about disaster relief systems and the interaction between its three

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<sup>264</sup> Respondent 10, Interview, 2011 and Respondent 14, Interview, 2011.

characters, expressing how an individual can both help and hinder a country in great need of aid. With this defining scale, *Inside the Haiti Earthquake* cannot possibly express the same procedural rhetoric or address the large-scale realities of disaster relief, incorporating every significant actor in Haiti let alone those powerful international actors that affect disaster relief. PTV, for example, could not coherently convey the emotional burden on aid workers that often result in sub-par aid relief while also modeling the intricacies of the Canadian International Development Agency and the domestic paradigms that shape the nation's aid practices.

*EnerCities*, meanwhile, takes a mid-level approach to scale, settling on a top-down perspective in a municipal and relatively small environment. In place of just a few individuals, *EnerCities* constructs a growing city, creating procedural rhetoric that ties spatial expansion to population growth, and urban growth to economic development and a policy driven paradigm of sustainability. *EnerCities* simply cannot elicit the same values and emotions created by *Inside the Haiti Earthquake*, nor can it convey the sense of interconnectivity and cross-border relationships between sustainability and development contained in *Fate of the World*. It can, however, straddle the middle-ground in which urban sustainable development meets personal awareness of local policies and behaviors amongst its student and European based audience. Importantly, the target audience and its sociopolitical context greatly biases *EnerCities* towards city and urban development, which contains its own unique concerns regarding sustainable development that may not apply in the developing world. Sustainable development in France, for example, faces entirely different concerns and utilizes vastly different strategies than sustainable development in the slum centers of Kinshasa or the rural villages of Rwanda. To a great extent, *EnerCities*'s approach to scale defines its play experience and is intimately related to a European-

centric approach to development.

Scale similarly defines *Fate of the World's* rhetoric. While animal extinctions and news broadcasts may enhance some personal and emotional relationships between players and the game's subject matter, the regional approach to modeling climate change necessarily excludes the creation of certain individual, local, and national experiences, values, and procedural rhetoric. Approaching climate change, development, politics, and even future technologies with such a top down approach expertly expresses the complex interdependency between these real world systems, particularly when adhering to such strong research data. Yet the type of learning fostered by such a sense of scale is pointedly different from that fostered by local-level and individual-level approaches such as those employed by *EnerCities* and *Inside the Haiti Earthquake*. While nearly all my player interviewees expressed a marked confidence in their improved understanding of climate change, particularly in regards to certain policies and technologies, few noted significant personal behavior change. *Fate of the World*, it seems, lends itself particularly well towards increasing policy-based as opposed to experiential knowledge. The game and its high-scale approach imparts immense educational potential and systemic knowledge, but emotional resonance and small issue concerns must come secondary if at all.

None of this discussion is meant to say one game or the other offers better persuasive or educational potential. Rather, like player agency, approaches to scale must be determined according to the persuasive and educational goals of social impact game design teams. Of course technological and financial constraints can greatly affect the scale of a game, but even so, designers may take these possible constraints into account when planning their early educational and persuasive goals during all phases of the development process. I am very much in agreement

with the Paladin Studio designer who states that deciding how to approach scale “is the most important decision to make when making a game like this.”<sup>265</sup>

### **Difficulty and Systems Fluency**

Considering the varying degrees of difficulty in *Inside the Haiti Earthquake*, *EnerCities*, and *Fate of the World*, an interesting relationship becomes apparent between difficulty and systems complexity, largely defined by scale. As Juul discusses in his assessment of difficulty in games, “failure is central to player enjoyment of games.”<sup>266</sup> In social impact games, failure is also a critical component of education and persuasion. As Lee explains, game designers may exploit difficulty and lose conditions specifically to subvert player expectations and create profound learning opportunities.<sup>267</sup> Yet difficulty is not an easily adjusted constant. Players experience difficulty quite subjectively according to their own knowledge, skills, experiences, and expectations. Difficulty, as Juul elucidates, should also oscillate during a play experience. Therefore, locating the exact unit operations that facilitate the creation of meaning through difficulty becomes an arduous task in itself. In *Inside the Haiti Earthquake*, the game's narrative construction ushers players towards sub-optimal outcomes, yet rarely punishes players for these diversions, opting instead to lead them back to the primary narrative and therefore minimizing its difficulty. As a collection of individual stories, largely offering players binary choices, the game also minimizes the degree of mechanical complexity required to “succeed.” *EnerCities* employs one dominant lose condition in the form of resource depletion, but largely removes impediments

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265 Respondent 19, Interview, 2011.

266 Juul, “Fear of Failing?”, 11.

267 Shuen-shing Lee, “I Lose Therefore I Think.”

towards completion. Although achieving a very high score may prove difficult, completing the game is not. *Fate of the World*, on the other hand, models a great deal of complexity and demands players critically examine quantitative information over time to succeed, making a notoriously difficult play experience.

