Persuasive Games

The Expressive Power of Videogames

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Preface

Videogames are an expressive medium. They represent how real and imagined systems work. They invite players to interact with those systems and form judgments about them. As part of the ongoing process of understanding this medium and pushing it further as players, developers, and critics, we must strive to understand how to construct and critique the representations of our world in videogame form.

Despite their commercial success, videogames still struggle for acceptance as a cultural form.[1] Critic James Newman offers two possible reasons. First, he suggests, videogames are perceived as a children's medium, "easily denigrated as trivial—something that will be 'grown out of'—and demanding no investigation."[2] It is common to hear parents, educators, and policymakers equate videogame playing with idle time, time that could be put to better use. Yet, even if videogames were merely a children's medium (which they are not, and never were), this reason alone does not adequately explain why they would escape respect.[3] Children's literature has enjoyed considerable popularity in both popular and academic contexts. For example, the Modern Language Association (MLA) maintains a group for children's literature, which in turn produces an annual, *Children's Literature*, which "publishes theoretically based articles that address key issues in the field."[4] Hollins University offers masters degrees in the study and writing of children's literature.[5] Even comics, which enjoyed broad readership among kids and adults alike before the adoption of the 1954 Comics Code, still benefit from occasional critical acclaim and attention.[6] The University of Florida supports comics studies,

where English professor Donald Ault recently established a peer-reviewed academic journal on comics and graphic novels, called *ImageTexT*.[7] Even if it were accurate, the mere perception of videogames as children's culture is not a sufficient explanation for their resulting critical inattention.

A more convincing quandary emerges from the correlation between videogames and children's culture. That quandary is *triviality*. Videogames are considered inconsequential because they are perceived to serve no cultural or social function save distraction at best, moral baseness at worst. Newman cites this triviality as the second explanation for the medium's struggle for legitimacy. Videogames, he argues, are perceived to be "mere trifles—low art—carrying none of the weight, gravitas or credibility of more traditional media."[8] This is not a new problem in the history of culture. Comics, television, and even film once endured popular and critical scorn. The relative maturity of each medium explains part of the problem. Says noted videogame (and comics) critic Henry Jenkins, "If it's 1910 and you ask, 'What's the state of movies?,' I'm going to say mostly chases and pie fights. By 1915, when D. W. Griffith makes *Birth of a Nation*, now I'm saying that this is a mature storytelling medium that has enormous power to shape the debates within our culture."[9] Jenkins and many other critics in the growing field of game studies are trying to identify and cultivate a similar trend in videogames. In my previous book, *Unit Operations: An Approach to Videogame Criticism*, I too made such a gesture, arguing for a comparative criticism of videogames that would connect them with so-called high art—poetry, literature, and film in particular.[10]

But the growth of videogames as a legitimate medium requires more than just comparisons to other media. Jenkins's casual comment might inspire the incorrect belief that time is a sufficient cure for the relative immaturity of videogames. But creative progress on the part of the development community and critical progress on the part of the academic and journalistic community require a deeper knowledge of the way videogames work—precisely how they do whatever it is we would have them do to count as expressive cultural artifacts.

This book is an analysis of the way videogames mount arguments and influence players. Drawing on the 2,500-year history of rhetoric, the study of persuasive expression, I offer a general approach to how rhetoric functions uniquely in software in general and videogames in particular. In classical antiquity, rhetoric was understood as the art of oratory. Since then, some fields

have adopted a more general understanding of rhetoric; for example, media studies now often covers visual rhetoric, the art of using imagery and visual representation persuasively, in order to understand the function of rhetoric in photography and film. Following these traditions, this book suggests that videogames open a new domain for persuasion, thanks to their core representational mode, procedurality.

I call this new form *procedural rhetoric*, the art of persuasion through rule-based representations and interactions rather than the spoken word, writing, images, or moving pictures. This type of persuasion is tied to the core affordances of the computer: computers run processes, they execute calculations and rule-based symbolic manipulations. But I want to suggest that videogames, unlike some forms of computational persuasion, have unique persuasive powers. While "ordinary" software like word processors and photo editing applications are often used to create expressive artifacts, those completed artifacts do not usually rely on the computer in order to bear meaning. Videogames are computational artifacts that have cultural meaning *as* computational artifacts. Moreover, they are a popular form of computational artifact; perhaps the most prevalent form of expressive computation. Videogames are thus a particularly relevant medium for computational persuasion and expression.

Among computer software, I want to suggest that videogames have a unique persuasive power. Recent movements in the videogame industry, most notably the so-called *Serious Games* movement, which I discuss below, have sought to create videogames to support existing social and cultural positions. But videogames are capable of much more. In addition to becoming instrumental tools for institutional goals, videogames can also disrupt and change fundamental attitudes and beliefs about the world, leading to potentially significant long-term social change. I believe that this power is not equivalent to the *content* of videogames, as the serious games community claims. Rather, this power lies in the very way videogames mount claims through procedural rhetorics. Thus, all kinds of videogames, from mass-market commercial products to obscure art objects, possess the power to mount equally meaningful expression. From this vantage point, in the following chapters I interrogate three domains in which videogame persuasion has already taken form and still has great promise: politics, advertising, and learning.

In the domain of politics, I look at politics and public policy, first discussing the ways ideology functions in videogames. I then examine the way

rule-based systems expose what George Lakoff has called "frames" for political discourse. Unlike verbal discourse, which relies on deeply ingrained metaphors that most people take for granted, videogames deploy more abstract representations about the way the world does or should function. I trace the function of these frames in political games, art games, and commercial games. Next, I explore the field of officially endorsed political games, investigating the role of games in public policy and political campaign discourse.

In the domain of advertising, I first argue for a new era in advertising, one that abandons the trend toward "associative" marketing, the attempt to manufacture needs in consumers by suggesting affinities between aspirations and brands. Instead, I resuscitate and revise "demonstrative" advertising, the attempt to correlate advertising messages with the actual features and functions of goods and services. I explore and chart many varieties of advertising in games, from branded games to in-game product placement, suggesting that games which articulate the function of a product or service deploy the most productive procedural rhetorics.

In the domain of learning, I first critique the state of current educational practice, in particular the tendency to teach either specific knowledge divorced from context or abstract principles divorced from specific knowledge. Next, I look at how games address values and aspirations, including an interrogation of consumption, corporate training, and morality. I argue that videogames' usefulness comes not from a capacity to transfer social or workplace skills, but rather from their capacity to give consumers and workers a means to critique business, social, and moral principles. Finally, I explore so-called *exergames*, videogames that encourage physical activity in their players, arguing that the most sophisticated examples of these games attempt to translate the rhetoric of the personal trainer without simply reproducing the figure of the trainer.

The research that produced this book is twofold. On the one hand, I am an academic videogame researcher; I play games, research their histories and influences, and record my subsequent claims about their meaning. On the other hand, I am a videogame designer; I make games designed to have an impact in the three domains that are the subject of this book. The videogames studio I cofounded, Persuasive Games, shares its title with this book, and I intend this work to reflect both theoretical and game design goals. A small subset of the examples I discuss in the book were created at my studio, and I

select them not for self-promotion but because they directly address the topic at hand, a direct product of my attempt both to theorize and to practice the principles of procedural rhetoric. While I do not offer direct advice for game designers in these pages, I hope this book will prove useful for designers, critics, and players of videogames alike.

I am grateful to numerous academic and professional colleagues whose direct support, collaboration, and feedback was essential to the completion of this book. Special thanks go to my frequent research collaborators Gonzalo Frasca and Michael Mateas, who have helped shape my thinking about videogames and rhetoric. Nick Montfort and Noah Wardrip-Fruin provided detailed feedback on numerous drafts of this book. I am grateful to Matteo Bittanti, Sandra Braman, Suzanne de Castell, Katherine Isbister, Liz Losh, Thomas Malaby, Sharon Mazzarella, Jane McGonigal, and Janet Murray for feedback on individual chapters. And I thank Jay Bolter, Ted Castronova, Mia Consalvo, Mary Flanagan, Jim Gee, Stuart Moulthrop, Michael Nitsche, Ken Perlin, Cindy Poremba, and Kurt Squire for fruitful discussions, general feedback, and ongoing support. A few publication acknowledgements are also in order. Chapter 3 previously appeared as "Videogames and Ideological Frames" in *Popular Communication* 4:2 (2006).[11] Selections of that chapter appeared as "Frame and Metaphor in Political Games" in *Worlds in Play*, eds. Suzanne de Castell and Jen Jenson.[12] Earlier portions of chapter 8 appeared as "Videogames and the Future of Education" in *On the Horizon* 13:2 (2005),[13] and a previous version of chapter 4 appeared as "Playing Politics" in *First Monday* 11:9 (2006). eds. Thomas Malaby and Sandra Braman.[14]

Likewise, I heartily thank my professional colleagues in game development. I am particularly grateful to colleagues at my studio, Persuasive Games, including Gerard LaFond, Alejandro Quarto, and Nicolas Massi, without whom several examples discussed in the following pages would never have been created. I also must acknowledge Simon Carless, Brian Crecente, Michael Gesner, Raph Koster, Aleks Krotoski, Eric Marcoullier, and Ben Sawyer, who have all provided support and encouragement. I also thank the developers who speak at the annual Game Developers Conference, providing invaluable insights into the creation of their own games. I owe special thanks to Michael Boyce, Toru Fujimoto, Daniel Olson, Nate Olson, and Shannon Townsend for the essential yet trying job of acquiring permission to reprint many of the images that appear in the book. Many thanks as well to Simon Ferrari, whose

keen proofreading helped improve many passages and correct numerous mistakes. I am likewise indebted to the readers of Water Cooler Games, a website on "videogames with an agenda" that Gonzalo Frasca and I have edited since 2003.[15] The reactions, responses, and support of our readers have been extremely beneficial. Finally, I thank my family for their ongoing support: my wife Abbey for tolerating my simultaneous refusal to connect a VCR to our television and insistance that ten videogame consoles remain continuously mated to it, and to my children Tristan and Flannery for helping me see what I otherwise might miss.

1

Procedural Rhetoric

In 1975, Owen Gaede created *Tenure*, a simulation of the first year of secondary school teaching, for the PLATO computer education system.[1] The program was intended to give new high school teachers an understanding of the impact of seemingly minor decisions on the teaching experience. The goal of the game is to complete the first year of teaching and earn a contract renewal for the next. During play, the player must make successive decisions, each of which affects different people in different ways. Some decisions may please the students but contradict the principal's educational philosophy. Others may provide a higher quality educational experience but put performance pressure on fellow teachers, causing workplace conflict. The player can monitor the state of affairs by listening to student reactions, requesting a conference with the principal, or overhearing gossip in the teacher's lounge.

The game is played primarily through responses to multiple-choice questions whose aggregate answers change principal, teacher, and student attitudes. For example, at the start of the game, the player must take a job interview with his prospective principal. The principal may ask about the player's educational philosophy or his willingness to advise student organizations. Later, the player must choose a grading methodology, classroom rules, student seating arrangements, and a curriculum plan. The simulation then presents the player with very specific quandaries, such as how to manage another teacher's students at a school assembly, whether or not to participate in the teacher's union, dealing with note-passing in class, contending with

parents angry about their children's grades, and even managing students' difficult personal issues, such as home abuse.

No decision is straightforward, and the interaction of multiple successive decisions produces complex social, educational, and professional situations. Situations are further influenced by the gender of the teacher, the influence of the principal, student learning styles, and other subtle, social factors. In one run of a recent PC port of *Tenure*, Jack, one of my best students, had been arriving late to class.[2] I could choose to ignore his tardiness, talk to him privately, or give him detention. I chose to talk with Jack about the problem, which earned me praise from the principal, whose progressive philosophy encouraged direct contact and student empathy. However, after speaking with the student, I learned that his tardiness was caused by Mr. Green, the math teacher, who had been holding class after the bell to complete the last problem on the board. Now I was faced with a new decision: confront Mr. Green, make Jack resolve the issue and accept the necessary discipline, or complain to the principal. Asking the student to take responsibility would avoid conflict with my colleague and principal on the one hand, but would put Jack in an uncomfortable situation on the other, perhaps changing his opinion of me as a teacher. Confronting Mr. Green might strain our relationship and, thanks to lounge gossip, my rapport with other teachers as well. Complaining to the principal might cause the same reaction, and might also run the risk of exposing me as indecisive. All of these factors might change given the outcome of other decisions and the personalities of my fellow teachers and principal.

Tenure makes claims about how high school education operates. Most notably, it argues that educational practice is deeply intertwined with personal and professional politics. Novice teachers and idealistic parents would like to think that their children's educations are motivated primarily, if not exclusively, by pedagogical goals. *Tenure* argues that this ideal is significantly undermined by the realities of school politics, personal conflicts, and social hearsay. The game does not offer solutions to these problems; rather, it suggests that education takes place not in the classroom alone, but in ongoing affinities and disparities in educational, social, and professional goals. *Tenure* outlines the *process* by which high schools really run, and it makes a convincing argument that personal politics indelibly mark the learning experience.

I suggest the name *procedural rhetoric* for the new type of persuasive and expressive practice at work in artifacts like *Tenure*. *Procedurality* refers to a way

of creating, explaining, or understanding processes. And processes define the way things work: the methods, techniques, and logics that drive the operation of systems, from mechanical systems like engines to organizational systems like high schools to conceptual systems like religious faith. *Rhetoric* refers to effective and persuasive expression. Procedural rhetoric, then, is a practice of using processes persuasively. More specifically, procedural rhetoric is the practice of persuading through processes in general and computational processes in particular. Just as verbal rhetoric is useful for both the orator and the audience, and just as written rhetoric is useful for both the writer and the reader, so procedural rhetoric is useful for both the programmer and the user, the game designer and the player. Procedural rhetoric is a technique for making arguments with computational systems and for unpacking computational arguments others have created.

Procedural and *rhetoric* are both terms that can impose ambiguity and confusion. Before trying to use the two together in earnest, I want to discuss each in turn.

Procedurality

The word *procedure* does not usually give rise to positive sentiments. We typically understand *procedures* as established, entrenched ways of doing things. In common parlance, *procedure* invokes notions of officialdom, even bureaucracy: a procedure is a static course of action, perhaps an old, tired one in need of revision. We often talk about procedures only when they go wrong: *after several complaints, we decided to review our procedures for creating new accounts*. But in fact, procedures in this sense of the word structure behavior; we tend to "see" a process only when we challenge it.[3] Likewise, procedure and the law are often closely tied. Courts and law enforcement agencies abide by *procedures* that dictate how actions can and cannot be carried out. Thanks to these common senses of the term, we tend to think of procedures as fixed and unquestionable. They are tied to authority, crafted from the top down, and put in place to structure behavior and identify infringement. Procedures are sometimes related to ideology; they can cloud our ability to see other ways of thinking; consider the police officer or army private who carries out a clearly unethical action but later offers the defense, "I was following procedure." This very problem arose in the aftermath of American brutalization of Iraqi war prisoners at Abu Ghraib in 2004. Field soldiers claimed they followed orders,

while officers insisted that the army did not endorse torture; rather individual soldiers acted alone. No matter the truth, the scenario raises questions about the *procedures* that drive military practice. In his report on prison practices, Major General Marshal Donald Ryder noted the possibility of altering "facility procedures to set the conditions for MI [military intelligence] interrogations."[4] In this case, the procedures in question dictate the methods used to interrogate prisoners. One might likewise think of interactions with line workers in retail establishments. When asked to perform some unusual task, such employees may be instructed to balk, offering excuses like "that's not our policy." Policy is a synonym for procedure in many cases: an approach, or a custom; a process for customer relations. In both these cases, procedures constrain the types of actions that can or should be performed in particular situations.

In her influential book *Hamlet on the Holodeck*, Janet Murray defines four essential properties of digital artifacts: procedurality, participation, spatiality, and encyclopedic scope.[5] Murray uses the term *procedural* to refer to the computer's "defining ability to execute a series of rules."[6] Procedurality in this sense refers to the core practice of software authorship. Software is composed of algorithms that model the way things behave. To write procedurally, one authors code that enforces rules to generate some kind of representation, rather than authoring the representation itself. Procedural systems generate behaviors based on rule-based models; they are machines capable of producing many outcomes, each conforming to the same overall guidelines. Procedurality is the principal value of the computer, which creates meaning through the interaction of algorithms. Although Murray places procedurality alongside three other properties, these properties are not equivalent. The computer, she writes, "was designed . . . to embody complex, contingent behaviors. To be a computer scientist is to think in terms of algorithms and heuristics, that is, to be constantly identifying the exact or general rules of behavior that describe any process, from running a payroll to flying an airplane."[7] This ability to execute a series of rules fundamentally separates computers from other media.

Procedurality in the computer-scientific sense preserves a relationship with the more familiar sense of *procedure* discussed above. Like courts and bureaucracies, computer software establishes rules of execution, tasks and actions that can and cannot be performed. I have argued elsewhere that procedurality can be read in both computational and noncomputational structures.[8] As cultural

critics, we can interrogate literature, art, film, and daily life for the underlying processes they trace. But computational procedurality places a greater emphasis on the expressive capacity afforded by rules of execution. Computers run processes that invoke interpretations of processes in the material world.

For my purposes, procedural expression must entail symbol manipulation, the construction and interpretation of a symbolic system that governs human thought or action. As Stevan Harnad argues, computation is "interpretable symbol manipulation" in which symbols "are manipulated on the basis of rules operating only on the symbols' shapes, which are arbitrary in relation to what they can be interpreted as meaning."[9] The interpretation of these systems, continues Harnad, "is not intrinsic to the system; it is projected onto it by the interpreter."[10] Computation is representation, and procedurality in the computational sense is a means to produce that expression. As Murray suggests, computer processes are representational, and thus procedurality is fundamental to computational expression. Because computers function procedurally, they are particularly adept at representing real or imagined systems that themselves function in some particular way—that is, that operate according to a set of processes. The computer magnifies the ability to create representations of processes.

The type of procedures that interest me here are those that present or comment on processes inherent to human experience. Not all procedures are expressive in the way that literature and art are expressive. But processes that might appear unexpressive, devoid of symbol manipulation, may actually found expression of a higher order. For example, bureaucracy constrains behavior in a way that invokes political, social, and cultural values. Consider the example of retail customer service as an invocation of processes. Imagine that you bought a new DVD player from a local retailer. Upon installing it, you discover that the device's mechanical tray opens and shuts properly, but no image displays on the television. You assume it is defective. Most stores offer a return policy in such cases, so you take the player back to the store and exchange it for a new one.

Now imagine that you buy the DVD player late one evening on the way home from work. You lead a busy life, and unpacking a DVD player isn't the first thing on your mind. You leave it in the box for a week, or two, and then finally take it out and connect it, discovering that it doesn't work properly. You are frustrated but still pressed for time, and you don't get back to the retailer for the return until the following week. The store would be happy to

take your return, but they note that you purchased the item more than fourteen days ago. The store's stated policy is to accept consumer electronics returns only within two weeks of purchase. In this case, the retailer's employees may try to enforce their return policy, invoking the rules of a process. But you might reason with the clerk, or make a ruckus, or ask to see a supervisor, or cite your record of purchases at the store in question. Swayed by logic, empathy, or expediency, the store might agree to accept the return—to bend the rules or *to break procedure*, as we sometimes say.

Let's replace the human agents with computational ones. Now imagine that you purchased the DVD player from an online retailer. The return process is no less codified in procedure, but this time a computer, not a human, manages your interface with the procedure. You receive the package and, as before, you delay in opening and installing it. By the time you realize the item is defective, you have exceeded the stated return window. But this time, the return is managed by the retailer's website software. Instead of speaking with a person, you must visit a website and enter your order number on a return authorization page. A computer program on the server performs a simple test, checking the delivery date of the order automatically provided by the shipping provider's computer tracking system against the current date. If the dates differ by more than fourteen days' time, the computer rejects the return request.

Situations like this help explain why we often despise the role of computers in our lives. They are inflexible systems that cannot empathize, that attempt to treat everyone the same. This is partly true, but it is not a sufficient explanation of *computational* procedural expression. When the human clerks and supervisors in the retail store agree to forgo their written policy, they are not really "breaking procedure." Instead, they are mustering new processes—for example, a process for promoting repeat business, or for preventing a commotion—and seamlessly blending them with the procedure for product returns. This distinction underscores an important point about processes in general and computational processes in particular: often, we think of procedures as tests that maintain the edges of situations. Disallow returns after two weeks. Diffuse customer incidents as quickly as possible. This also explains why we think of procedures as constraints that limit behavior. Max Weber pessimistically characterized the rationalist bureaucratization of society as an "iron cage." When the asceticism of Puritanism was extended into daily life, argues Weber,

> it did its part in building the tremendous cosmos of the modern economic order. This order is now bound to the technical and economic conditions of machine production which today determine the lives of all the individuals who are born into this mechanism. In [Calvinist Richard] Baxter's view the care for external goods should only lie in on the shoulders of the "saint, like a light cloak, which can be thrown aside at any moment." But fate decreed that the cloak should become an iron cage.[11]

Weber's point is that mechanization overemphasizes rationalism. But in fact, procedures found the logics that structure behavior in *all* cases; the machines of industrialization simply act as a particularly tangible medium for expressing these logics. The metaphor of the cloak may suggest easy shedding of procedure, but the saint must immediately don a new cloak, symbolizing a new logic. Both cloak and cage brandish processes; one is simply nimbler than the other.

While we often think that rules always limit behavior, the imposition of constraints also creates expression. In our example, the very concept of returning a defective product is only made possible by the creation of rules that frame that very notion. Without a process, it would perhaps never even occur to us that defective or unwanted products can be returned. And yet, this state of affairs too implies a process, which we give the shorthand *caveat emptor*, let the buyer beware. When we do things, we do them according to some logic, and that logic constitutes a *process* in the general sense of the word.

This clarification in mind, there is no reason one could not model the more complex, human-centered product return interaction computationally. For example, the computer system might also recall the customer's previous purchases, forgoing the cutoff policy for frequent buyers. It might even reason about the customer's future purchases based on a predictive model of future buying habits of similar customers. We think of computers as frustrating, limiting, and simplistic not because they execute processes, but because they are frequently programmed to execute simplistic processes. And the choice to program only a simplistic process for customer relations exposes yet another set of processes, such as corporate information technology operations or the constraints of finances or expertise that impose buying off-the-shelf software solutions instead of building custom solutions.

Processes like military interrogation and customer relations are cultural. We tend to think of them as flexible and porous, but they are crafted from a multitude of protracted, intersecting cultural processes. I have given the name

unit operations to processes of the most general kind, whether implemented in material, cultural, or representational form.[12] Unit operations are characterized by their increased compression of representation, a tendency common over the course of the twentieth century, from structuralist anthropology to computation. I use this term to refer to processes in the general sense, for example, the coupling of a cultural process and its computational representation. I also use *unit operation* to distinguish one process in interleaved or nested procedural systems, for example, the concept of customer loyalty as distinct from transaction age in the case of a process for managing product returns.

Since processes describe the way simple and complex things work, sometimes they are nonobvious. In some cases, we want to conceal procedure—for example, many people read the U.S. Army's ambiguous response to Abu Ghraib as a sign that high-ranking officials in the military, those with the authority to set the procedure, endorsed torture. In other cases, the process is too complex to apprehend immediately. We tend to ask the question *how does this work?* in relation to such processes. This sentiment probably conjures images of mechanical devices like wristwatches, where procedural understanding implies taking a set of gears apart to see how they mesh. But procedurality can also entail the operation of cultural, social, and historical systems. In these cases, asking *how does this work?* requires taking a set of cultural systems apart to see what logics motivate their human actors.

A notable example comes from microbiologist Jared Diamond's Pulitzer Prize-winning book *Guns, Germs, and Steel*, an alternative approach to understanding history (discussed further in chapter 9).[13] Instead of recording the events of human history, Diamond looks at configurations of material conditions like geography and natural resources and asks how they produce structural, political, and social outcomes. These outcomes in turn recombine with their underlying material conditions to produce new historical moments. For example, the lush agricultural conditions in the fertile crescent, along with the similar climates in the east–west axis of Eurasia, set the stage for rapid advances in agriculture across that continent, leading to adequate food surpluses that allowed societies to pursue activities like politics and technology. Such an approach to history goes far beyond the relation between contemporaneous events, asking us to consider the systems that produce those events.

Steven D. Levitt's work on microeconomies also exposes processes. Levitt and Stephen J. Dubner authored the *New York Times* bestseller *Freakonomics*, a

populist account of Levitt's sometimes unusual microeconomic analysis. Levitt claims that human behavior is fundamentally motivated by incentives.[14] He uses this assertion to explain the seemingly incomprehensible function of numerous communities of practice, from real estate agents to sumo wrestlers to drug dealers. In one of his more controversial claims, Levitt argues that the massive drop in crime across the United States in the 1990s was caused by the legalization of abortion in 1973.[15] Levitt and Dubner explain:

> In the early 1990s, just as the first cohort of children born after *Roe v. Wade* was hitting its late teen years—the years during which young men enter their criminal prime—the rate of crime began to fall. What this cohort was missing, of course, were the children who stood the greatest chance of becoming criminals. And the crime rate continued to fall as an entire generation came of age minus the children whose mothers had not wanted to bring a child into the world. *Legalized abortion led to less unwantedness; unwantedness leads to high crime; legalized abortion, therefore, led to less crime.*[16]

Using written rhetoric, Levitt and Dubner walk us through an explanation of the causal relationship that leads, in their proposition, from legalized abortion to reduced crime. They are describing a social process, the operation of interrelated legal policy and social welfare. Notably, the two end this explanation with a formal logical syllogism (italicized above), a structure I will return to below in the context of rhetoric.

These abstract processes—be they material like watch gears or cultural like crime—can be recounted through representation. However, procedural representation takes a different form than written or spoken representation. Procedural representation explains processes *with other processes*. Procedural representation is a form of symbolic expression that uses process rather than language. Diamond and Levitt make claims about procedural systems like history and crime, but they do not inscribe those claims in procedure—they write them, just like I wrote the description of product returns above. In fact, each and every analysis of videogame-based procedural rhetoric I will perform in this book necessarily *describes* the function of processes. These written descriptions attempt to explain the procedural ones, which are made up of rules rather than letters.

Procedural representation itself requires inscription in a medium that actually enacts processes rather than merely describe them. Human behavior is one

mode of procedural inscription. Human actors can enact processes; we do so all the time. The clerk, the supervisor, and the army private all enact procedures. Even very young children can consciously enact procedures with great success: crossing the street, tying one's shoes, and setting the table are all unit operations in cultural and social processes. Nondigital board and card games offer further examples of human-enacted processes; the people playing the game execute its rules. But human behavior is a challenging medium to muster for arbitrary expression. It is difficult to coerce even a small group of people to execute a particular process again and again, without rest and without incentive. Because procedurality is intrinsic and fundamental to computers, and because computers are much more flexible as an inscription medium than human agents, they are particularly suited to procedural expression.

In her call for meaningful interactive drama, Janet Murray advocates for procedural authorship. Such effort, says Murray, "means writing the rules by which the text appears as well as writing the texts themselves. It means writing the rules for the interactor's involvement, that is, the conditions under which things will happen in response to the participant's actions." Murray cites Joseph Weizenbaum's *Eliza* program as an early example of this kind of procedural expression.[17] *Eliza* modeled a therapist, responding to users' text-based input in much the same way one would expect from a real Rogerian psychologist. Here is a sample exchange from Weizenbaum's original *Eliza*, which ran on MIT's MAC time-sharing system in the mid-1960s (capitalized lines are computer responses):

Men are all alike.
IN WHAT WAY?
They're always bugging us about something or other.
CAN YOU THINK OF A SPECIFIC EXAMPLE?
Well, my boyfriend made me come here.
YOUR BOYFRIEND MADE YOU COME HERE
He says I'm depressed much of the time.
I AM SORRY TO HEAR YOU ARE DEPRESSED
It's true. I am unhappy
DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY
I need some help, that much seems certain.

WHAT WOULD IT MEAN TO YOU IF YOU GOT SOME HELP
Perhaps I could learn to get along with my mother.
TELL ME MORE ABOUT YOUR FAMILY
My mother takes care of me.[18]

As a technical experiment, *Eliza* is an example of natural language processing (NLP); the computer takes the user's input, parses it into units of meaning that the program can understand, and then assembles and presents a response, including the proper grammatical transformations to maintain the illusion of language fluency. *Eliza* seeks out keywords such as "I am" or "you" and manufactures transformations based on them. The computer program has no real understanding of the meaning of the user's input; rather, it is taking that input and spinning it into a possible conversation. *Eliza* is a machine for generating conversations according to procedures.

Of course, the Rogerian psychologist is not the most meaningful real-life interlocutor—such a therapist converses with the patient, encouraging him or her toward "self-actualization" through empathy, mostly in the form of repetition intended to encourage reflection. Since *Eliza*, considerable research in the field of artificial intelligence has centered on the creation of similar agents. Some agents are meant merely to process bits of data, like keyword searches or security tools. Other agents have more lofty goals, hoping to create believable characters whose behavior is authored procedurally with special-use computer languages.[19] These are expressive agents, meant to clarify, explore, or comment on human processes in the same vein as poetry, literature, and film. No matter their content, these computer programs use processes for expression rather than utility. As an inscriptive practice, procedurality is not limited to tool-making.

Procedurality versus the Procedural Programming Paradigm

Speaking of computer languages, I would like to make a few notes to help reduce confusion for readers who come equipped with different (although not incompatible) notions of procedure, especially for those who come from a background in computer science. I am using *procedural* and *procedurality* in a much more general sense than it sometimes takes on in that field. In computer science, a *procedure* is sometimes used as a synonym for a subroutine—a function or method call. A procedure contains a series of computational

instructions, encapsulated into a single command that can be called at any time during program execution. Some imperative computer languages, such as Pascal, even reserve the word *procedure* to declare a subroutine in code, as the following example illustrates.

```
procedure foo(var n: integer)
begin
    writeln('foo outputs ', n);
end;

begin
    i := 1;
    while i <= 10 do foo(i);
end.
```

In other cases, *procedural* is used to describe a particular approach to computer programming, one typically called the *procedural programming* paradigm. Procedural programming is a paradigmatic extension of the notion of *procedure* as subroutine. As a programming method, procedural programming became privileged over unstructured programming, in which all code exists in a single continuous block. In Assembly and early versions of BASIC, programs were written as long lists of code with branches (Assembly's BNE, BEQ, and JMP) or execution flow statements (BASIC's GOTO).[20] Procedural programming allowed increased readability and management of complexity, at a slight cost in program performance. Procedural programming also offered the ability to reuse the same code throughout a program through procedure calls, functions, and multiple files. Strong proponents of the more recent paradigm of object-oriented programming may shudder at my liberal use of the term *procedural*, but I am not referring to the programming paradigm. Object-oriented programming extends the modularity introduced by procedural programming and therefore owes the latter a conceptual debt, but this relationship is not relevant to my purposes here. Rather, I understand procedurality as the fundamental notion of authoring processes.

Procedural Figures, Forms, and Genres

Just as there are literary and filmic figures, so there are procedural figures. These are distinct from and prior to forms and genres. Procedural figures have much

in common with literary figures like metaphor, metonymy, or synecdoche; they are strategies for authoring unit operations for particularly salient parts of many procedural systems. Noah Wardrip-Fruin has used the term *operational logics* to refer to the standardized or formalized unit operations that take on common roles in multiple procedural representations.[21] He identifies two operational logics that are particularly common, graphical logics and textual logics. Graphical logics are very frequently found in videogames; they include such procedural figures as movement, gravity, and collision detection. These fundamental figures ground innumerable videogames, from *Spacewar!* to *Pong* to *Pac-Man* to *Doom*. In many videogames, the player controls an object, agent, or vehicle that he must pilot in a particular manner—toward a goal or to avoid enemies or obstacles. Graphical logics frequently encapsulate procedural representations of material phenomena, such as moving, jumping, or firing projectiles. Object physics and lighting effects offer additional examples, meant to depict changing environments rather than character movement. In the videogame industry, sets of graphical logics are often packaged together as a *game engine*, a software toolkit used to create a variety of additional games.[22]

Wardrip-Fruin also cites textual logics as a common procedural trope. NLP, mentioned above, is an example of a textual logic, as are the text parsers inherent to Z-machine text adventure games and interactive fiction, such as *Zork*.[23] Additional logics include those procedural tropes used for text generation, such as n-grams, a probability distribution derived from Markov chains and first suggested by cyberneticist Claude Shannon. N-grams are sequences of a specified number (n) of elements from a given sequence, where probabilities determine which members of the sequence are most likely to be selected next. They are really sequential logics, but when applied to text generation they can be used to predict and construct textual phrases based on probability distributions of the subsequent word or phrase given a starting word or phrase. For example, in the sequence "where are" a likely subsequent word might be "you."[24]

Outside of videogames, procedural tropes often take the form of common models of user interaction. Elements of a graphical user interface could be understood as procedural tropes, for example, the scrollbar or push-button. These elements facilitate a wide range of user interactions in a variety of content domains. Operational logics for opening and saving files are also reasonable candidates; these tropes encapsulate lower-level logics for getting handles to filestreams and reading or writing byte data. We might call the

former group of procedural tropes *interface logics*, and the latter *input/output (IO) logics*. Just as game engines accumulate multiple, common graphical logics, so software frameworks like Microsoft Foundation Classes (MFC) and Java Foundation Classes (JFC) accumulate multiple, common interface logics, IO logics, and myriad other logics required to drive the modern computer operating system.

Taken together, we can think of game engines, frameworks, and other common groupings of procedural tropes as commensurate with forms of literary or artistic expression, such as the sonnet, the short story, or the feature film. These collections of procedural tropes form the basis for a variety of subsequent expressive artifacts. On its own, the sonnet is no more useful than the physics engine, but both can be deployed in a range of expressive practices. A classical Newtonian mechanics simulation can easily facilitate both war (projectile fire) and naturalism (ballooning), just as a sonnet can facilitate both religious (John Donne) and amorous (Shakespeare) expression.

Procedural genres emerge from assemblages of procedural forms. These are akin to literary, filmic, or artistic genres like the film noir, the lyric poem, or the science fiction novel. In videogames, genres include the platformer, the first-person shooter, the turn-based strategy game, and so forth. When we recognize gameplay, we typically recognize the similarities between the constitutive procedural representations that produce the on-screen effects and controllable dynamics we experience as players.

Procedural representation is significantly different from textual, visual, and plastic representation. Even though other inscription techniques may be partly or wholly driven by a desire to represent human or material processes, only procedural systems like computer software actually represent process with process. This is where the particular power of procedural authorship lies, in its native ability to depict processes.

The inscription of procedural representations on the computer takes place in code. Just like *procedure*, the term *code* can take multiple meanings. Lawrence Lessig has taken advantage of the term's ambiguity to address the similarity between code in the legal sense and code in the programmatic sense: "In real space we recognize how laws regulate—through constitutions, statutes, and other legal codes. In cyberspace we must understand how code regulates—how the software and hardware that make cyberspace what it is *regulate* cyberspace as it is."[25] But in legal systems, code is regulated through complex social and political structures subject to many additional procedural influences, just

like the soldiers in Abu Ghraib and the clerk at the retail return counter. In computational systems, code is regulated through software and hardware systems. These systems impose constraints, but they are not subject to the caprice of direct human action.

Rhetoric

Like procedurality, rhetoric is not an esteemed term. Despite its two and a half millennia-long history, *rhetoric* invokes largely negative connotations. We often speak of "empty rhetoric," elaborate and well-crafted speech that is nevertheless devoid of actual meaning. *Rhetoric* might conjure the impression of *hot air*, as in the case of a fast-talking con who crafts pretentious language to hide barren or deceitful intentions. Academics and politicians are particularly susceptible to this sort of criticism, perhaps because we (and they) tend to use flourish and lexis when coherence runs thin, as in this very sentence. Rhetoric is often equated with a type of smokescreen; it is language used to occlude, confuse, or manipulate the listener.

However, turgidity and extravagance are relatively recent inflections to this term, which originally referred only to persuasive speech, or oratory. The term *rhetoric* (ῥήτωρικη) first appears in Plato's *Gorgias*, written some 2,500 years ago, in reference to the art of persuasion. The term itself derives from the rhetor (ῥήτωρ), or orator, and his practice, oratory (ῥήτωρεύω).[26] Rhetoric in ancient Greece—and by extension classical rhetoric in general—meant public speaking for civic purposes. Golden age Athenian democracy strongly influenced the early development of rhetoric, which dealt specifically with social and political practices. Rhetoric was oral and it was public. The rhetor used his art on specific occasions and in particular social contexts—the law court and the public forum. A well-known example of this type of rhetoric is Plato's *Apology*, in which Socrates defends himself against accusations that he has corrupted the youth of Athens—*apology* here refers to the Greek term ἀπολογία, a defense speech. In the context of public speech and especially legal and civic speech, rhetoric's direct relation to persuasion is much clearer. Spoken words attempt to convert listeners to a particular opinion, usually one that will influence direct and immediate action, such as the fateful vote of Socrates' jury.

In golden age Athens, there was good reason to become versed in rhetorical technique. Unlike our contemporary representative democracies, the Athenian system was much more direct. Citizens were required to participate

in the courts, and anyone (i.e., any male) could speak in the assembly. Unlike our legal system, with its guarantees of professional representation, Athenians accused of a crime were expected to defend themselves (or to find a relative or friend to speak on their behalf). Furthermore, Athenian juries were huge—usually 201 members but often many hundreds more depending on the importance of the case. The average citizen untrained in oratory not only might find himself at a loss for words but also might experience significant intimidation speaking before such a large group.

Rhetorical training responded to this need, partly motivated by lucrative business opportunities. The title character in Plato's *Phaedrus* speaks of books on the subject of rhetoric (ἐν τοῖς περὶ λόγων τέχνης), and Socrates subsequently recounts the technical advice these books proffer:[27]

Socrates: Thank you for reminding me. You mean that there must be an introduction [προοίμιον, *prooemion*] first, at the beginning of the discourse; these are the things you mean, are they not?—the niceties of the art.

Phaedrus: Yes.

Socrates: And the narrative [διήγησίν, *diegesis*] must come second with the testimony [τεχμήρια] after it, and third the proofs [πίστωσιν, *pistis*], and fourth the probabilities [ἐπιπίστωσιν, *epipistis*]; and confirmation and further confirmation are mentioned, I believe, by the man from Byzantium, that most excellent artist in words.

Phaedrus: You mean the worthy Theodorus?

Socrates: Of course. And he tells how refutation [ἔλεγχόν, *elenkhos*] and further refutation [ἐπεξέλεγχον, *epexelenkhos*] must be accomplished, both in accusation and in defense. Shall we not bring the illustrious Parian, Evenus, into our discussion, who invented covert allusion and indirect praises? And some say that he also wrote indirect censures, composing them in verse as an aid to memory; for he is a clever man.

. . .

But all seem to be in agreement concerning the conclusion of discourses, which some call recapitulation [ἐπάνοδον, *epanodos*], while others give it some other name.

Phaedrus: You mean making a summary of the points of the speech at the end of it, so as to remind the hearers of what has been said?

Socrates: These are the things I mean, these and anything else you can mention concerned with the art of rhetoric.[28]

Socrates' negative opinion of textbook rhetoric notwithstanding (see below), the *Phaedrus* offers evidence of the method by which fifth-century Greeks

thought oratory could be best composed. Speakers should begin with an introduction (*prooemion*), then continue with a description or narration of events (*diegesis*), followed by proof and evidence (*pistis*) and the probabilities that such evidence is sound (*epipistis*). The speaker should then refute the opposing claim (*elenkhos*), and then refute it once more (*epexelenkhos*). Finally, the speech should end with a conclusion, including a recapitulation (*epanodos*) of the argument.

These techniques form the basis for rhetorical speech; they describe how it works and they instruct the speaker on how best to use rhetoric in any situation. Technical rhetoric, as this type is sometimes called, is useful for the layperson but perhaps too simplistic for the professional orator. Numerous other techniques developed around imitating skilled orators. These experts usually charged for their services, and they were called *sophists*. Sophistic rhetoric was taught by demonstration and practice, not by principle like technical rhetoric. In some cases, a demonstration of sophistic rhetoric resembled the performance of epic poetry, where narrative fragments were memorized and reassembled during recitation.[29] Other techniques included parallelism in structure, syllabic meter, and tone.[30]

The popularity of books and sophistry bred critique. Such approaches motivated the work of Socrates, Plato, and Aristotle, who rejected the social and political contingency of the court and the assembly in favor of more lasting philosophical truths. Socrates and Plato privilege *dialectic*, or methods of reasoning about questions toward unknown conclusions, over rhetoric, which crafts discourse around known or desired conclusions. In Plato's *Gorgias*, Socrates exposes rhetoric as a form of flattery, intended to produce pleasure, not knowledge or justice.[31]

Aristotle resuscitated rhetoric, joining it with his notion of causality. In the *Physics*, Aristotle articulates four causes: the material, formal, efficient, and final. The material cause is the material out of which a thing is made; the formal cause is the structure that makes it what it is; the efficient cause is that which produces the thing; and the final cause is the purpose for which it is produced.[32] A table, for example, is made of wood (material cause), crafted to have four legs and a flat surface (formal cause) by a carpenter (efficient cause) for the purpose of eating upon (final cause). For Aristotle, rhetoric has three possible ends, or final causes, and therefore he distinguishes three varieties of rhetoric: *forensic*, *deliberative*, and *epideictic*. Forensic (or judicial) rhetoric aims for justice, as in the purview of the law courts. Deliberative (or political) rhetoric strives for public benefit, as in the case of the assembly. Epideictic (or

ceremonial) rhetoric aims for honor or shame, as in the case of a private communication.[33] Aristotle avoids Plato's dismissal of rhetoric, arguing that rhetorical practice as a whole has the final cause of persuasion to correct judgment.