As Juul discusses, the degree of player setback as a result of failure can dramatically shift the player experience from the “casual” to the “hardcore,” potentially souring the experience for new players.<sup>268</sup> In regards to *Fate of the World* and *EnerCities*, the degree of setback largely relates to a player's understanding of information. An astute *Fate of the World* player may catch subtle shifts in economic trends and adjust policies and strategies accordingly, salvaging negative outcomes before meeting a complete fail state. Lesser informed players may instead fail to impede the rise of global temperatures, unaware early strategies set them towards a path of destruction, thereby forcing them to play the entire scenario again. Similarly, the most skilled *EnerCities* players keep in mind early game scores and their contribution to late game scoring, allowing them to restart the game when they first meet sub-optimal outcomes, minimizing their degree of setback.

Perhaps unsurprisingly, there is a correlation in all three case studies between perceived difficulty and the degree of systems complexity. Again, information access becomes a central component of assessing the success of game difficulty. As Juul discovers in his work, “players prefer feeling responsible for their own failure.”<sup>269</sup> Juul also hypothesizes that player attribution of failure depends on the their degree of knowledge:

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268 Juul, “Fear of Failing?”, 10.

269 Juul, “Fear of Failing?”, 7.

If the game is over due to a single, identifiable mistake, it is straightforward for the player to attribute failure to his or her own performance or skill (circumstance of person), but if the game is over due to an accumulation of small mistakes, the player is less likely to feel responsible for failing.<sup>270</sup>

In games that model real world systems, a higher degree of complexity, particularly when adhering to a version of “truth” that emphasizes actual research data, demands a recognition of the accumulation of many interactive components. Thus, information barriers in *Fate of the World* naturally increased the game's difficulty by obfuscating the visibility or legibility of the system's numerous components. *EnerCities*, on the other hand, simplified its already minimal approach to sustainable development by abstracting much of the data for its players, creating a significantly more approachable experience.

Importantly, all of my *Fate of the World* player interviewees expressed a high degree of familiarity with games in general, many of whom had a great deal of experience playing strategy games in particular. Each player already had a high degree of digital games fluency, allowing them to more easily navigate *Fate of the World*'s difficulty without entirely abandoning the game. As a social impact game attempts to model real world systems with increasing complexity, it becomes an increasingly niche experience, limited to those with a well established degree of digital systems fluency. Complex systems threaten to engage only those players already comfortable in the realm of digital systems. Therefore, increasing digital systems fluency as a learning endeavor across all degrees of social impact games increases the capacity for players to better understand real world systems as well. Games may produce better players and better thinkers. Considering Juul's assessment of information gaps, transparency of both system components and codified assumptions offers one method of facilitating increased systems

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<sup>270</sup> Ibid., 3.

fluency amongst players, regardless of a game's complexity. Opening the proverbial “black box” allows players greater freedom to critically examine and deconstruct digital models of real world systems and eases the inherent difficulty embedded within the management of complex systems.

As Donella Meadows states:

As our world continues to change rapidly and become more complex, systems thinking will help us manage, adapt, and see the wide range of choices we have before us. It is a way of thinking that gives us freedom to identify root causes of problems and see new opportunities.<sup>271</sup>

Social impact games that address real world systems within digital media not only offer a unique venue to critically examine the political, social, and economic structures that shape our lives, they offer the opportunity to increase systems fluency amongst players, making more complex social impact games more accessible and creating systems thinkers outside the digital realms of videogames.

## **Future Research**

This research project points towards areas of future research that both academics and industry professionals may find enlightening. A bevy of research from the educational sector explores the idea of engagement and ways in which students may better understand subject matter through the use of educational videogames. However, only a limited body of work examines “serious” games as both educational and persuasive tools of engagement. Future research should incorporate the study of procedural rhetoric into the analysis of educational experiences. Accordingly, both quantitative and qualitative research projects should further

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<sup>271</sup> Donella H. Meadows, *Thinking in Systems: A Primer*, Ed. Dana Wright, Sustainability Institute, (White River Junction: Chelsea Green, 2008), 1-2.

interrogate the designer context and experience to understand how game designers, construct digital models of real world systems. In particular, researchers and designers would benefit greatly from engaging in prolonged research projects that span the entire development cycles of social impact games from inception to completion. The multiple stages at which meaning becomes constructed demands a long-term and holistic approach to the study of procedural rhetoric.

Lastly, the intersection between digital game systems and real world systems remains woefully unexplored. Powerful discourses and ideologies shape our lives and our understanding of real world systems. The games medium holds great potential for increasing systems fluency and the ability for players to understand and interrogate the components of real world systems, and as importantly, the assumptions and beliefs that undergird current approaches to “reality.” Since games may persuade while also obfuscating their hidden assumptions, succumbing, once again, to the “black box” problem, it is paramount that there be further study into the procedural rhetoric of social impact games in particular, as well as the experiences and contexts that feed into the design process and affect the negotiation of meaning. This research is multidisciplinary by necessity, and demands a critical eye not just towards game design, but towards the way real world systems are constructed, sold, understood, and consumed within digital spaces.

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