In the *Rhetoric*, Aristotle accomplishes this corrective through an approach to rhetorical practice that aligns it with knowledge instead of sophistry. Responding to Plato, Aristotle attempts a systematic, philosophical approach to the art of persuasive oratory. This approach borrows much from the idea of oratory process from technical rhetoric, and a great deal of Aristotle's rhetorical theory addresses the style, arrangement, and organization of persuasive speech. For Aristotle, rhetoric is defined as "the faculty of observing in any given case the available means of persuasion."[34] The adept rhetorician does not merely follow a list of instructions for composing an oratory (technical rhetoric), nor does he merely parrot the style or words of an expert (sophistic rhetoric), but rather he musters reason to discover the available means of persuasion in any particular case (philosophical rhetoric). This variety of rhetoric implies an understanding of both the reasons to persuade (the final cause) and the tools available to achieve that end (the efficient cause), including propositions, evidence, styles, and devices. Most importantly, Aristotle offers a philosophical justification for rhetoric that moves it closer to dialectic, the philosophical practice of reason that Socrates and Plato deliberately opposed to rhetoric.

In particular, Aristotle draws a correlation between two modes of human reason, induction (ἐπαγωγή) and deduction (συλλογισμός, *syllogism*). In rhetoric, the equivalent to induction is the example (παράδειγμα, *paradigm*), and the equivalent to deduction is the enthymeme (ἐνθύμημα). Examples advance the claim that a certain proposition is a part of a set of such (allegedly true) cases, and therefore equally true. Enthymemes advance the claim that a certain proposition is true in light of another's truth value. Unlike syllogisms, in which both propositions and conclusions are given explicitly, in enthymeme the orator omits one of the propositions in a syllogism.[35] For example, in the enthymeme "We cannot trust this man, as he is a politician," the major premise of a proper syllogism is omitted:

Politicians are not trustworthy. (Omitted)
This man is a politician.
Therefore, we cannot trust this man.

The enthymeme and the example offer instances of a broad variety of rhetorical figures developed by and since Aristotle. Like procedural figures, rhetorical figures define the possibility space for rhetorical practice. These figures are many, and a complete discussion of them would be impossible in the present context. However, many rhetorical figures will be familiar by virtue of our common experience with them: antithesis (the juxtaposition of contrasting ideas); paradox (a seemingly self-contradictory statement that produces insight or truth); oxymoron (a highly compressed paradox); aporia (feigning flummox about the best way to approach a proposition); irony (evoking contrary meaning to yield scorn). These and other rhetorical figures found the basis of rhetorical tactics. Combining these with the structural framework of introduction, statement, proof, and epilogue, Aristotle offers a complete process for constructing oratory.[36]

Rhetoric Beyond Oratory

Unlike his Roman counterparts Cicero and Quintilian, Aristotle does not explicitly define rhetoric as the art of *verbal* persuasion, although it is unlikely that any other rhetorical mode occurred to him. Classical rhetoric passed into the Middle Ages and modern times with considerable alteration. The use of rhetoric in civil contexts like the court never disappeared entirely, and indeed it remains a common form of rhetoric today; our modern politicians soapbox just as Plato's contemporaries did. But the concept of rhetoric was expanded beyond oratory and beyond direct persuasion. Effectively, rhetoric was extended to account for new modes of inscription—especially literary and artistic modes. Rhetoric in writing, painting, sculpture, and other media do not necessarily make the same direct appeals to persuasion as oratory. Rhetoric thus also came to refer to *effective expression*, that is, writing, speech, or art that both accomplishes the goals of the author and absorbs the reader or viewer.

Persuasion as a rhetorical goal persists, but it has changed in nature. In classical rhetoric, oral persuasion primarily served political purposes. It was enacted when needed and with particular ends in mind. The effectiveness of oratory related directly to its success or failure at accomplishing a particular, known goal. And because citizens often got only one shot at oratory—as is the case in Socrates' defense speech—one can point to the clear success or failure of rhetorical techniques. In discursive rhetoric, persuasion is not necessarily so teleological. Writers and artists have expressive goals, and they

deploy techniques to accomplish those goals. The poststructuralist tendency to decouple authorship from readership, celebrating the free play of textual meanings, further undermines the status of persuasion. Here, persuasion shifts from the simple achievement of desired ends to the effective arrangement of a work so as to create a desirable possibility space for interpretation. In contemporary rhetoric, the goal of persuasion is largely underplayed or even omitted as a defining feature of the field, replaced by the more general notion of elegance, clarity, and creativity in communication. When understood in this sense, rhetoric "provides ways of emphasizing ideas or making them vivid."[37] Success means effective expression, not necessarily effective influence.

Despite the apparent dichotomy between classical and contemporary rhetorics, the two share one core property: that of technique. Rhetorics of all types assume a particular approach to effective expression, whether it be oral, written, artistic, or otherwise inscribed. Today, spoken and written expression remain deeply relevant to culture. The spoken and written word enjoys a long rhetorical tradition—Aristotle's techniques remain equally useful, and indeed equally put to use, by contemporary orators. Sonja Foss, Karen Foss, and Robert Trapp have attempted to reposition rhetoric outside of any particular mode of inscription. The three define rhetoric "broadly as the uniquely human ability to use symbols to communicate with one another."[38] However, as Kevin DeLuca points out, on the "very next page"[39] Foss, Foss, and Trapp also argue that "the paradigm case of rhetoric is the use of the spoken word to persuade an audience."[40] While rhetoric might include nonverbal transmission, these modes still maintain a tenuous relationship, and are at risk of appearing inferior to verbal discourse.

The influential twentieth-century rhetorician Kenneth Burke marks an important change in the understanding of rhetoric. Because people are inherently separate from one another, we seek ways to join our interests. Burke identifies this need as the ancestor of the practice of rhetoric. He extends rhetoric beyond persuasion, instead suggesting "identification" as a key term for the practice.[41] We use symbolic systems, such as language, as a way to achieve this identification. Burke defines rhetoric as a part of the practice of identification, as "the use of words by human agents to form attitudes or induce actions in other human agents."[42] While rhetoric still entails persuasion for Burke, he greatly expands its purview, arguing that it facilitates human action in general. Persuasion is subordinated to identification (or the more obscure term *consubstantiality*, which Burke uses to characterize identification), and

using rhetoric to achieve an end is only one possible use of the craft for Burke.[43] Rhetoric becomes a means to facilitate identification and to "bridge the conditions of estrangement that are natural and inevitable."[44]

In addition to expanding the conception of rhetoric, Burke also expands its domain. Following the tradition of oral and written rhetoric, he maintains language as central, but Burke's understanding of humans as creators and consumers of symbolic systems expands rhetoric to include nonverbal domains. He does not explicitly delineate all the domains to which rhetoric could apply; instead, he embraces the broadness of human symbolic production in the abstract. "Wherever there is persuasion," writes Burke, "there is rhetoric. And wherever there is 'meaning,' there is 'persuasion.'"[45]

Visual Rhetoric

The wide latitude Burke affords rhetoric won him both champions and critics, but his approach advances the rhetorical value of multiple forms of cultural expression, not just speech and writing.[46] Thanks to the influence of Burke, and amplified by the increasingly inescapable presence of non-oral, nonverbal media, increasing interest has mounted around efforts to understand the rhetorical figures and forms of these other, newer modes of inscription that also appear to serve rhetorical ends. In particular, the emergence of photographic and cinematic expression in the nineteenth and twentieth centuries suggests a need to understand how these new, nonverbal media mount arguments. This subfield is called *visual rhetoric*. Marguerite Helmers and Charles A. Hill explain:

> Rhetoricians working from a variety of disciplinary perspectives are beginning to pay a substantial amount of attention to issues of visual rhetoric. Through analysis of photographs and drawings, graphs and tables, and motion pictures, scholars are exploring the many ways in which visual elements are used to influence people's attitudes, opinions, and beliefs.[47]

Visual communication cannot simply adopt the figures and forms of oral and written expression, so a new form of rhetoric must be created to accommodate these media forms. Helmers and Hill argue that visual rhetoric is particularly essential in the face of globalization and mass media. Visual images on television, clothing, retail storefronts, and public spaces are nearly

ubiquitous, offering a strong incentive to understand the rhetoric of such media. Moreover, the profusion of photographic, illustrative, and cinematic images increases with the rise in cheap, accessible digital photography and video techniques coupled with instant, worldwide distribution on the Internet. Politicians and advertisers use visual images as much as, if not more than, they use spoken and written words. In reference to these and related uses of images, visual rhetoricians ask, "how, exactly, do images persuade?"[48]

Aristotle took great pains to reconnect rhetoric with philosophical discourse. A common thread in visual rhetoric addresses the relative merit of visual communication as emotional versus philosophical. As Hill explains,

> It is likely that verbal text, because of its analytic nature (being made up of discrete meaningful units) and because it is apprehended relatively slowly over time, is more likely to prompt systematic processing, while images, which are comprehend wholistically and almost instantaneously, tend to prompt heuristic processing.[49]

Images may lack the kind of deep analysis afforded by textual interpretation, a sentiment that resonates with concerns over the use of images in propaganda. According to Hill, images are more "vivid" than text or speech, and therefore they are more easily manipulated toward visceral responses.[50] This use of images has been especially popular in advertising, a subject to which I will return in chapter 5. Advertisers, notes Hill, "don't want to *persuade* people to buy their products, because persuasion implies that the audience has given the issue some thought and come to a conscious decision. Instead, advertisers want to . . . compel people to buy a product without even knowing why they're buying it—as a visceral response to a stimulus, not as a conscious decision. And this is best done through images."[51] Hill offers no final conclusions about the potential for images to serve more reflective rhetorical purposes, but he does point out that visual rhetoric should not strive "to banish emotional and aesthetic concerns."[52]

J. Anthony Blair argues that visual rhetoric needs a theory of visual argument to escape this trap. Blair argues that, like Hill's psychological vividness, "symbolic inducement" alone is inadequate for a theory of rhetoric.[53] Rather, visual rhetoric requires visual "arguments" which "supply us with *reasons* for accepting a point of view."[54] Blair advances the rather ambiguous view that visual images cannot make propositional claims—the very notion of a "visual argument" stands at the edge of paradox.[55] The acid test for a visual argument, according to Blair, is "whether it would be possible to construct from what is communicated visually a verbal argument that is consistent with the visual presentation."[56] Blair admits that such an argument could never be equivalent to the visual argument, but that the test is necessary to determine whether an image has propositional content. Verbal rhetoric remains privileged, with images mainly useful for "evocative power."[57]

The preferential treatment afforded to verbal rhetoric underscores the continued privilege of speech over writing, and writing over images. Philosopher Jacques Derrida argued against the hierarchy of forms of language, giving the name *logocentrism* to the view that speech is central to language because it is closer to thought.[58] In the Western tradition, speech is thought to derive from thought, and writing from speech. Detractors of visual rhetoric like Blair could be seen as logocentric in arguing that images derive from writing and are thus more distant from thought, less conducive to persuasive expression.

David S. Birdsell and Leo Groarke oppose this position. Visual argument does exist, but it takes a necessarily different form from that of verbal argument; images are, after all, a different mode of inscription from writing. Birdsell and Groarke call the "prevalent prejudice that visual images are in some way arbitrary vague and ambiguous" a "dogma that has outlived its usefulness."[59] Objections claiming that images are sometimes vague are unconvincing, for spoken and written language is also vague at times. Visual argument, argue Birdsell and Groarke, is simply constructed differently than verbal argument. The two also observe that the rapid changes in visual culture make visual cultural contexts crucial in considerations of visual argument.

Randall A. Lake and Barbara A. Pickering offer several tropes for visual argument and refutation, including substitution, in which an image is replaced in part of a frame with connotatively different ones, and transformation, in which an image is "recontextualized in a new visual frame, such that its polarity is modified or reversed through association with different images."[60] Examples of transformation include the "reframing" and "mobile framing" techniques used by filmmakers. Keith Kenney points out that documentarian Ken Burns liberally uses these gestures to reveal portions of an image in order to draw selective attention to its constituent parts, which then complete the visual argument.[61] Editorial cartoons, a favorite example of visual rhetoricians, use similar techniques, encouraging the viewer to break down the image into constituent parts, each of which advances a portion of the argument.

Kevin Michael DeLuca attempts to address visual argument through the concept of "image event," a kind of visual documentation of a rhetorical strategy.[62] He draws examples from large-scale environmental demonstrations, such as the (failed) 1975 Greenpeace attempt to disrupt the Soviet whaling vessel *Vlastny* by positioning activists in inflatable boats between the harpoon and the whale. DeLuca argues that despite the failed actions of Greenpeace's Save the Whales campaign, they succeed in their rhetorical purpose, namely drawing massive worldwide attention to the problem in question. DeLuca makes convincing claims that these situationist-style interventions actually influence future policy, but I would argue that they do not deploy visual rhetoric in the true sense of the word. To be sure, images of the Greenpeace actions appear to be partly, even largely responsible for subsequent protests and rejoinders toward environmental policy changes, but the actions themselves are designed to generate provocation, not to make arguments for policy changes.

The profusion of visual images recommends a subfield of rhetoric, but visual rhetoric remains an emerging discipline. The very notion of a visual rhetoric reinforces the idea that rhetoric is a general field of inquiry, applicable to multiple media and modes of inscription. To address the possibilities of a new medium as a type of rhetoric, we must identify how inscription works in that medium, and then how arguments can be constructed through those modes of inscription.

Digital Rhetoric

Visual rhetoric offers a useful lesson in the creation of new forms of rhetoric in the general sense. One would be hard pressed to deny that advertisements, photographs, illustrations, and other optical phenomena have some effect on their viewers. To be sure, visual rhetoric is often at work in videogames, a medium that deploys both still and moving images. A study of visual rhetoric in games would need to address the disputes of the former field, especially the rift between psychological and cultural discourses about manipulation and phenomenal impact on the one hand and logical deliberation on the other. But despite its possible value to digital media, visual rhetoric cannot help us address the rhetorical function of procedural representation. To convincingly propose a new domain for rhetoric, one is obliged to address the properties of the persuasive medium in particular, and the general practice of persuasion

on the other. Visual rhetoric simply does not account for procedural representation. This is not a flaw in the subfield of visual rhetoric; there is much value to be gained from the study of images in all media. But in procedural media like videogames, images are frequently constructed, selected, or sequenced in code, making the stock tools of visual rhetoric inadequate. Image is subordinate to process.

Unfortunately, many efforts to unite computers and rhetoric do not even make appeals to visual rhetoric, instead remaining firmly planted in the traditional frame of verbal and written rhetoric in support of vague notions of "the digital." *Digital rhetoric* typically abstracts the computer as a consideration, focusing on the text and image content a machine might host and the communities of practice in which that content is created and used. Email, websites, message boards, blogs, and wikis are examples of these targets. To be sure, all of these digital forms can function rhetorically, and they are worthy of study; like visual rhetoricians, digital rhetoricians hope to revise and reinvent rhetorical theory for a new medium. James P. Zappen begins his integrated theory of digital rhetoric on this very note: "Studies of digital rhetoric," he writes, "help to explain how traditional rhetorical strategies of persuasion function and are being reconfigured in digital spaces."[63] But for scholars of digital rhetoric, to "function in digital spaces" often means mistaking subordinate properties of the computer for primary ones. For example, Laura J. Gurak identifies several "basic characteristics"[64] of digital rhetoric, including speed, reach, anonymity, and interactivity.[65] Of these, the first three simply characterize the aggregate effects of networked microcomputers. On first blush the last characteristic, interactivity, appears to address the properties of the computer more directly. But Gurak does not intend *interactivity* to refer to the machine's ability to facilitate the manipulation of processes. Instead, she is thinking of the more vague notion of computer-mediated discussion and feedback, essentially a repetition and consolidation of the other three characteristics.[66]

Other digital rhetoricians likewise focus on the use of digital computers to carry out culturally modified versions of existing oral and written discourse; letters become emails, conversations become instant message sessions. Barbara Warnick has argued that the more populist, nonhierarchical structure of the web facilitated opposition to the standards of traditional media. For example, Warnick explores zines and personal websites as welcome alternatives to top-down commercial media like print magazines.[67] Others want educators,

especially secondary and postsecondary instructors, to provide stylistic training in increasingly indispensable digital forms like email and the web. Richard Lanham has made a case for digital rhetoric's place in the broader "digital arts," encouraging higher education to address the changing composition practices brought on by so-called new media.[68] Both Warnick and Lanham's proposals are reasonable and valuable. But they focus on revisions of existing cultural and expressive practices; the computer is secondary. What is missing is a digital rhetoric that addresses the unique properties of computation, like procedurality, to found a new rhetorical practice.

This challenge is aggravated by the fact that rhetoric itself does not currently enjoy favor among critics of digital media. In one highly visible example, new media artist and theorist Lev Manovich has argued that digital media may sound a death knell for rhetoric. Writing about web interfaces, Manovich doubts that hypertext could serve a rhetorical function:

> While it is probably possible to invent a new rhetoric of hypermedia that will use hyperlinking not to distract the reader from the argument (as is often the case today), but rather to further convince her of an argument's validity, the sheer existence and popularity of hyperlinking exemplifies the continuing decline of the field of rhetoric in the modern era. . . . World Wide Web hyperlinking has privileged the single figure of metonymy at the expense of all others. The hypertext of the World Wide Web leads the reader from one text to another, ad infinitum. . . . Rather than seducing the user through a careful arrangement of arguments and examples, points and counterpoints, changing rhythms of presentation, . . . [hypertext] interfaces . . . bombard the user with all the data at once.[69]

One can raise numerous objections to Manovich's claims. For one, he has a rather curious view of hypertext that seems to equate hypermedia with media gluttony. Manovich seems to think that web pages present links in an attempt to substitute their linkage for their content, causing endless, haptic clicking on the part of the user. Meaning is tragically, "infinitely" deferred. This claim is especially curious given the prehistory of hypertext in Vannevar Bush's conceptual Memex and Ted Nelson's Xanadu.[70] These systems were conceived largely as tools to *increase* the correlation between documents, as material manifestations of manual cross-reference. Today, hypertext on "ordinary" websites is frequently used in this fashion; they provide additional information or resources to the user who wishes to confer them. Frequently, these resources

take the form of supporting arguments, evidence, or citation, very old and very traditional tools in written rhetoric.

While Manovich considers the nature of the hyperlink, he ignores the computational system that facilitates hypermedia in the first place. Chris Crawford has used the term *process intensity* to refer to the "degree to which a program emphasizes processes instead of data."[71] Higher process intensity—or in Crawford's words a higher "crunch per bit ratio"—suggests that a program has greater potential for meaningful expression. While hypertexts themselves exhibit low process intensity, the systems that allow authorship and readership of web pages exhibit high process intensity. A web browser must construct a request for a page using the proper format for the Hypertext Transfer Protocol (HTTP) that carries requests between the computer and a server. The computer must then create a connection to the server via Transmission Control Protocol (TCP), which in turn communicates the request via Internet Protocol (IP), the communication convention that transports data across the packet-switched network that comprises the Internet. The server hosting the requested web page must then interpret the request, retrieve the requested document, and prepare it for transmission back to the user's computer via the same protocols, HTTP atop TCP/IP. IP guarantees delivery of all packets in a request, so the receiving computer's network layer must determine—all in code—whether all the packets have been received, which ones are out of order, and which need to be resent owing to corruption or loss. Once received, reordered, and reconstructed, the web browser must then take the textual data that the server has returned and render it in the browser. This too takes place in code. The web page is made up of Hypertext Markup Language (HTML), which the browser must parse, making decisions about which elements to place where and in what format on the user's screen. Then the web browser repeats the process for other resources referenced in the HTML document, such as other embedded HTML pages, images, script files, or stylesheets.

These technical details may appear to have little to do with Manovich's claims about the endless progression of hyperlinks on a web page. But the aggregate software systems that facilitate web-based hypertext are what make it possible to link and click in the first place. The principal innovation of the web is the merger of a computer-managed cross-referencing system with a networking system that supports heterogenous clients. More plainly put, Manovich ignores the software systems that make it possible for hyperlinks

to work in the first place, instead making loose and technically inaccurate appeals to computer hardware as exotic metaphors rather than as material systems. Continuing the argument above, he compares hypertext to computer chipsets: "individual texts are placed in no particular order, like the Web page designed by [artist collective] antirom for HotWired. Expanding this comparison further, we can note that Random Access Memory, the concept behind the group's name, also implies a lack of hierarchy: Any RAM location can be accessed as quickly as any other."[72] Manovich compares the HotWired website to RAM not because computer memory facilitates the authorship of websites, but because the website was designed by a group that uses a pun on a computer chip term in their name—a different chip from RAM, as it happens, Read Only Memory, or ROM.

Manovich admits that a new rhetoric of hypermedia is "probably possible," but clearly he has no intention of pursuing one. Gurak and Warnick are not cynical about rhetoric and communication, but they focus on digital communities of practice, treating the computer primarily as a black-box network appliance, not as an executor of processes. In short, digital rhetoric tends to focus on the presentation of traditional materials—especially text and images—without accounting for the computational underpinnings of that presentation.

Rhetorician Elizabeth Losh neatly summarizes this inconsistency among digital rhetoricians. "In the standard model of digital rhetoric," she argues, "literary theory is applied to technological phenomena without considering how technological theories could conversely elucidate new media texts."[73] While I admit that there are useful interrogations of digital media that focus on reception over the technological structure (Losh's own work on the way digital artifacts take part in the public sphere is such a one), my contention here is that approaches to digital rhetoric must address the role of procedurality, the unique representational property of the computer.

Procedural Rhetoric

With these lessons in mind, I would now like to put the concepts of *procedurality* and *rhetoric* back together. As I proposed at the start of this chapter, *procedural rhetoric* is the practice of using processes persuasively, just as verbal rhetoric is the practice of using oratory persuasively and visual rhetoric is the practice of using images persuasively. Procedural rhetoric is a general name

for the practice of authoring arguments through processes. Following the classical model, procedural rhetoric entails persuasion—to change opinion or action. Following the contemporary model, procedural rhetoric entails expression—to convey ideas effectively. Procedural rhetoric is a subdomain of procedural authorship; its arguments are made not through the construction of words or images, but through the authorship of rules of behavior, the construction of dynamic models. In computation, those rules are authored in code, through the practice of programming.

My rationale for suggesting a new rhetorical domain is the same one that motivates visual rhetoricians. Just as photography, motion graphics, moving images, and illustrations have become pervasive in contemporary society, so have computer hardware, software, and videogames. Just as visual rhetoricians argue that verbal and written rhetorics inadequately account for the unique properties of visual expression, so I argue that verbal, written, and visual rhetorics inadequately account for the unique properties of procedural expression. A theory of procedural rhetoric is needed to make commensurate judgments about the software systems we encounter every day and to allow a more sophisticated procedural authorship with both persuasion and expression as its goal.

Procedural rhetorics afford a new and promising way to make claims about *how things work*. Consider a particularly sophisticated example of a procedural rhetoric at work in a game. *The McDonald's Videogame* is a critique of McDonald's business practices by Italian social critic collective Molleindustria. The game is an example of a genre I call the anti-advergame, a game created to censure or disparage a company rather than support it.[74] The player controls four separate aspects of the McDonald's production environment, each of which he has to manage simultaneously: the third-world pasture where cattle are raised as cheaply as possible; the slaughterhouse where cattle are fattened for slaughter; the restaurant where burgers are sold; and the corporate offices where lobbying, public relations, and marketing are managed. In each sector, the player must make difficult business choices, but more importantly he must make difficult moral choices. In the pasture, the player must create enough cattle-grazing land and soy crops to produce the meat required to run the business. But only a limited number of fields are available; to acquire more land, the player must bribe the local governor for rights to convert his people's crops into corporate ones. More extreme tactics are also available: the player can bulldoze rainforest or dismantle indigenous settlements to clear space for

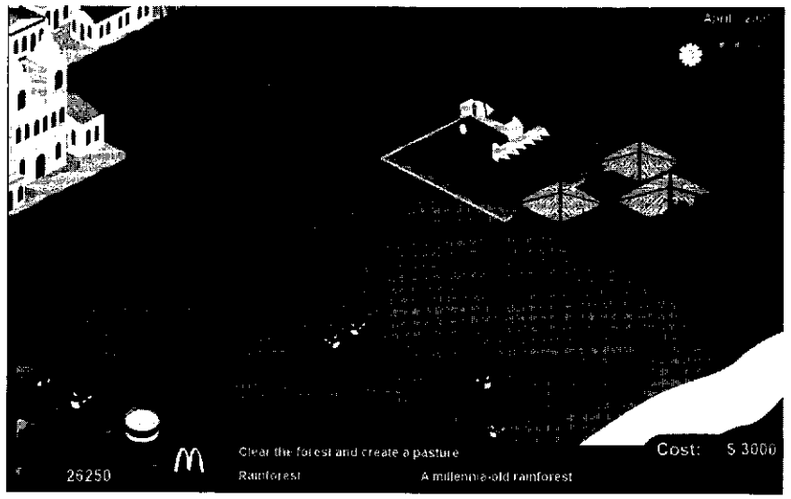

Figure 1.1 In Molleindustria's *The McDonald's Game,* players must use questionable business practices to increase profits.

grazing (see figure 1.1). These tactics correspond with the questionable business practices the developers want to critique. To enforce the corrupt nature of these tactics, public interest groups can censure or sue the player for violations. For example, bulldozing indigenous rainforest settlements yields complaints from antiglobalization groups. Overusing fields reduces their effectiveness as soil or pasture; creating dead earth also angers environmentalists. However, those groups can be managed through PR and lobbying in the corporate sector. Corrupting a climatologist may dig into profits, but it ensures fewer complaints in the future. Regular subornation of this kind is required to maintain allegiance. Likewise, in the slaughterhouse players can use growth hormones to fatten cows faster, and they can choose whether to kill diseased cows or let them go through the slaughter process. Removing cattle from the production process reduces material product, thereby reducing supply and thereby again reducing profit. Growth hormones offend health critics, but they also allow the rapid production necessary to meet demand in the restaurant sector. Feeding cattle animal by-products cheapens the fattening process, but is more likely to cause disease. Allowing diseased meat to be made into burgers may spawn complaints and fines from health officers, but those groups too can be bribed through lobbying. The restaurant sector

demands similar trade-offs, including balancing a need to fire incorrigible employees with local politicians' complaints about labor practices.

The McDonald's Videogame mounts a procedural rhetoric about the necessity of corruption in the global fast food business, and the overwhelming temptation of greed, which leads to more corruption. In order to succeed in the long-term, the player must use growth hormones, he must coerce banana republics, and he must mount PR and lobbying campaigns. Furthermore, the temptation to destroy indigenous villages, launch bribery campaigns, recycle animal parts, and cover up health risks is tremendous, although the financial benefit from doing so is only marginal. As Patrick Dugan explains, the game imposes "constraints simulating necessary evils on one hand, and on the other hand . . . business practices that are self-defeating and, really just stupid."[75] The game makes a procedural argument about the inherent problems in the fast food industry, particularly the necessity of overstepping environmental and health-related boundaries.

Verbal rhetoric certainly supports this type of claim; one can explain the persuasive function of processes with language: consider my earlier explanation of the rhetoric of retail store return policies, or Eric Schlosser's popular book and film *Fast Food Nation*, which addresses many of the issues represented in *The McDonald's Videogame*.[76] But these written media do not express their arguments procedurally; instead, they describe the processes at work in such systems with speech, writing, or images. Likewise, it is possible to characterize processes with visual images. Consider a public service campaign called *G!rlpower Retouch*, commissioned by the Swedish Ministry of Health and Social Affairs. The goal of the campaign was to reduce the fixation on physical appearance caused partly by unrealistic body images in magazines and media. Forsman & Bodenfors, the agency hired to execute the campaign, created a click-through demo that explains how photo retouchers make significant changes to the bodies of their already striking models, hoping to render them even more perfect.[77] The demonstration depicts an attractive, young blonde on the cover of a fictional magazine. The user is then given the opportunity to undo all the photo retouches and individually reapply them. A textual explanation of the technique is also provided.

G!rlpower Retouch unpacks a process, the process of retouching photos for maximum beauty. It uses sequences of images combined with written text to explain each step. The artifact makes claims about images, so it makes reasonable use of images as propositions in the argument. *Retouch* even deploys

the Aristotelian tactic of example, using a single model image to depict feature modifications common to all model images—eyes, teeth, lips, nose, jawline, hair, breasts, and so forth. The piece makes claims about the process of retouching, which is itself facilitated by the procedural affordances of image-editing software like *Adobe Photoshop*. However, *Retouch* does not deploy a procedural rhetoric, since it does not use representational processes to explain the actual processes used in photo retouching.

That said, one could imagine a procedural version of the same argument. Simply replicating a photo editor would supply the needed procedurality, but not the required rhetoric. The steps needed to accomplish the individual effects are complex and require professional-level command of the tools. Instead, a procedural implementation might abstract a set of editing tools particular to model editing, for example a "thinning" tool for waists, arms, and hips. Shadow and highlighting tools could be added for cheeks, hair, and breast augmentation. Instead of clicking through a sequence of images that explain the retouching process, the user would be put in charge of implementing it himself. A procedural implementation would accentuate and extend the use of paradigmatic evidence in the existing version of *Retouch*. In its current implementation, the piece depicts only one model. Her archetypical appearance makes her an effective example, and her three-quarter perspective pose allows the authors to address both face and body modifications. But a procedural version of the same argument would facilitate a variety of different images, full-body, head-and-shoulders, different body types, and so forth. Such a system might also allow the user to load his own photos, or photos from the Internet; these would serve as the data on which the retouching processes could run. Such a capacity would extend the rhetorical power of example.

Another, similar online consumer-awareness tool makes strides in the direction of procedural rhetoric while resting comfortably in the domain of visual rhetoric. PBS Kids maintains a website for young viewers, hosting show pages, games, and other interactive features.[78] Among the features is "Don't Buy It," a minisite that seeks to educate kids about the tricks advertisers use to turn kids into consumers.[79] The site features simple quizzes to help kids understand media manipulation (coincidentally, among them is a much simpler version of *G!rlpower Retouch* for food advertising).[80]

One of these features is *Freaky Flakes*, an interactive program that allows the user to design a cereal box. Unlike *Retouch*, *Freaky Flakes* asks the user to

construct a box from the ground up, starting with its color. Textual information explains the benefits of each color, for example, "Orange stimulates the appetite and is one of the most popular cereal box colors." Next the user selects a character, again reading textual descriptions, for example, "The superhero is a great choice because little kids prefer fantasy characters to pictures of real people." Next the user enters a cereal name; the program advises him to "pick a name that is an attention grabber." Then the user selects one of four banners to add to the box to add marketing appeal, such as "Outrageous Crunch!" which "makes your cereal seem fun and exciting to eat." Finally, the user selects a prize to place inside, following advice about gender identification such as "Tattoos appeal to boys and girls." The user can view the completed box (see figure 1.2) or make a new one.

The argument *Freaky Flakes* mounts is more procedural than *Retouch*, but only incrementally so. The user recombines elements to configure a cereal box, but he chooses from a very small selection of individual configurations. *Freaky Flakes* is designed for younger users than *Retouch*, but the children who watch PBS Kids also likely play videogames much more complex than this simple program. Most importantly, *Freaky Flakes* fails to integrate the process of designing a cereal box with the supermarket where children might actually encounter it. The persuasion in *Retouch* reaches its apogee when the user sees the already attractive girl in the fake magazine ad turned into a spectacularly beautiful one. This gesture is a kind of visual enthymeme, in which the

Figure 1.2 PBS's *Freaky Flakes* offers a simple representation of practices of children's advertising. Courtesy of KCTS Television. © 2004 KCTS Television. All rights reserved.

authors rely on the user's instinctual and culturally mediated idea of beauty to produce actual arousal, jealousy, or self-doubt. *Freaky Flakes* offers no similar conclusion. The user creates a cereal box, but every box yields the same result (even combining the superhero and the princess ring yields the congratulatory message, "Your box looks great!"). A more effective procedural argument would enforce a set of rules akin to the tactics advertisers use to manipulate kids, while providing a much larger possibility space for box authorship. Within this space, the user would have the opportunity both to succeed and to fail in his attempt to manipulate the simulated children buying the cereal. Through multiple designs, the user might home in on the logic that drives the advertisers, resulting in increased sales of his virtual cereal. This gesture represents a procedural enthymeme—the player *literally* fills in the missing portion of the syllogism by interacting with the application, but that action is constrained by the rules. That is to say, a set of procedural constraints would determine which combinations of design strategies influence kids more and less successfully.

Let's revisit verbal and visual rhetorics' stumbling blocks in light of these two examples of potential procedural rhetorics. Charles Hill pointed out that images offer greater "vividness" than verbal narration or written description. Vivid information, he argued, "seems to be more persuasive than non-vivid information."[81] J. Anthony Blair countered that vivid images may increase presence, but they do not necessarily mount arguments. Even if images successfully cause viewers to take certain actions, those viewers are more likely manipulated than they are persuaded. Visual arguments, argues Blair, "lack [the] dialectical aspect [of] the process of interaction between the arguer and the interlocutors, who raise questions or objections."[82] Procedural rhetoric must address two issues that arise from these discussions: first, what is the relationship between procedural representation and vividness? Second, what is the relationship between procedural representation and dialectic?

To address the first question, I reproduce a table from Hill's essay, which he names "A comprehensive continuum of vividness."

Most Vivid Information

- actual experience
- moving images with sound
- static photograph
- realistic painting
- line drawing

- narrative, descriptive account
- descriptive account
- abstract, impersonal analysis
- statistics

Least Vivid Information

Immediately one can see that procedural representation is absent from this continuum. Simulation does not even make the list. Further yet, Hill accounts for no computational media whatsoever. I would be less inclined to quibble with the exclusion had Hill not called the continuum "comprehensive," indicating his intention to cover representational forms and their relationship to vividness fully.[83] Procedural representation is representation, and thus certainly not identical with actual experience. However, procedural representation can muster moving images and sound, and software and videogames are capable of generating moving images in accordance with complex rules that simulate real or imagined physical and cultural processes. Furthermore, procedural representations are often (but not always—see below) interactive; they rely on user interaction as a mediator, something static and moving images cannot claim to do. These capacities would suggest that procedurality is more vivid than moving images with sound, and thus earns the second spot on the continuum, directly under actual experience.[84] However, other factors might affect the relative vividness of procedural representations. For example, a simulation that accepts numerical input and generates numerical output might seem more akin to an abstract, impersonal analysis or even a set of statistics, falling to the bottom of Hill's continuum. Recalling Crawford's notion of process intensity, I would submit that procedural representations with high process intensity and with meaningful symbolic representations in their processes—specimens like interactive fiction, software, and especially videogames—certainly earn a spot above moving images on the continuum. Given this caveat, procedural representation seems equally prone to the increased persuasive properties Hill attributes to vividness.

What about procedural representations' relationship to dialectic? Hill argues that images are comprehended "wholistically and instantaneously," whereas verbal texts are apprehended "relatively slowly over time" as a result of their "analytic nature."[85] Interestingly, Hill characterizes the latter as "made up of discrete meaningful units," a property somewhat similar to my characterization of procedurality as the configuration of logical rules as unit operations. Blair's objection to visual arguments centers around images' reduced ability to advance propositions, a requirement of rhetorical argument. The

visual argument Blair names most effective is the famous 1964 Lyndon Johnson television spot known as the "Daisy Ad."[86] Here is an account of the ad as accurately described by Wikipedia (www.wikipedia.org):

> The commercial begins with a small girl picking the petals of a daisy while counting slowly. An ominous-sounding male voice is then heard counting down as the girl turns toward the camera, which zooms in until her pupil fills the screen, blacking it out. Then the countdown reaches zero and the blackness is replaced by the flash and mushroom cloud from a nuclear test. A voiceover from Johnson follows: "These are the stakes! To make a world in which all of God's children can live, or to go into the dark. We must either love each other, or we must die." Another voiceover then says, "Vote for President Johnson on November 3. The stakes are too high for you to stay home."[87]

Blair argues that this visual image *does* make an argument "in the sense of adducing a few reasons in a forceful way."[88] In particular, the ad invokes a visual enthymeme that completes a syllogism:

> Increasing nuclear proliferation will likely lead to the destruction of humanity.
> Goldwater supports nuclear proliferation (omitted).
> Therefore, electing Goldwater may lead to the destruction of humanity.

Nevertheless, argues Blair, the ad "does not embody dialectic completely." In particular, it "does not permit the complexity of such dialectical moves as the raising of objections in order to refute or otherwise answer them."[89]

How does such an example compare with procedural representation? For one part, procedural rhetorics do mount propositions: each unit operation in a procedural representation is a claim about how part of the system it represents does, should, or could function. *The McDonald's Videogame* makes claims about the business practices required to run a successful global fast-food empire. My hypothetical revision of *Freaky Flakes* makes claims about the techniques advertisers use to design cereal boxes, as well as claims about children's culturally and psychologically influenced responses to specific box configurations. These propositions are every bit as logical as verbal arguments—in fact, internal consistency is often assured in computational arguments, since microprocessors and not human agents are in charge of their consistent execution.[90]

What about raising objections? One might argue that many computational systems do not allow the user to raise *procedural* objections—that is, the player of a videogame is usually not allowed to change the rules of play. Many critics have objected to this tendency, calling for games that allow players to alter core simulation dynamics to allow alternative perspectives. Most famously, Sherry Turkle has criticized[91] *Sim City*[92] for its failure to include alternative taxation-to-social services dynamics, a debate I have discussed in detail elsewhere.[93] Applying this objection to our current examples, one might point out that users of *Freaky Flakes* cannot make alterations to the designers' conception of advertising manipulation.

I have two responses to this objection. For one part, the type of user alteration Turkle and others call for is not the same as the dialectical objections Blair requires of arguments. One raises objections to propositions in the hopes of advancing conflicting or revisionist claims. Conversely, one allows user alteration in order to construct an artifact that accounts for multiple perspectives on a particular subject. One usually makes rhetorical claims precisely to *exclude* opposing positions on a subject, not to allow for the equal validity of all possible positions. For example, in the case of *Freaky Flakes*, one might object that the underlying model for advertising influence presumes the media ecology of consumer capitalism. This is a reasonable objection; but such a wholesale revision might imply a different simulation entirely, one that would be outside the expressive domain of the artifact. However, procedural representations often do allow the user to mount procedural objections through configurations of the system itself. In my hypothetical procedural revision of *Freaky Flakes*, the player might attempt to find inconsistencies in the creator's model by designing boxes that both produce socially responsible messages and appeal to children.

For another part, all artifacts subject to dissemination need not facilitate direct argument with the rhetorical author; in fact, even verbal arguments usually do not facilitate the open discourse of the Athenian assembly. Instead, they invite other, subsequent forms of discourse, in which interlocutors can engage, consider, and respond in turn, either via the same medium or a different one. Dialectics, in other words, function in a broader media ecology than Blair and Turkle allow. This objection applies equally to all rhetorical forms—verbal, written, visual, procedural, or otherwise.

Just as an objection in a debate would take place during the negation or rebuttal of the opponent rather than in the construction of the proponent, so

an objection in a procedural artifact may take place in a responding claim of a verbal, written, visual, or procedural form. Such objections are not disallowed by the Daisy ad or by *Freaky Flakes*; they merely require the interlocutor to construct a new claim in another context—for example in a responding TV spot or software program.

Consider an example of a procedural representation that addresses both of these concerns. *The Grocery Game* is a website that gives subscribers access to a special grocery list, sorted by grocery store and U.S. location.[94] The game's premise is this: supermarkets structure their pricing to maximize consumer spending on a short-term basis; they count on families buying enough groceries for about a week's time and then returning for more the following week. Buying in this fashion inevitably costs more, as consumers don't take advantage of the cost leverage afforded by bulk purchases of staples. *The Grocery Game* addresses this issue by automating the research necessary to produce lists of common products that maximize weekly coupon and in-store specials for a given week, while encouraging larger purchases of basics to last many weeks. Despite its name, "The List" is really a procedural system designed to maximize savings through strategic use of coupons and stockpiling. The game's method is clarified on the website:

> The Grocery Game is a fun, easy way to save hundreds of dollars on groceries each month. TERI'S LIST [the founder's name is Teri] reveals the "rock bottom" prices on hundreds of products each week and matches them up with manufacturers' coupons for the best possible savings at your local supermarket. The Grocery Game has exclusive databases that track manufacturers' coupons along with weekly sales and specials, both advertised and UN-advertised. With TERI'S LIST, the days of time consuming work required for effective couponing are over. The Grocery Game does all the hard work and research, presented in a quick reference format on the internet each week, as TERI'S LIST. Members log in, spend a few minutes with a pair of scissors, and they're off to win The Grocery Game!

The game has a goal (save as much money as possible) and a set of simple rules (stockpiling and couponing) that constitute its procedural rhetoric. A subsequent procedural system trolls grocery stock and advertising lists to produce a savings-maximized shopping plan tuned to a particular locality, based on the two tactics just mentioned.

The Grocery Game makes two major claims. For one part, it claims that the grocery business relies on weekly shopping for higher profits. Playing for a month and checking one's grocery budget against a previous month easily confirms this claim. For another part, the game claims that grocery shopping is fundamentally an exercise in spending as little money as possible. One might raise several objections to this claim: gastronomy is an experience central to human culture and should not be blindly replaced with frugality; buying the cheapest products for a given week sidesteps considerations like business ethics and the sustainability of growers and manufacturers; the cheapest products are sometimes, and perhaps often, at odds with ideal nutritional goals; a lowest-common-denominator grocery list assumes that all families are the same, while in fact every family has specific tastes and health considerations (such as food allergies); stockpiling requires storage space, which supports an undesirable obsession with material property. *The Grocery Game* has a hard time responding to these objections, although it is possible to pick and choose among the items the search algorithm generates.

While the game does not provide the user with direct access to the search algorithms that generate its lists, so that a user could wage these objections in code, it does provide a flourishing community of conversation. The message boards have entire threads devoted to savings for a particular week. This variation on the high-score list replaces hierarchical performance with discourse—an opportunity to share how well you did according to your own particular goals. It's not just about winning; it's also about telling people what you did and how you did it. Cash savings are winnings in a literal sense. To a lesser extent, so is fooling the grocery industry by refusing to play by their profit-maximizing rules. But the real winnings seem to come from what people do with what they save. Here's an example from the boards:

> i [*sic*, throughout] have been a lister for 1 year now. grocery shopping has changed 100% for me. i dreaded every single minute of being in a market. now, i find it to be fun. i average 100.00 a week in savings and spending 150.00. Today, i was able to purchase the dvd "Holes" for my children. It is because of the great savings weekly that i am able to purchase things like that "big ticket" item with ease.[95]

The community discourse at the game's message boards are not always related to objections to its underlying procedural rhetoric, but the availability of this

forum facilitates active reconfiguration of the game's rules and goals, a topic to which I will return in chapter 11.

Interactivity

Procedural representations do not necessarily support user interaction. Many computational simulation methods make claims about processes in the material world, but limit user participation significantly. Take a simple computational model like the Monte Carlo method, a statistical sampling technique used to approximate the results of complex quantitative problems. The classic example of the Monte Carlo method in practice is the so-called Buffon's needle problem. George-Louis Leclerc, Comte de Buffon, posed the following question: If a needle of a particular length is dropped at random onto a horizontal surface ruled with parallel lines drawn at a greater than the length of the needle, what is the probability that the needle will cross one of the lines?[96] In a computational model of the Monte Carlo algorithm, the user might configure the length of the needle and the distance of the lines, then run the operation. Similarly, in a physical simulation, such as a demonstration of rigid body collision or mechanical dynamics, a human operator might configure the size and mass of objects or the relative force of gravity, elasticity, and other properties before observing the result.

A more complex and expressive example of a procedural system with limited user interaction can be found in Chris Crawford's 1990 game about global ecology, *Balance of the Planet*.[97] In the game, the player sets global environmental policies. The game challenges players to balance global ecological and economic forces through taxation and expenditure. However, each of the player's policies sets a complex set of interrelated relationships in motion. For example, forest clearing changes the carbon dioxide levels, which affect global warming. The player enacts policy by adjusting sliders to change underlying policies (see figure 1.3), executing the results, and again revising the policies.

The Monte Carlo simulation, physical simulations, and *Balance of the Planet* all accept simple user input and configuration, perhaps the most basic type of input to a computer program other than merely executing and automatically returning results based on hard-coded parameters. *Interactivity* is an entrenched notion in studies of digital media. Janet Murray rightly calls the term "vague" despite its "pervasive use."[98] Murray argues that the simple manipulation of

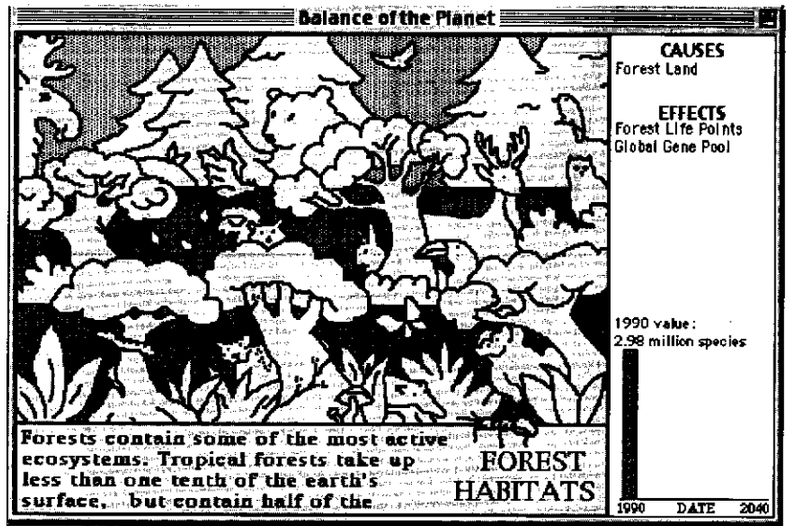

Figure 1.3 Chris Crawford's 1990 title *Balance of the Planet* offers a sophisticated model of interrelated environmental issues.

a computational system, the "mere ability to move a joystick or click on a mouse" is not sufficient cause for "agency"—genuine embodied participation in an electronic environment.[99] Rather, such environments must be meaningfully responsive to user input. This state of affairs constitutes one of Murray's four properties of the computer, its *participatory* nature. "Procedural environments," she argues, "are appealing to us not just because they exhibit rule-generated behavior, but because we can induce the behavior. . . . the primary representational property of the computer is the codified rendering of responsive behaviors. This is what is most often meant when we say that computers are *interactive*. We mean they create an environment that is both procedural and participatory."[100]

As *Balance of the Planet* suggests, procedural rhetorics do not necessarily demand sophisticated interactivity. But we might ask if procedural rhetorics *benefit* from sophisticated interactivity. Following Murray, *sophistication* in this context does not refer to *more* or *more frequent* interaction, the kind that more buttons or faster hand-eye responses would entail. Rather, sophisticated interactivity means greater responsiveness, tighter symbolic coupling between user actions and procedural representations. *Balance of the Planet* offers a terrifically sophisticated procedural model of global ecology, but its coupling of user action to the game's causal model is weak, reducing both empathetic and dialectical engagement.

Another way to understand the role of interactivity in procedural rhetoric is through the concept of *play*. The weak coupling between model and experience in *Balance of the Planet* does not arise from a poverty of procedural representation. Rather, it arises from the awkward way that representation is exposed to the player. Play is a complex concept with a long and arduous intellectual history in numerous fields. Rather than understand play as child's activity, or as the means to consume games, or even as the shifting centers of meaning in poststructuralist thought, I suggest adopting Katie Salen and Eric Zimmerman's useful, abstract definition of the term: "play is the free space of movement within a more rigid structure."[101] Understood in this sense, play refers to the possibility space created by processes themselves. Salen and Zimmerman use the example of the play in a mechanism like a steering column, in which the meshing gears creates "play" in the wheel, before the turning gesture causes the gears to couple. In a procedural representation like a videogame, the possibility space refers to the myriad configurations the player might construct to see the ways the processes inscribed in the system work.

This is really what we do when we *play* videogames: we explore the possibility space its rules afford by manipulating the game's controls.

While *Balance of the Planet* sports a very large possibility space, the game's controls and feedback system make it difficult for players to keep track of the decisions they have already made and to see the aggregate effects of those decisions. The game is *hard to play*; that is, it is difficult to understand the processes at work inside and the nature of the possibility space those processes create.

In the context of procedural rhetoric, it is useful to consider interactivity in relation to the Aristotelian enthymeme. The enthymeme, we will remember, is the technique in which a proposition in a syllogism is omitted; the listener (in the case of oratory) is expected to fill in the missing proposition and complete the claim. Sophisticated interactivity can produce an effective procedural enthymeme, resulting in more sophisticated procedural rhetoric. Sometimes we think of interactivity as producing user empowerment: the more interactive the system, the more the user can do, and the better the experience. For example, many players and critics have celebrated *Grand Theft Auto III* (*GTAIII*)[102] as a game that allows the player to "go anywhere, do anything."[103] This sentiment is flawed for several reasons. First, the game does not actually allow the player to "do anything"; rather, in the words of one reviewer, "*GTAIII* let you do anything you wish, within the parameters of the game."[104] The "parameters of the game" are made up of the processes it supports and excludes. For example, entering and exiting vehicles is afforded in *GTAIII*, but conversing with passersby is not (see chapter 3 for more on this subject). This is not a limitation of the game, but rather the very way it becomes procedurally expressive. Second, the interactivity afforded by the game's coupling of player manipulations and gameplay effects is much narrower than the expressive space the game and the player subsequently create. The player performs a great deal of mental synthesis, filling the gap between subjectivity and game processes.

Previously, I have argued that the ontological position of a videogame (or simulation, or procedural system) resides in the gap between rule-based representation and player subjectivity; I called this space the "simulation gap."[105] Another way to think about the simulation gap is in relation to rhetoric. A procedural model like a videogame could be seen as a system of nested enthymemes, individual procedural claims that the player literally completes through interaction. If *Balance of the Planet* increased player interaction by

adding more sliders to move, it would not necessarily become more expressive or more persuasive. On Hill's vividness continuum, *Balance of the Planet* might land closer to the realm of abstract analysis, despite its rich procedural policy model. However, if it increased the coupling between the computer's procedural rhetoric and the exposition of that rhetoric, its persuasive value would likely increase as well. Ironically, Chris Crawford himself has offered a definition of interactivity that addresses this very problem: "I choose to define it [interactivity] in terms of a conversation: a cyclic process in which two actors alternately listen, think, and speak. The quality of the interaction depends on the quality of each of the subtasks (listening, thinking, and speaking)."[106] In the case of *Balance of the Planet*, the player does a lot of meaningful listening and thinking, but not much meaningful speaking. The computer does a lot of meaningful thinking, but not much meaningful listening or speaking. Maximizing all three does not necessarily optimize expression—*GTAIII* does limited computational listening and thinking, for example—but understanding the relationship between the three can offer clues into the rhetorical structure of a procedural argument.

Videogames

I have chosen to explain and exemplify the function of procedural rhetoric in a subcategory of procedural expression, namely, videogames. There are several reasons I privilege this medium over other procedural media, and over other computational media in particular.

For one part, videogames are among the most procedural of computational artifacts. All software runs code, but videogames tend to run more code, and also to do more with code. Recalling Crawford's term, videogames tend to offer more process intensity than other computational media. Videogames tend to demand a significant share of a computer's central processing unit (CPU) resources while running; they are more procedural than other computational artifacts. As I write this paragraph, my computer is running twelve major applications, including the active one, resource hog *Microsoft Word*, and some seventy total processes to run the machine's underlying systems—window management, networking, graphics, audio, and so forth. Despite this immodest quantity of activity, my CPU remains 75–85 percent idle. The quantity of processes and the amount of random access memory (RAM) they consume does not necessarily correlate with their process intensity. Modern

videogames often require another processor devoted to processing graphics instructions, a graphics processing unit (GPU). Videogames regularly drive computer hardware upgrades; physics processing units are slowly emerging as another tool to extend the power of the CPU. Process-intensive programs like videogames are not guaranteed to mount more interesting or sophisticated procedural rhetorics, but they are predisposed to do so.

For another part, videogames are generally a more expressive subgenre of computational media than other types, for example, productivity software.[107] By expressive, I mean that videogames service representational goals akin to literature, art, and film, as opposed to instrumental goals akin to utilities and tools. All software structures experience, including productivity software, and much has been written about the ways word processors, spreadsheets, and web applications influence our conception of the world (to cite just one example, Friedrich Kittler has written about the ways WordPerfect, coupled to the MS-DOS operating system, structures writing practice).[108] But videogames are uniquely, consciously, and principally crafted as expressions. As such, they represent excellent candidates for rhetorical speech—persuasion and expression are inexorably linked.

For yet another part, videogames are often interactive in the particular way I described above; they require user action to complete their procedural representations. As such, they provide particularly promising opportunities for the procedural translation of rhetorical devices like enthymeme. Interactivity guarantees neither meaningful expression nor meaningful persuasion, but it sets the stage for both. Sid Meier, designer of *Civilization*, has argued that gameplay is "a series of interesting choices."[109] Interesting choices do not necessarily entail *all* possible choices in a given situation; rather, choices are selectively included and excluded in a procedural representation to produce a desired expressive end. For example, *The McDonald's Videogame* includes control of cattle slaughtering but abstracts control of restaurant line-workers for a rhetorical end: to force the player to make decisions with social and political implications.

Greater interactivity is often considered especially engaging, or "immersive." The interactivity of (good) videogames might locate those games higher on the "vividness spectrum" discussed earlier, producing more vivid experience thanks to the player's active involvement. But I want to suggest that vividness comes not from immersion, but from abstraction. The values common to virtual reality and computer graphics assume that the closer we

get to real experience, the better. This sentiment corresponds directly to the vividness spectrum, with the best interactivity coming closest to real experience. But meaning in videogames is constructed not through a re-creation of the world, but through selectively modeling appropriate elements of that world. Procedural representation models only some subset of a source system, in order to draw attention to that portion as the subject of the representation. Interactivity follows suit: the total number and credibility of user actions is not necessarily important; rather, the relevance of the interaction in the context of the representational goals of the system is paramount. Videogames offer a particularly good context for this selective interactivity.

Finally, I will admit that I have a particular fondness for videogames. I am a videogame critic and a videogame designer, and I am devoted to the process of connecting videogames with the history of human expression. In my previous book, *Unit Operations*, I argued for a comparative understanding of procedural expression, using the concept of unit operations to define the elements of procedural representation common across media. In this book, I argue for a similar understanding with respect to rhetoric. As I have already suggested, rhetoric in its contemporary sense refers to both persuasion and expression, and so a study of procedural rhetoric shares much in common with a study of procedural expression. Despite my preference for videogames, I should stress that I intend the reader to see *procedural rhetoric* as a domain much broader than that of videogames, encompassing any medium—computational or not—that accomplishes its inscription via processes. I hope my choice of videogames as examples of procedural rhetoric inspires both an increased appreciation of that medium and inspiration to study procedural rhetorics in other media.

Persuasive Games

I give the name *persuasive games* to videogames that mount procedural rhetorics effectively. Before addressing persuasive games in this sense, it is worth diffusing some of the other ways videogames and persuasion have intersected, so as to distinguish my approach from others'.

Starting with Bushnell's *Computer Space*, arcade games have shared much in common with pinball and slot machines.[110] They accepted coins as payment, and one of their main design goals entailed persuading players to insert (more) coins. In the arcade industry, this is called "coin drop." Andrew

Rollings and Ernest Adams have discussed the effect of coin drop on the design of such games: "Arcade operators care little for richness, depth, and the aesthetic qualities of a game as long as it makes a lot of money for them. This requires some fine balancing. If a game is too hard, people will abandon it in disgust, but if it is too easy, they will be able to play for a long time without putting any more money in."[111] Procedural rhetoric might be deployed in such games, but more often persuasion is accomplished through more basic appeals to addiction and reinforcement. Shuen-shing Lee explains such persuasion via Geoffrey R. Loftus and Elizabeth F. Loftus's 1983 study *Mind at Play*:[112]

> [*Mind at Play*] sorts out two types of psychological configurations embedded in game design that aim to get players addicted to gaming. The first type, "partial reinforcement," is that utilized by slot machines which spit out coins intermittently to reward a gambler. The experience of being occasionally rewarded often drives the gambler to continue inserting coins, in hopes of another win or even a jackpot. Arcade game designers have cloned the same reinforcement strategy in their games. Surprises such as score doubling, weapon upgrading, expedient level advancing may pop up randomly during the gaming process to heighten the player's intrigue, stimulating continued playing.[113]

Partial reinforcement is certainly a type of persuasion, but the persuasion is entirely self-referential: its goal is to cause the player to continue playing, and in so doing to increase coin drop. Despite its relationship to gambling and other addictive activities, partial reinforcement is an interesting and worthwhile area of inquiry that can help game designers understand how to produce experiences that players feel compelled to continue or complete. However, this kind of persuasion is not my concern here. Instead, I am interested in videogames that make arguments about the way systems work in the material world. These games strive to alter or affect player opinion outside of the game, not merely to cause him to continue playing. In fact, many of the examples I will discuss strive to do just the opposite from arcade games: move the player from the game world into the material world.

As arcade games suggest, there are reasons to leverage videogames for goals orthogonal to those of procedural expression. The increasing popularity of and media attention paid to videogames means that merely producing and distributing a videogame may have its own persuasive effect. When Gonzalo

Frasca and I co-designed *The Howard Dean for Iowa Game* in 2003, it became the first official videogame of a U.S. presidential candidate. While the game did deploy procedural rhetorics (see chapters 4 and 11 for more), the very existence of an official Howard Dean game served its own rhetorical purpose, further aligning the candidate with technology culture.[114] In another, similar example, Elizabeth Losh has reflected on the government's creation of *Tactical Iraqi*, a learning game designed to teach U.S. soldiers Arabic language and customs in order to help them accomplish military missions in the Middle East.[115] Losh, who studied the game as a field researcher and has written lucidly about her moral and rhetorical conflicts in doing so, later mused about its true rhetorical function in an online discussion forum:[116]

> In the wake of all the publicity that *Tactical Iraqi* has received in the last few months, I find myself with an even more serious reservation about the game, which crystallized after reading Max Boot's article, "Navigating the 'human terrain,'" in which Boot, a senior fellow at the Council on Foreign Relations, enthuses about visiting "the Expeditionary Warfare School, where captains study Arabic by playing a sophisticated computer game complete with animated characters." It was then that I realized that the purpose of the game might be rhetorical not pedagogical. Despite what the researchers thought they were doing, perhaps it was primarily intended to SHOW the teaching of Arabic to policy makers and the general public not actually TEACH Arabic more effectively. Traditional classroom teaching doesn't make for a good media spectacle, but a video game might.[117]

Tactical Iraqi cannot be accused of sporting low process intensity. As an engineering effort, it deploys sophisticated procedural models of language understanding, simulated gestures, and cross-cultural communication. But, Losh suggests, as an expressive artifact, the project might serve an agenda different from its primary one, namely drawing attention to a videogame training system to distract critics from America's military occupation of Iraq. Again, such a gesture is undeniably rhetorical, but its rhetoric is accomplished through media speech, not through processes. I will return to the substitution of procedural rhetoric for audience correlation in the context of advertising in chapter 5.

Videogames created with a more genuine interest in expression and persuasion may still underplay procedurality in favor of visual images. The commercial game industry dazzles buyers with high-fidelity images of increasingly greater verisimilitude, but these images do not necessarily couple with advances in procedural representation. In 2004, the American Legacy Foundation commissioned *Crazy World*, a game in service of their ongoing antismoking campaign, best known for its rhetorically powerful "the truth"-themed television ads. Built around a satirical carnival world that coincided with the foundation's advertising campaign at the time, the game sports very high production values, visuals, and sound—the very factors that contribute to vividness, according to Charles Hill. But the procedural rhetoric in the game is weak. In a press release, one of the creators describes a mechanic in the game:

> The game, which is aimed at a wide audience, ages 18–50, was created to show both smokers and non-smokers the dangers of cigarettes using humor and irony. Players score points by avoiding moving green puffs of radioactive smoke. If they get caught in the smoke, they mutate into an alien-like form. "The idea is to attract people to entertain themselves and keep the message within context—to play for fun," [Templar Studios president Peter] Mack said.

A game like *Crazy World* may speak through visual rhetoric alone, or at least principally. The use of highly polished visual and sound design builds an expectation of authority. Images hypnotize many consumers, and even the largest videogame companies often repackage the same games with improved (or simply different) graphics. Considerable attention and investment has gone into improving the visual fidelity of commercial games, including the move to high definition and higher polygon models on the now-current Xbox 360 and PlayStation 3 consoles. Visual fidelity implies authority. Likewise, simplistic or unrefined graphics are often taken as an indication of gameplay quality. Just as a poor or "generic" package design can turn consumers away from a quality product, so the skin of a procedural rhetoric might influence player enticement. The 2004 Republican National Committee game *Tax Invaders*, which barely succeeds in replicating the rudimentary graphics of the classic arcade game *Space Invaders*, is an example of the latter (for more on this game, see chapter 3).[118]

The tenuous coupling between visual appearance and procedural rhetoric also hinders videogames that seek to make persuasive statements about issues in the material world, but fail to adopt effective procedural representations for those issues. One common pitfall is borrowing a procedural form from an

existing game or game genre and skinning it with new graphics. Such a one is *Congo Jones and the Raiders of the Lost Bark*, a game about deforestation sponsored by the nonprofit Rainforest Foundation.[119] The game borrows its gameplay from 2D platform games of the *Super Mario Bros.* variety.[120] The player controls a monkey who must find and defeat the president of the World Bank. The player must jump from platform to platform to avoid flying chainsaws, while attempting to reach and defeat the bank president.

Congo Jones adopts no procedural representation—and therefore no procedural rhetoric—of its own. Instead, it borrows the notion of progress through abstract obstacles as an object lesson for deforestation's struggle against the World Bank (who had supported logging in the Congolese rainforests). The game makes no claims about possible reasons to oppose the World Bank, nor how to do so, although it does succeed in positing the World Bank as an archetypal opponent, the "boss monster" of the game. The game might or might not be effective in building "awareness" about the issue, but it certainly does not mount a procedural argument about the topic. Or more precisely, it does not mount its *own* procedural rhetoric; it adopts processes of obstacle avoidance and goal pursuit from platform games and reinscribes them onto deforestation.

Congo Jones borrows gameplay and applies a graphical skin—a visual rhetoric—atop it. Another common technique is to borrow gameplay and apply a textual skin—a verbal rhetoric—atop it. An example of such a game is *P.o.N.G.*, created by the Global Arcade art collective.[121] The game's website explains that the game features "a few different variations of the classic Pong, each with just a little different play on the language of globalization."[122] The result is a direct copy of *Pong* in which the ball is replaced by words that might arise in discussions of globalization (*neoliberalism*, $$, etc.). The player must bat these back and forth with the paddle, as one might "exchange words" in a conversation on the topic. While the Global Arcade's mission statement announces their commitment "to make information about globalization interesting, engaging and interactive," *P.o.N.G.* serves as little more than a sight gag, perhaps not even articulating expression adequate to warrant the moniker of *digital art*.

The notion of adopting *Pong*'s back-and-forth procedural mechanic or *Super Mario Bros.*' platform mechanic as rhetorics for discourse might have promise, but *P.o.N.G.* and *Congo Jones* do not make meaningful use of those processes in their arguments. *Tax Invaders*, which I mentioned above and discuss in detail in chapter 3, is an example of a game that borrows a videogame form and successfully mounts its own procedural rhetoric atop it.

A more successful procedural rhetoric can be found in the 1982 title *Tax Avoiders*, an unusual game for the Atari Video Computer System (popularly known as the Atari VCS or Atari 2600).[123] Conceived by Darrell Wagner, a "Licensed Tax Consultant and former IRS Revenue Agent," the goal of the game is to become a millionaire by amassing income and avoiding red tape and audits.[124] The player controls a human character, John Q, who must collect income (represented by dollar-sign icons) and avoid red tape (represented by an abstract tape icon). After each fiscal quarter the player has the opportunity to shelter income in investments, which are represented as sprites on screen, or to store income in a portfolio, represented as a briefcase sprite (see figure 1.4). A second sprite oscillates between an IRS agent, a CPA, and an investment advisor. The player always loses an audit, and 50 percent of his income is lost to taxes. A CPA charges a small fee but always makes new

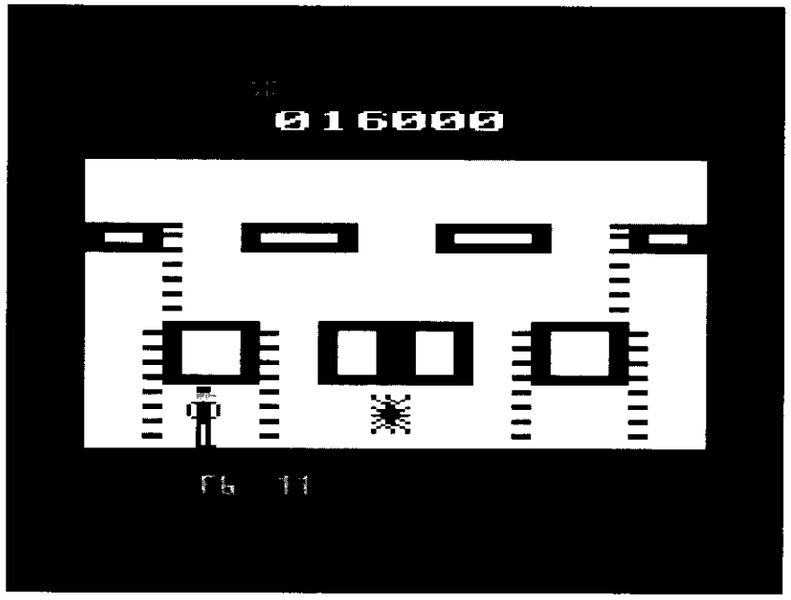

Figure 1.4 Although the Atari VCS title *Tax Avoiders* may look simplistic, it constructs a sophisticated procedural rhetoric about tax strategy.

tax-sheltered investments available. The investment advisor can maximize returns on sheltered investments. At the end of this interstitial phase, the player's remaining income is taxed and he returns to work.[125]

Tax Avoiders mounts an interesting and relatively complex procedural rhetoric about tax avoidance strategies. The fact that these techniques are mapped onto movement, a graphical logic, is perhaps not ideal, but it is also not detrimental to the argument. The player must run around to collect income, literally *avoiding* red tape. Likewise, he must avoid the IRS agent while racing to *catch* investment opportunities before their window of opportunity closes. These metaphors of locomotion correspond quite well to the abstract processes of work, investment, and taxation.

Finally, I would like to make a distinction between persuasive games, procedural rhetoric, and the rhetoric of play. In contemporary game studies, considerable attention has been paid to the relationship between games and play—and this is a worthwhile pursuit. However, my interest here is not in the function of play, nor in videogames as a subdomain of play activities. Rather, my interest is in the function of procedural representation as it is used for persuasion, and in videogames as a subdomain of procedural media. In particular, I should draw a distinction between procedural rhetoric and what Brian Sutton-Smith has called "rhetorics of play," or ways "play is placed in context within broader value systems."[126] While we both use the term *rhetoric*, we use it in different contexts, although not in entirely different ways. Sutton-Smith discusses the rhetorical modes of play itself: the ways theorists present play as a human cultural activity. As Katie Salen and Eric Zimmerman explain, Sutton-Smith's rhetorics of play "identify how games and play embody ideological values and how specific forms and uses of play perpetuate and justify these values."[127] Sutton-Smith's project is a general one, focused on the cultural role of play, not the culturally embodied practice of playing specific games. He identifies seven rhetorics of play, including play as progress, fate, power, identity, the imaginary, the self, and frivolity, each of which orchestrates play in different ways and for different ends under the same ostensible name (hence the ambiguity).[128] Sutton-Smith musters these rhetorics to attempt to explain the reasons people play, and the cultural function of that play.[129] His approach is broad and macroscopic, investigating play itself as a cultural activity that serves multiple purposes, purposes which often complicate one another.

I am discussing the rhetorical function of procedural expression in the tradition of representation rather than the tradition of play. This said, Sutton-Smith's rhetorics may prove useful in contextualizing procedural rhetorics among the values of play. This is not an effort I will attempt here, but which Salen and Zimmerman attempt in their text on game design, *Rules of Play*. The two suggest *The Landlord's Game* (the conceptual precursor to the popular board game *Monopoly*) as an embodiment of Sutton-Smith's rhetorics of power and progress. Unlike *Monopoly*, *The Landlord's Game* opposes land monopoly, instead advocating the single tax proposed by economist Henry George. As Salen and Zimmerman explain:

> Despite the strong similarity between The Landlord's Game and Monopoly, there are distinct (and wonderfully incongruous) differences in the rhetorics each evokes. While the play rhetorics of progress and power apply to both games, The Landlord's Game was distinctly anti-capitalist in its conception. The game's conflict was not premised on property acquisition and the accumulation of monopolies, but instead on an unraveling of the prevailing land system. Because properties in the game could only be rented, there was no opportunity for domination by a greedy land baron or developer.[130]

Without realizing it, Salen and Zimmerman helpfully clarify the difference between Sutton-Smith's *rhetorics of play*—the global, cultural roles for exploring themes like ownership and property—and the *procedural rhetoric of a game*—the local argument *The Landlord's Game* makes about taxation and property ownership. Salen and Zimmerman do not actually apply Sutton-Smith's rhetorics of play, a gesture that shows how macroscopic the latter's approach really is. On the one hand, they admit that progress and power "apply" abstractly to both *The Landlord's Game* and *Monopoly*. On the other hand, their analysis relies not on these higher-level categories, but on the specific function of the rules of each game, for example rental as collective equity versus ownership as individual leverage. When Salen and Zimmerman say that there are "distinct . . . differences in the rhetorics each evokes," they refer not to Sutton-Smith's cultural rhetorics, but to the procedural rhetorics of the two specific games, *The Landlord's Game* and *Monopoly*. In fact, Salen and Zimmerman's analysis of the procedural rhetorics of these games is quite mature, revealing the way the rules of the games make fundamentally different

arguments about land ownership, despite having apparently similar boards and gameplay dynamics.

The difference between rhetorics of play and procedural rhetoric should now be clear. Sutton-Smith's rhetorics of play characterize broad cultural contexts, while procedural rhetorics express specific patterns of cultural value. Despite their invocation of Sutton-Smith as a figure at the intersection of rhetoric and games, Salen and Zimmerman are actually invoking the more ordinary notion of rhetoric as persuasive and expressive discourse.[131] Although they claim to "take the word 'rhetoric' from Brian Sutton-Smith's remarkable treatise *The Ambiguity of Play*," really they take the word from its more general classical and modern roots, applying it to the analysis of games.[132] There may be value in applying Sutton-Smith's rhetorics of play to specific procedural rhetorics, perhaps for comparative anthropological purposes. But as Salen and Zimmerman unwittingly demonstrate, the more useful intersection between rhetoric and play is one that unpacks the particular rules of a particular game in a particular context, not the more general intersection between modes of play in general. This distinction mirrors the one that separates representational discourse from sociological discourse. Clearly cultural context influences the creation of and interaction with games. But the games we create can also support, interrogate, or oppose those cultural contexts.

Persuasive Games versus Serious Games

Topics like taxation, deforestation, and globalization are not the usual subject matter of videogames; furthermore, the games about these topics discussed above are very arcane, so much so that I doubt many readers would have chanced upon all three before. Procedural rhetoric is not limited to such anomalous specimens; in the following pages I discuss numerous commercial games that have enjoyed great market success. But one often uses persuasion in the context of domains like economics, business, and politics. As it happens, an entire subdomain of videogame development has erupted around such topics, known as *serious games*. What, if anything, differentiates persuasive games from serious games?

Interrogating the relationship between seriousness and play is nothing new. Dutch anthropologist Johan Huizinga struggled with the ambiguous link between seriousness and play in his classic study *Homo ludens*. On the one hand, Huizinga notes that play "is the direct opposite of seriousness."[133] But on

further investigation, he argues that "the contrast between play and seriousness proves to be neither conclusive nor fixed."[134] Huizinga notes that one can "play seriously," that is, with great devotion and resolve,[135] but seriousness does not seem to include the possibility of play, making the latter of a "higher order" than seriousness.[136] Despite this status, play helps constitute social and cultural functions of great gravity, according to Huizinga, including religion, politics, and warfare. Huizinga remains conflicted to the end on the interrelation between play and seriousness. As such, it is not surprising that scholars, business people, and developers thought they had fallen upon something new in "reuniting" seriousness and play.

An early example of the new collusion of seriousness and gameplay comes in Clark C. Abt's 1970 book *Serious Games*, which addresses the use of analog games (board games, role-play, etc.) in education, science, government, and industry. In his first chapter, titled "The Reunion of Action and Thought," Abt offers a definition of serious games: "We are concerned with *serious games* in the sense that these games have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement."[137] Abt quickly admits that this does not mean that serious games "are not, or should not be entertaining," but the message is clear: serious games are created under the direct influence and guidance of external institutional goals.

When the Woodrow Wilson International Center for Scholars unearthed the moniker "serious games" as the name for their new videogame initiative, they did so without direct reference to Abt's proposal thirty years earlier. Rather, the name arose fairly spontaneously. Wilson Center Director of Foresight & Governance David Rejeski and consultant Ben Sawyer were trying to title a white paper Sawyer had written for the center. The two had a subtitle—"Improving Public Policy through Game-Based Learning and Simulation"—but they wanted a snappy title to entice readers. Rejeski had been reading Michael Schrage's 1999 book *Serious Play: How the World's Best Companies Simulate to Innovate*, a call for businesses to foster play as an agent for innovation.[138] Schrage cites Abt in his book, and Rejeski, perhaps influenced by conscious or unconscious memory of that reference, suggested "Serious Games" as a title.[139] Since then, Woodrow has founded and funded the Serious Games Initiative, an ad hoc networking and knowledge-sharing group with a thriving membership.[140] Its primary activities include collecting resources, facilitating contacts between government/industry and developers, and

running meetings and conferences on its core topics, including the Serious Games Summit, a large biannual conference (on whose advisory board I happen to serve). Interestingly, the Initiative's goals read very similarly to Abt's 1970 definition: "the goal of the initiative is to help usher in a new series of policy education, exploration, and management tools utilizing state of the art computer game designs, technologies, and development skills."[141] Mirroring Abt's goals with nondigital games, the Initiative seeks to couple videogames to the needs of modern institutions. Their mission statement asks, "How can we quickly expand the application of computer-based games to a much wider range of key challenges facing our government and other public or private organizations?" Abt's "carefully thought out educational purpose" and the Serious Games Initiative's focus on "government and other public or private organizations" both suggest that serious games are crafted in the service of officials, especially officials of governments or corporations. The language used to advertise the Serious Games Summit confirms this sentiment; under a header reading "Gaming for your Industry" follows a list of institutional interests: education, government, health, military, corporate, first responders, science.[142]

If the notion of "seriousness" is what distinguishes this group's efforts from other types of videogaming, it is worth briefly interrogating the term and its relationship to their endeavor. *Serious* is a word with many meanings, and it should no longer be sufficient merely to oppose it to *entertainment*, the major mover-and-shaker in the videogame marketplace.

Serious can mean *solemn*, implying emotionlessness and sobriety. One might think of the drill sergeant, the librarian, or perhaps even the IRS agent as an agent of this type of seriousness: *she shot me a serious look and I reconsidered my itemizations*.

Serious can mean *weighty*, implying consequence and demanding consideration. One might think of authority figures like teachers, parents, or religious leaders using this meaning of the term when addressing the particularly foolish (not serious) plans of pupils, offspring, or followers: *Don't tell me to calm down, son! Marriage is a serious commitment*.

Serious can mean *grave*, implying severity and foreboding. One might think of officials making statements about unthinkable acts of war, disease, or suffering: *Two of the five miners remain hospitalized in serious condition*.

Serious can mean *highbrow*, implying intellectualism and profundity. One might think of academics, artists, curators, and more generally snobs

insistent on segregating weighty matters from light ones: *James is a serious artist, he doesn't make that pop-culture drivel*.

All of these ways of understanding *serious* have something in common: they rely on a point of reference that affirms the seriousness of a subject in relation to some nonserious alternative. Solemnity responds to behavior outside a known, desired code of conduct; weightiness responds to behavior thought to lead to crucial and perhaps irreversible decision; gravity suggests an opposite and always undesirable condition; and snobbery isolates worthwhile pursuits from insignificant ones. Furthermore, these meanings suggest that seriousness is often deployed in the service of institutions: governments, corporations, healthcare systems, religious beliefs, cultural communities, and so forth. Seriousness implies actions that support the goals and progress of these institutions.

Such a conception of seriousness is coincident with Abt's use of the term in relation to board games and the Serious Games Initiative's use of the term in relation to videogames. Serious games are videogames created to support the existing and established interests of political, corporate, and social institutions. To apply this principle to the industry domains of the Serious Games Summit proves a simple task. Educational games translate existing pedagogical goals into videogame form; government games translate existing political goals in videogame form; health games provide doctors and medical institutions with videogame-based tools to accomplish their existing needs; military games help armies and soldiers address existing global conflicts with new, cheaper, and more scalable simulations; corporate games provide executives with videogame-based tools to accomplish their existing business goals; first responder games offer simulated views of already known methods of response to natural disaster or terrorist incident; and science games provide appealing videogame-based tools to clarify known principles and practices.

Such goals do not represent the full potential of persuasive games. If persuasive games are videogames that mount meaningful procedural rhetorics, and if procedural rhetorics facilitate dialectical interrogation of process-based claims about how real-world processes do, could, or should work, then persuasive games can also make claims that speak past or against the fixed worldviews of institutions like governments or corporations. This objection—which bears some resemblance to Socrates' opposition to sophistic and technical rhetoric in the fifth century BCE—suggests that persuasive

games might also interrogate those institutions *themselves*, recommending correctives and alternatives.

If we wanted to retain the term *serious games*—a questionable goal—then two other meanings stand out as potential ways of understanding the phrase. First, *serious* can imply care and attention to detail, especially as such care leads to reflection: *I will give your ideas serious thought.* This meaning is related to weightiness, but carries the sense of open discourse, of the possibility of finding new structures of thought not immediately given by a current worldview. Second, and more esoteric, *serious* can imply substance, a window onto the underlying structure of a thing. This use may be limited to informal discourse; a sentiment like *dude, that is a serious cheesecake* implies that the specimen presented offers a fundamental insight into the nature, even the apotheosis of the thing in general.[143] "Serious games" in this sense—a sense commensurate with what I intend persuasive games to mean—would deal with the exposition of the fundamental structure of existing situations intended to invoke support, doubt, or debate about their validity or desirability, or universality. These are not games in the service of governments, corporations, educational institutions, and their kindred but games that challenge such institutions, creating opportunities to question, change, or eliminate them.

The notion of the serious as the underlying structure of a system is particularly compatible with the concept of procedurality. Procedural representation depicts how something does, could, or should work: the way we understand a social or material practice to function. I connect this idea to contemporary philosopher Alain Badiou's notion of the *situation*, a "structured presentation" of a *multiplicity*, a particular ontological arrangement.[144] Badiou applies transfinite set theory to philosophy, understanding being to mean *being a member of*. The gesture of including a concept in a situation is akin to the set-theoretical notion of belonging, which Badiou names the *count-as-one*.[145] I have previously correlated the count-as-one with the unit operation, the gesture of conceiving of a particular process as an encapsulated concept.[146] Badiou further understands situations to have a *state*, the logic by which the elements in a situation are counted as one—or the reasons why the structure is organized in the way it is.[147] It is the state that is commensurate with "seriousness" as the nature of a thing, the reasons that make it what it is. Badiou further articulates a concept called the *event*, which offers a chance to disrupt the state of a situation and reinvent it, wholly anew, under a different organizing logic, a topic I will return to in chapter 11.[148]

Despite the possibility of rescuing serious games under the definition I have just offered, I do not want to preserve the name. Instead, I would like to advance persuasive games as an alternative whose promise lies in the possibility of using procedural rhetoric to support *or* challenge our understanding of the way things in the world do or should work. Such games can be produced for a variety of purposes, be they entertainment, education, activism, or a combination of these and others. The concept of serious games as a counter movement apart from and against the commercial videogame industry eliminates a wide variety of games from persuasive speech. It is a foolish gesture that wrongly undermines the expressive power of videogames in general, and highly crafted, widely appealing commercial games in particular. As I will show in the following chapters, many games carry messages, make arguments, and attempt meaningful expression. This should not surprise us; indeed, all media resonate on a variety of registers. I want to encourage developers and critics to pay more mind to the way such messages, arguments, and expressions are constructed through procedural rhetorics, in videogames of all kinds.

Persuasive Games versus Persuasive Technology

Since the late 1990s, Stanford University experimental psychologist B. J. Fogg has been advancing a concept he calls *captology*. The simple definition Fogg gives on his research group's website is this: "Captology is the study of computers as persuasive technologies. This includes the design, research, and analysis of interactive computing products created for the purpose of changing people's attitudes or behaviors."[149] Fogg's research has produced a book entitled *Persuasive Technology: Using Computers to Change What We Think and Do*.[150] Given the strong similarity between the phrases *persuasive technology* and *persuasive games*, I would like to address the differences between my approach and that of Fogg.

The most important distinction mirrors the difference between persuasive games and serious games. Just as the Serious Games Initiative implicates videogames in the service of existing goals, so captology does for computer technology in general. Captology, says Fogg, "does not include . . . unintended outcomes; it focuses on the attitude and behavior changes *intended* by the designers of interactive technology products."[151] Admittedly, this understanding is far closer to my goals than that of the Serious Games Initiative; Fogg does not appear to explicitly correlate captological persuasion with

institutional ideologies. However, further interrogation shows that captology is not fundamentally concerned with altering the user's fundamental conception of how real-world processes work. Rather, it is primarily intended to craft new technological constraints that impose conceptual or behavioral change in users.

To this end, Fogg suggests seven types of persuasive technology tools, which I list, define, and exemplify below.

Reduction—"using computing technology to reduce complex behavior to simple tasks," exemplified by the capitoladvantage.com website, which simplifies political participation by presenting a user with contact information for all of his elected officials based on zip code input.[152]

Tunneling—"leading users through a predetermined set of actions, step by step," illustrated by the registration or electronic payment systems on many websites.[153]

Tailoring—"provid[ing] information relevant to individuals to change their attitudes or behaviors or both," as by scorecard.org, which provides information about polluting institutions local to a user based, again, on zip code input.[154]

Suggestion—"an interactive computing product that suggests a behavior at the most opportune moment," such as roadside speed-monitoring radar systems, which display a driver's speed as he passes.[155]

Self-Monitoring—"[a] type of tool that allows people to monitor their attitudes or behaviors to achieve a predetermined goal or outcome," for example, digital heart-rate monitors.[156]

Surveillance—"computing technology that allows one party to monitor the behavior of another to modify behavior in a specific way," such as Hygiene Guard, a system that monitors hand washing in the retail service industry.[157]

Conditioning—"a computerized system that uses principles of operant conditioning to change behaviors," such as Telecycle, an exercise bike which, when pedaled to a target speed, clarifies the image on a television screen in front of the cycle.[158]

Perhaps these tools offer valid ways of using technology to alter behavior. But not one of them deploys rhetoric; instead, all of Fogg's techniques use technology to alter actions or beliefs without engaging users in a discourse about

the behavior itself or the logics that would recommend such actions or beliefs. Some techniques are more obviously guileful than others, such as the hand washing surveillance system or the website registration system. The approaches that do admit user awareness assume that the user has already understood and accepted the larger reason that the technology inscribes. For example, a self-monitoring technology like a heart-rate monitor assumes an understanding and acceptance of the relationship between cardiovascular exercise and long-term health. Thus, while captology does not explicitly align itself with the service of existing social, political, or corporate institutions, its formal structure—as tactics given a particular, established situation—only allows persuasive technology to work in the service of existing material ends, rather than the reasons one would want to pursue those ends.

More strongly, captology appears to rely only on psychological, not dialectical user responses. This is not surprising given Fogg's background as an experimental psychologist, but he seems generally dismissive of the tradition of philosophical rhetoric, which aligns persuasion with logical argument and discourse. In the nearly three hundred pages of *Persuasive Technology*, Fogg devotes only a half-page sidebar to the subject of rhetoric, dismissively labeled "A Brief History of Persuasion Studies."[159] In this sidebar, Fogg exposes his opinion that psychological methods are inherently more desirable than philosophical ones:

> Today the formal study of persuasion continues to be advanced, primarily through research in social psychology, which began during the early part of the 1900s. Inspired largely by the U.S. government's need to persuade citizens to support war efforts, social psychologists established ambitious research programs to determine what caused people to change their attitudes and behaviors. Later, marketers and advertisers built on the insights gleaned from social psychology, systematically investigating how influence works and often applying their findings to help corporations prosper.[160]

The lack of irony and scrutiny in the discussion of government-funded social science studies for covert manipulation suggests that Fogg is perhaps unaware of the ideology he himself inhabits: one in which existing power structures always devise ethical and desirable goals. Fogg himself is caught in a worldview that limits his understanding of computational persuasion, one driven partly by corporate and government grant funding for his own research. Despite Fogg's suggestion that *captology* acronymizes "computers as persuasive

technologies," the phrase itself conjures the sense of *capture*, of arrest and incarceration by an authority. A better name for Fogg's work would perhaps be *manipulative technology*.

On a less critical note, persuasive technology differs from persuasive games because the former does not deal fundamentally with procedurality. Fogg does discuss the use of simulations in persuasion, including nods to videogames (principally as examples of conditioning, "keeping the player playing," the broader context of which coin-drop is an example), but the majority of his examples rely on presenting data to the user (turning zip codes into lists of data) or mirroring the result of sensor input back to the user (the speed check or the heart-rate monitor).[161] Reduction and tunneling might provide useful frames for procedural rhetorics, but Fogg does not explicitly align them with procedural representation; as is, his examples all exhibit low process intensity.

Black and White Boxes

As a final note of clarification, I would like to say a few things about the function of computer code in my analysis of procedural rhetoric. If computational expression is fundamentally procedural, and if computational procedural expression is crafted through code, then what is the role of code in the practice and analysis of procedural rhetoric?

Since each figure and form of a procedural rhetoric in software and videogames must be constructed with code, it might seem impossible to analyze or discuss them without digging into the code itself. Verbal rhetoric, after all, has identified dozens of figures for the authorship of spoken and written arguments with an eye toward persuasion. Is the same not possible for procedural rhetoric? I believe that it is, but nevertheless none of the analyses you will read herein cites or extrapolates code.

Code is not usually available in compiled software like videogames. Software subsystems are closely held trade secrets, and one simply cannot "open up" *The Sims* or *Grand Theft Auto III* to look at the code running beneath. In software development and testing, there is a name for this distinction. To watch a program's effects and extrapolate potential approaches or problems (in the case of testing) in its code is called *black-box* analysis. Such analysis makes assumptions about the actual operation of the software system, assumptions that may or may not be true. To watch a program's effects and identify actual approaches or problems in its code is called *white-box* analysis

(or sometimes, *glass-box* analysis). Such analysis observes the effects of the system with a partial or complete knowledge of the underlying code that produces those effects. Some white-box analysis can be performed without direct access to code. Examples include architectural descriptions from conference presentations about development techniques, as have been made about *The Sims*, or commonalities in documented subcomponents, as could be done for the RenderWare engine at the heart of *Grand Theft Auto*. I have previously discussed the way early arcade console games' use of common hardware components, and first-person shooters' use of common game engines, each influenced the design of multiple games built on the same platform.[162] Publicly documented hardware and software specifications, software development kits, and decompiled videogame ROMs all offer possible ways of studying the software itself. Such study can shed important light on the material basis for videogame experiences. An understanding of code supplements procedural interpretation. In particular, a procedural rhetorician should strive to understand the affordances of the materials from which a procedural argument is formed. For attorneys, this means understanding the legal code and judicial process. For computational critics, it means understanding the affordances of hardware, software frameworks, and programming languages.[163] This type of expertise is a subset of both procedural criticism and procedural rhetoric, and it is a worthwhile course of study in both fields. But such resources are hardly guaranteed for every computational artifact.

This lack of visibility concerns some critics. Part of Sherry Turkle's criticism of *Sim City* had to do with the simulation's black-box nature, which she saw occluding its position on such matters as tax policy. "Opening the box," in Turkle's opinion, would allow players to see how the simulation runs, providing better ability to critique. The problem with this objection is that the player *can* see how the simulation runs: this is, in no trivial way, what it means to play the game. Turkle's real beef is not with *Sim City*, but with the players: they do not know how to play the game critically. Understanding the simulation at the level of code does not necessarily solve this problem. Even understanding the simulation via some intermediary system poised between the code and the existing interface—some have proposed "policy knobs" that could alter the simulation rules of a game like *Sim City*—does not guarantee an understanding of making and interacting with arguments as processes rather than words. Rather than addressing this problem from the bottom up through code literacy, we need to address it from the top down through

procedural literacy, a topic I will return to in chapter 9. Part of that practice is learning to read processes as a critic. This means playing a videogame or using procedural system with an eye toward identifying and interpreting the rules that drive that system. Such activity is analogous to that of the literary critic interpreting a novel or the film critic reviewing a film—demanding access to a computer program's code might be akin to asking for direct access to an author's or filmmaker's expressive intentions. Despite the flaws of twentieth-century critical theory, one notion worth keeping is that of dissemination, the irreversible movement of the text away from the act of authorship.[163] "Simulation authors," says Gonzalo Frasca, "do not represent a particular event, but a set of potential events. Because of this, they have to think about their objects as systems and consider which are the laws that rule their behaviors. In a similar way, people who interpret simulations create a mental model of it by inferring the rules that govern it."[164] In such simulations, says Frasca, "the goal of the player would be to analyze, contest and revise the model's rules according to his personal ideas and beliefs."

Persuasive Games and Procedural Rhetoric

As examples like *Tax Avoiders*, *P.o.N.G.*, and *Congo Jones and the Raiders of the Lost Bark* suggest, procedural rhetoric is not automatically a part of computational expression, and a great deal of attention is required to construct coherent—let alone effective—procedural rhetorics. In the three sections that follow, I will consider approaches to and examples of procedural rhetorics in three domains, namely, politics, advertising, and education. I have chosen these fields for several reasons. For one part, they are areas I know something about—I have worked professionally in all these areas, I have done academic research and writing in all these areas, and I have created videogames in all these areas. For another part, these represent typical domains for discussions of rhetoric and persuasion in general, and thus are low-hanging fruit for procedural rhetoric and persuasive games. For yet another part, they offer clear goals and referents in the material world. Exposure to procedural rhetorics in politics, advertising, and education should plant the seeds for the interrogation of other, perhaps more subtle expressive domains. And finally, together these three areas cover a broad swath of human social experience, areas that have become largely broken in contemporary culture, and areas I believe videogames can help restore, and not just in small part.

Politics

most don't have a computer monitor as large as their television to facilitate proper visual feedback from a safe distance.

But the constraints of exergame feasibility do not occur in a vacuum. In U.S. homes of the last sixty years, living-room designs have assumed certain lifestyle considerations. One or more adults are expected to rise early in the morning, shower, shave, eat, and commute to work. Kids leave even earlier for school, so that the house is left unoccupied for much of the day. Upon return from work or school, those households lucky enough to avoid dysfunction might enjoy a meal together before relaxing—not working up a sweat—in front of the television. As telecommuting and home offices become more common, many professionals struggle already to find proper space to devote to work at home, even further reducing the space available for avocational activities like television, pleasure reading, and videogaming, let alone health-conscious activities like aerobics, workout devices, or exergaming. For better or worse, the large majority of suburban U.S. homes with the time and money to afford videogame consoles and exergaming software and hardware are simply not designed to support it; physical exertion is something relegated to the neighborhood sidewalk, the local gym, or, more commonly, nowhere at all.

When combined with easy access to long-term credit, the postwar work ethic we short-handedly call "The American Dream" encourages families to buy homes that they can only afford by spending increasingly longer hours at work. Larger homes require us to move deeper into the suburbs, requiring ever-longer commutes across increasingly crowded urban sprawl. Working and commuting for longer hours reduces the time we have with our families and ourselves, leading to a downward spiral of less and less physical activity of any kind. Thus, no matter the efficacy of any of the rhetorics of exergaming, the most important one may reside in the complex social, political, and material structures that determine the spaces we occupy. Exergames reveal the incongruence of work and exercise or leisure, and the prevalence of the ideological structures that push us to work more and move less.

11

Purposes of Persuasion

When we make claims intended to persuade, how do we know if they were successful? As a goal-oriented activity, persuasion might only seem useful if it actually persuades, that is, if the targets of the persuasion change their minds or change their actions. Aristotle's notion of a final cause explains the reason something is made or done; for example, one might walk in order to get healthy.[1] When applied to rhetoric, final causes involve a persuasion to "right judgment, action, or belief."[2] Each of Aristotle's types of persuasive oratory has a different final cause; forensic oratory strives for justice, deliberative oratory strives for public benefit, and epideictic oratory strives for honor.[3] All of these domains might fall under the purview of procedural rhetoric as well. Computer simulations are used with increasing frequency in courtrooms, where they serve as forensic persuasion. *JFK Reloaded*, discussed in chapter 4, might take on a very different persuasive tone if it had been designed for the kind of conspiracy trial depicted in Oliver Stone's film *JFK*. Many of the public policy games also discussed in the first section persuade on the deliberative register. And the advertising and learning games discussed in the final two sections persuade on the epideictic register.

A statement is persuasive, in Aristotle's words, "because there is someone whom it persuades."[4] But precisely how do we know if and when a procedural "statement" has persuaded someone? In classical rhetoric of the ideal form, persuasion entails deliberation, which yields action through reasoned assent. Interlocutors might indicate success directly: "you have persuaded me." In such cases, the persuasion is immediate, determinate, and directly known to

the orator. A court of law is perhaps the best example of this sort of certainty. The defendant offers his defense, awaits the jury's deliberation, and then ceremonially receives notice of the success or failure of the persuasion. Deliberative rhetoric follows suit, albeit less powerfully, by means of the democratic process. We carry over this method of measuring persuasion in modern political elections, but the myriad forms and instances of persuasive propositions—speeches, posters, television advertisements—occlude the individual successes and failures of individual tactics. Epideictic rhetoric usually covers the praise or censure of something, or commonly, someone; this is the domain of the ceremonial harangue. Such cases often mirror the deliberative and the judicial, the orator making an appeal to an audience to trust or distrust another human agent. All of these modes of persuasion enjoy the benefit of direct access to the subjects of persuasion: the law court, the agora, and the private symposium support public interjection and challenge. In religious rhetoric, preaching that leads primarily or exclusively to conversion (missionary sermon) provides equally simple evidence of persuasion: the persuaded agent's acceptance of Christ as savior and subsequent acceptance of the initiation rituals of a particular sect. This type of persuasive outcome is not unlike that of the law court or the public forum, in which some material and measurable gesture affirms the interlocutor's acceptance of the orator's argument.

In these cases, the ability to determine whether someone has been persuaded is clear. The object of the persuasion is held accountable, even held hostage for a response. The jury may not complete its duties without answering for the effectiveness of each candidate's persuasion. The same goes for the electorate, who cannot avoid responding to the relative persuasiveness of each of a set of candidates. The only gestures that avoid such accounting are abstention. But even then, individual abstention is not enough; the entire body of jurors or voters must opt out in order to avoid answering the call of persuasion. In such a case, the group is no longer commenting on the persuasiveness of a candidate or a defendant, but on some inherent problem in the method by which they have been asked to judge him.

Videogames—especially serious games—have been implicated in a similar logic of accountability. The value of a videogame in any particular situation is always related to a method of measurement that already implies players' support of the system that produced the videogame. Consider commercial games, which are judged primarily by two measures. First, a commercial game's success is judged by aggregate reviews in magazines and websites like

Metacritic.com. Metacritic.com compiles reviews from other sources and takes a weighted average to arrive at a "metascore" for the product.[5] These scores are taken seriously by buyers and publishers alike; Electronic Arts Chief Creative Officer Bing Gordon has argued that EA brass use Metacritic as a thermometer for the short- and long-term success of their titles.[6] Second, a commercial game's success is judged by its financial performance. Products that sell well are generally accorded more cultural and artistic relevance than those that do not. Games share these criteria with other commercial entertainment goods such as film and books, for which quality is often, and questionably, elided with marketability. Where niche markets make claims for the quality of such a product, the artifact is usually relegated a special "cult status" outside normal commercial success. Cult movies, comics, books, and videogames are rarely mass-market successes, and thus the commercial industries that produce them literally do not account for their impact. The very use of the word *cult* to describe such works speaks to their isolation from generally accepted practice, just as a religious cult's beliefs are misplaced from the norm. Cult veneration is often characterized as daft or even dangerous, even if those in the mainstream pursue similar activities with equal zeal. Commercial games thus foreclose any judgment save that of the market. And market numbers are literally counted and compared, just like jury votes or ballots.

Serious games impose a distinct but similar strategy to determine their success. In the case of the subject areas I have discussed in the previous chapters—politics, advertising, and learning—each has its own logic that stands in for the marketplace. Politics seeks to establish policy positions that support the political agents and constituencies who advance those positions. Ideology supports these claims by forming a foundation for the goals of political structures. Advertising seeks to produce image-markets that support the agencies that produce advertising. Media buying supports this infrastructure by forming a foundation for the goals of advertisers. Learning seeks to reproduce structures of knowledge. Schooling supports the infrastructure of work and the economy by aligning the goals of education with those of institutionalization and production.

Earlier I argued that the serious games movement in its current form supports and extends the closed goals of such institutions. *Seriousness* helps create an opposition to triviality, positioning the goals of government, business, and educational institutions against those of entertainment. Ironically, as the use

of Metacritic as an example demonstrates, commercial (entertainment) games relate leisure to business, to the exchange of disks and bits for capital. Serious games replace the cycle of capital with the cycle of political regimes, the cycle of industrial production, the cycle of institutionalized social goals. Just as the commercial industry has no means to accept financially unsuccessful products and thus must relegate such titles to the realm of cult, so the serious games industry has no means to accept disruptive products that challenge the very operation of the institutions it hopes to serve.

Where commercial videogames cite financial success as a primary measure of success, serious games cite other, less familiar factors. If big business is measured by the amount of money it brings in, and if the logics of institutions like government and education take the place of capital in serious games, then the latter must measure success by the amount of reinforcement a game generates for a sponsoring institution. Consider David Michael and Sande Chen's explanation of the differences between commercial and serious games development:

> Modern education is built around the concept of mastering (and/or memorizing) designated content, progressing through a number of school levels (primary, secondary, college, etc.) until finally graduating with a diploma or degree. Even outside the field of education, corporate and military training works within a similar structure. Material is presented to the students/trainees, and their mastery of that material is tested in various ways before they get credit for learning the material.
>
> For serious games to be considered a useful tool to educators and trainers, they must provide testing and progress tracking. The results of the testing must be recognizable within the context of the education or training.[7]

This analysis clearly argues that serious games must support the goals of educators to prosper. Education, argue Michael and Chen, is built around demonstrable mastery of presented materials, tested within the frame of behaviorist reinforcement, and capped by "credit"—a monetary metaphor that symbolizes the player/learner's "earnings," namely a diploma or other token of value within the sponsoring institution. The refusal to participate in this educational economy simply does not count as learning. Michael and Chen also make it clear that serious games must be "useful" to educators and trainers. The output of such games must be accounted for on the balance sheets of these institutions. This motivation itself is driven by the desire for serious games

to grow into a (financially) mature industry like commercial games; the obvious way to accomplish this feat is to support to the goals of institutions that can pay handsome sums for services.

Despite their earlier appeal to behaviorist testing, Michael and Chen further clarify that serious games offer the possibility of moving beyond the written test, instead demonstrating "processes, interactions, systems, causes and consequences," a claim that resonates with the type of persuasion I have called procedural rhetoric.[8] However, the two clarify that such methodologies impose additional requirements. Citing Clark C. Abt's original 1970 notion of serious games, Michael and Chen adopt the former's criteria for judging the "usefulness" of such a game:

> active involvement and stimulation of all players;
> sufficient realism to convey the essential truths of the simulation;
> clarity of consequences and their causes both in rules and gameplay;
> repeatability and reliability of the entire process.[9]

The first and last criteria are the most telling. To be useful, a serious game must stimulate and involve *all* players, not merely a subset of players. In the case of a school or business, this means that all students or employees must find commensurate value in such a game; otherwise it loses value in direct proportion to fragmentation of the audience. Just as commercial games strive to appeal to the greatest possible number of buyers, so serious games should strive to appeal to the greatest possible number of learners. In this case, the monetary value of commercial success is transferred to the sponsoring organization, for example, the number of students that will be taught chemistry to state expectations or the lowered opportunity cost of a game-based corporate trainer. Additionally, the outcome of such a game must be repeatable and reliable, not merely in part but throughout the "entire process." In other words, the gameplay session must maintain a tight coupling with the institution's existing processes, so that its support of those processes is ensured. "Realism" and "clarity" help convey the "essential truths" of this coupling.

Michael and Chen offer strategies by which serious games developers can ensure that their projects meet these expectations. Developers are advised to include "extensive, detailed logging of all player choices and actions" to allow postplay correlation of in-game to out-of-game actions. Presumably, any

actions that do not produce or forward desirable institutional activity must be excised from gameplay—or, at the very least, developers should amplify those in-game actions that maximize institutional goals. Furthermore, argue Michael and Chen, serious games "are expected to *assist* teachers, not *replace* them. Serious games, therefore, need to be integrated into the education process."[10] That is to say, serious games are tools of the institution, by which it leverages its existing purchase outside the domain of games to drive the gears of progress. The educator or trainer guides the player's advancement to ensure that he doesn't "misplay" the game and thereby consider insights or outcomes outside the purview of desirable, condoned learning. In these cases, serious games may even bind with other measures of institutional success. For example, serious games in educational contexts often help students prepare for written tests. Serious games for corporate training often integrate with learning management systems (LMSs), technology infrastructures that automate written assessment, typically via Web-based interfaces.[11] Inevitably, serious games depend on accountability to authorities.

Assessment

The type of overall accountability of which serious games partake is usually called *assessment*. Used in a variety of learning theories, assessment generically refers to the process by which a teacher or some other authority figure evaluates someone. Educational theorists often disagree about the best methodologies for assessment. Popular approaches include Bloom's taxonomy of six levels of competence;[12] rubrics, or anchors for quantitative and qualitative performance; indirect measures, such as exit surveys; and benchmarks, or quantitative comparisons. In every case, assessment entails the comparison of a student's actual performance with expected, desired, or forecasted performance. Serious games directly adopt this understanding of assessment. For example, in his technical book on developing serious games, Bryan Bergeron offers the following software development–specific definition of assessment: "Assessment involves comparing the goals established during the requirements specification stage of development with measurable behavior changes in players after gameplay."[13]

Assessment always requires an appeal to an existing domain. An assessment equates one form of symbolic action with another form of symbolic action through some mediating measurement. In serious games, gameplay (a

form of procedural symbolic action) is compared with desirable behavior within an institution, via material measurements like written tests or job performance.

It is worth noting that *assessment* has another, related meaning: that of valuation in general and taxation in particular. One assesses the value of a house or a diamond just as one assesses the importance of a business problem. The word derives from the Latin *assidere*, which literally means *to sit by*, but which took on the medieval meaning of levying tax. In modern times, we still use the term in relation to taxation; for example, a locality assesses properties at a certain rate. In its Latinate sense, assessment can also imply hostility, besiegement or blockade, and this meaning assuredly informs our notion of assessment as taxation. Taxes are levied in exchange for permission to pass, to carry on.

Assessment is thus fundamentally related to material exchange and economic return. A sovereign or a government provides protection and services in exchange for tax. A corporation provides job and industry training in exchange for the performance of job duties. A public school provides education in exchange for the immediate demonstration of progress toward defined social goals. Often, unspoken demands ride on the heels of such exchanges. Taxpayers have only limited control of their government's use of such moneys. Employees must adopt the goals and values of their employers. And students must ascribe to the implicit social program of institutionalized education. In many cases, the alternatives are dire. Failure to pay taxes leads to monetary penalties or audits; habitual penalty leads to incarceration. Failure to support one's employer leads to dismissal; habitual dismissal leads to starvation. Failure to embrace the educational system leads to social stigma; habitual rejection leads to ignominy.

In most cases, political, corporate, and educational institutions rely on one basic form of assessment, derived directly from the estimation of monetary value for taxation: numerical measurement. This goal motivates Michael and Chen's recommendation that developers store the details of players' every choice and action. If every action is stored, then the game can output any type of numerical report, from average score to average player velocity. Quantitative assessment is pervasive in serious games and educational technology in general. Such data are the foundation of educational assessment; we give students percentile grades, which we calculate based on weighted correct and incorrect responses, which we in turn render correct or incorrect by virtue of

a pencil mark in a particular numeric index on a test form. We count academic progress by grade level, in numerical order, with progress incremented in convenient rhythm with the calendar. We judge our sons and daughters and their future college careers by standardized test scores, numbers that have become metaphors for potential. We count college credit by units, and we understand academic effort as a function of the relative number of units assigned to a course. We assign times and durations to intellectual pursuits, each class meeting lasting as much time as the last and the next. We choose our neighborhoods based on the performance ratios of local schools, which in turn win their funding by the same measures of performance. No Child Left Behind amplifies education's focus on numerical measurement in the hope of increasing "accountability" by calculating school performance from the net assessments of their students.

In politics, newspapers cover Gallup polls that numerize public opinion. Results are broken down into districts, demographics, interest groups, and every other category imaginable. On election night in the United States, we watch as districts, counties, and states report their results, which are converted into the scrip of electoral votes, then further accrued to establish a winner. Would-be politicos measure success first by how many petition signatures they obtain to get on the ballot, then by dollars raised to run their campaigns, then by public opinion polls, next by exit polls, and finally by raw tallies of votes. Public policy is frequently equated with financial expenditure, and budget figures serve as proxies for moral value. Political consultant Frank Luntz, discussed in chapter 3, pays ordinary people to come to his offices to provide fodder for new message development. Subjects watch recorded interviews and continuously adjust a handheld dial to indicate their relatively positive or negative response to the speaker at a given time. Luntz's "message development" team mines the data and cross-references it with the words and phrases uttered at corresponding time-codes, accepting and rejecting possible terms based on numerical assessment.

In advertising, viewership is measured synecdochically, in "eyeballs." Decades ago, Nielsen Media Research concocted the system of television ratings, which bases the value of a show on sampling and viewer logs. The more viewers, the more valuable the advertising space on the show. Thanks to Nielsen's monopoly of the advertising metrics market, marketing value has become directly correlated to Nielsen's algorithms of viewer share. Value in other marketing media remains principally tied to viewership—the number

of cars that pass a billboard, the number of commuters on a subway platform, the number of subscribers to a magazine. Like pollsters, marketers correlate these against demographics, matchmaking for the largest number of matching eyeballs. The Internet has been celebrated in marketing circles for its ability to increase accountability in advertising; now banner ad views could be tracked against click-throughs, showing the number of ad viewers who became website viewers. Coupons, website clicks, and direct mail responses correlate viewership to purchases, producing new measures of response rates and "handraising." Promotions and contests collect consumer information, filling databases with ever-increasing numbers of records, which in turn bear new direct response mailers and email offers.

When applied to videogames, numerical assessment seeks to account for player gestures, immediately and indelibly, in the service of the sponsoring agency's known and predefined goals. Bergeron, Michael, and Chen urge serious game developers to first define fixed goals for a game and then correlate the numerical output of play against these goals. The undeniable empirical result is the efficacy of the game. When compared with other, known methods for achieving the same result, one can determine the game's return on investment (ROI), the relative cost benefit of achieving the desired results. Once again, performance is collapsed into financial expenditure.

Consider the type of advergames discussed earlier. Games with weak procedural rhetorics like *Ms. Match* are created in the image of popular casual games to produce high numbers of plays and high time-per-play. In accordance with Michael and Chen's advice on recorded metrics, the site that houses the game can measure the number of times the page and game have been loaded as well as the duration of play. Furthermore, through their Kewlbox.com portal, the creators are able to leverage multiple plays per user session across several of their advertising clients, thus providing increased numerical metrics. Likewise, in-game ad network Massive has partnered with metrics firm Nielsen to create measurement tools for in-game ad placements.[14] Through a normal Internet connection, Nielsen can record player time in front of a Massive-placed ad, as well as the location of that player and ad in the game or game level, as well as additional geometric details such as the angle of view between the player and the ad image. Such metrics allow the advertising industry to continue to justify advertising value through quantitative measurement. Advertisers continue to extend this model. In early 2006, Montréal-based First Person Plural (FPP) announced their intention to use

games as a source for database marketing. The group plans to release a driving game called *HumanLimit* for free, tempting players with the promise of a $1 million prize.[15] FPP would collect registrations for future marketing as well as sell ad space in the game's urban environment through a system much like Massive's. Once again, we have an example of a game striving for results through immediate, numerical evidence.

Other games attempt to account for their success through psychological or physiological metrics. Consider the educational/healthcare game *EyeSpy: The Matrix*, a conditioning game for self-esteem.[16] In the game, players are presented with a 4 × 4 grid of faces. One face in the grid is smiling; the rest frown or scowl. The player is instructed to click on the "smiling/accepting" face as quickly as possible. The researchers who developed the game conducted interviews and measurements with a control group and with players of the game and published research claiming that self-esteem can be enhanced via the randomized, smiling faces of *The Matrix*.[17] The game, they argue, produces implicit self-esteem merely through exposure to the smiling faces. And Red Octane's pro-*DDR* campaign claims that Tanya Jessen lost ninety-five pounds using the game as her only means of exercise.[18]

In serious games, performance is always assumed to correlate with numerical progress, and numerical progress is often tied directly or indirectly to the accrual of or reduction in capital. Furthermore, such a performance assessment is usually assumed to bear interest very rapidly, perhaps even immediately after a session of the game is completed. The institutions that fund and use serious games—the military, government, educational institutions, healthcare institutions, and corporations—impose such demands. For these institutions, persuasion implies the production of assent as rapidly as possible. But as I have argued, procedural rhetorics can also challenge the situations that contain them, exposing the logic of their operations and opening the possibility for new configurations. Accounting for such results is impossible from within the framework of the system a procedural rhetoric hopes to question; the currency of such a system is no longer valid. If we want to know how persuasive games persuade, we need to find another model.

Deliberation

When we created *The Howard Dean for Iowa Game*, the campaign stood at the peak of its success using grassroots outreach. Convinced that all their work could drive registrations, contributions, and further commitments to volunteer, the campaign asked us to include links to such activities in the game itself. These links registered click-throughs to a metrics server, which the campaign used to track the performance of a variety of campaigns. When I talk to the press about political games like *The Howard Dean for Iowa Game* or *Disaffected!*, they inevitably ask how many people played the game, or how long they played, or if we correlated gameplay with registrations or contributions. They are hoping for information like that stored by the metrics server. But the most interesting results the game produced had nothing to do with the number of plays, clicks from the game to the website, or contributions generated. Rather, those came from conversations about the game's procedural rhetoric itself.

In chapter 4, I argued that digital democracy has failed to represent political issues through computation, favoring encyclopedic artifacts like blogs over procedural ones like videogames. Videogames facilitate player consideration of rule-based systems, but blogs facilitate open discussion. Conveniently, Dean's campaign unfolded the same year weblogs came into their own as a popular medium, and we were fortunate to be able to watch players unpack their experiences with the games in both mass media publications and blogs. Responses were mixed, from "Half-assed mind-control experiment"[19] to "I have yet to decide if it's creative or creepy"[20] to "it is too incredible for words to describe."[21] These qualitative responses were both endearing and amusing, even the harshly negative ones. The more significant responses attempted to understand our procedural representation of grassroots outreach in the context of the broader campaign.

While many bloggers weighed in on their love, hate, or ambivalence for the game, others interrogated its rules and attempted to relate those rules to the meaning of the campaign. Wrote critic Justin Hall, "It's the arcade/action side of a real-time strategy game, resource gathering through fast clicking. But there's no resulting overview, no political resource allocation game."[22] Game journalist David Thomas took Hall's observation further in his own review.

> The score in the game is simple—the more people you recruit to the Dean side, the better. . . . You recruit, and while you do it, you get little pro-Dean messages flashing around the corners or your screen. . . .

> And in a few cute minutes of play with a simple set of games, politics is revealed for what it is—a raw game of numbers. The Dean game shows that his campaign is no different than Bush's. No different than any other in recent memory. The political process has been hijacked by analysis and planners looking at demographic data and figuring out how to build landslides of word-of-mouth influence. What Dean says doesn't matter in this game, nor in the real world. It's simply the calculus of mobilization. Get enough waves of volunteers recruiting volunteers and you have the perfect Amway pyramid—multi-level marketing your way to the presidency.[23]

Unlike many of the comments we tracked, Thomas's criticism ceases to traverse the game's surface and begins to interrogate the meaning of its rules. Politics, argues *The Howard Dean for Iowa Game*, is a numbers game. Like advertising, like education, like the very notion of assessment addressed above, the game privileges warm bodies over public policy. In such a scenario, political action is postponed. Hall makes an apology for the strategy, noting its credibility as a campaign strategy: "*The Howard Dean for Iowa Game* does remind us that the political process is made up of rote tasks performed by dedicated followers—the earlier in the process the better. So as a political education project, it is rudimentarily successful—recruit early and often." But Thomas worries that the strategy never ends, the candidate never stops campaigning to begin governing. On the one hand, Thomas's critique attacks the Dean campaign in particular; its focus on grassroots outreach and recruitment overwhelmed any semblance of discourse about the candidate's political issues. His progressive supporters overran Dean's record as a moderate in the small, rural state of Vermont. The image of Dean as a rural centrist with a commitment to public and social works was replaced by one of his coastal, urban followers: the latte-swilling, Volvo-driving leftists whose aggregate political persona replaced that of Dean. On the other hand, Thomas's appraisal suggests that it is not just Dean for whom amassing human wealth has replaced policy, but all politicians. Thomas continues, "the Dean for Iowa game tells us everything we need to know about the campaign. It's about votes, not about issues. It's about recruitment, not about people. It's about building momentum, not about being right."[24] Such is the procedural rhetoric of politics: one amasses supporters in support of nothing more than support itself. Political justice becomes, in Alain Badiou's words, "the harmonization of the interplay of interests."[25]

How might we measure David Thomas's interesting reading of the rhetoric of *The Howard Dean for Iowa Game*? Again the imps of numerical proof rear their horned heads. We might consider the influence of Thomas's syndicated newspaper column. We might count the readers on Thomas's buzzcut.com website, where the article was originally published. Perhaps we might count the number of replies in the comment thread attached to the article, or perhaps even the number of unique voices in that thread. Or, Google-like, we might count the inbound links, taking reference as a measure of value. But such measures impose the very criticism Thomas mounts against politics upon his own reading: issues, debate, and consideration are dismissed in favor of symbolic wealth.

The real promise of Thomas's response to the game's argument would come from discursive, not numerical analysis. What do he and his readers do with this new perspective on Dean's campaign, or on campaigns in general? Do they abandon all pretense of faith in the democratic process? Do they move for revolution? Do they challenge the candidate to forgo abstraction in favor of policy? And moreover, is this type of response a success or a failure in persuasion?

The persuasive goal of *The Howard Dean for Iowa Game*, we should remember, was to motivate fencesitter supporters to participate in the campaign. Thomas himself seems to self-identify as one such target: "I, like a lot of other people, have been thinking maybe Howard Dean wouldn't be such a bad guy to be president. The 'fighting centrist' acts like he just wants to do the right thing. And in American politics, that's a rare and possibly mythical beast."[26] If the only type of support valid for persuasion is the contribution of money or volunteer time, then certainly Thomas was not persuaded. But if increasingly sophisticated interrogation of the candidate and the campaign offers sufficient evidence of a progression from curious, possible supporter to inquisitive, prospective supporter, we need not consider the videogame a persuasive failure. Rather than producing assent, which can be measured with a yea or nay, the game produces deliberation, which implies neither immediate assent nor dissent.

There are precedents for styles of rhetoric that muster deliberation as evidence of persuasion. Modes of Judeo-Christian rhetoric outside of missionary sermon are less easily compared to the classical modes of evidence. Old Testament covenant speech follows a fixed pattern: "first, to strengthen the authority of the Lord by reminding the audience of what he has done; second,

to add new commandments; and third, to conclude with a warning of what will happen if the commandments are disregarded."[27] Such rhetorical acts are less easily mapped to the classical model—their primary purpose is to reinforce the covenant with God, which in turn guides everyday behavior in relation to prophetic caution. In Christian homiletics, propositions carry calls to duty or repentance, usually making appeals to the truth of scripture as a message "seized by the soul" and then deliberated and accepted through the study of scripture.[28] Here persuasion is held in suspense. In some form, the homily persuades when the parishioner agrees to accept it as a proposition for duty or repentance. In both the Catholic and Protestant church, homily often leads to a direct call to commitment or repentance in the form of prayer or contrition. Such actions could be construed as evidence that the homily has persuaded its audience. But the subsequent (and particularly Protestant) call to hermeneutics, or the interpretation of scripture, complicates matters. George A. Kennedy correlates Christian hermeneutics to Aristotelian dialectic: both involve the discovery of new material to advance as propositions in arguments.[29] But homily is advanced unceremoniously. A clerical authority explicates a scriptural passage for the congregation, including how to make use of it in daily life. The call to hermeneutics helps individual parishioners make personal sense of the homiletic elucidation. *Homily* and *sermon* both mean "conversation" or "being together" in Greek (ὁμιλία) and Latin (*sermō*) respectively, but the intercourse does not take place between the congregation and the cleric; rather the set of possible conversations is framed by the homily. Hermeneutics helps the parishioner specify the general homiletic rule to his particular situation.

Preaching in general and homily in particular take an important stance on the measurement of persuasive success by relinquishing measurement in favor of interrogation. The purpose of the cleric is to open a conceptual space for the parishioner, in relation to which the latter might reconfigure his personal life. Classical persuasion privileges consideration, debate, and response, but it typically closes such debate once the matter is decided. Unlike classical persuasion, homily enforces a set of constraints—one would not be wrong to call them rules—that are intended to structure thought and action for the object of the persuasion. Homily itself is verbal, not procedural, but nevertheless a procedural system founds its verbal rhetoric—in this case the system of belief delineated in scripture. Religious thought in general offers an unusual precedent for the conscious expression of a rule-based system. In this case, persuasion is perhaps never perfected, but rather continuously unfolding over time, challenged and readdressed as new "conversations" with an underlying system.

In religious rhetoric, a procedural system is deliberately codified in artifacts, traditions, and texts. We call ascription to such a system *faith*, a devotion to this system. Alain Badiou uses the term *fidelity* in a different way. For any situation, fidelity is a set of procedures that "separate out . . . those which depend on an event."[30] The event, we should recall, is the disruptive reconfiguration of a situation, one that has the potential to break entirely from its previous structure. Badiou's notion of fidelity is modeled after amorous relations, not religious faith. The relationship of love stands in relation to a disruption in the lives of the lover and the beloved. Love "founds itself upon an intervention."[31] Fidelity to this event comes only in the subsequent protection of its consequences. Marriage, for example, as an emblem of fidelity to love, exists as the ongoing commitment to understand two previous individual lives as one pair of intertwined lives. The gesture that establishes a situation, what Badiou calls the count-as-one and which I have called a unit operation, sets the rules for a fidelity. Or as Badiou puts it, "what allows us to evaluate a fidelity is its result."[32] It is measured by the production of new gestures that can be included in the situation. Fidelity helps us understand the uniqueness of Badiou's concept of the event; the event is not an isolated instance, but rather is something that always subsumes its participants. As Peter Hallward clarifies: "A third person looking in on a loving couple may be charmed or irritated, but is unlikely to share in the experience of love itself."[33] In turn, new events may erupt, reconfiguring the situation and demanding a new fidelity. One might think of the birth of a child as an event that alters the fidelity of a couple in love, requiring fidelity of a new kind.

Badiou reserves the name *subject* for beings transformed by an event into a relationship of fidelity. The event is disruptive, reconfiguring the structure of a situation. Within Badiou's vocabulary, we might then argue that procedural rhetorics make claims about the structure of a situation, in the hopes of inspiring a disruptive event. But events and the subjects they produce are individual, and no one relationship exists between the logic of system (e.g., political campaigning) and a singular agent (e.g., the citizen). Moreover, the event itself is unthinkable within the current structure of a situation. Badiou articulates a trace of this potential event within the configuration of a situation, which he names the *evental site*.[34] The evental site is "an abnormal multiple . . . the

minimal effect of structure which can be conceived; it is such that it belongs to the situation, whilst what belongs to it in turn does not."[35] This odd multiple is a wormhole into other situations; like a rift in space-time, Badiou locates the evental site "on the edge of the void."[36] The evental site can belong to multiple situations simultaneously without inconsistency, and it gives participants of a situation perspective that can lead to disruption. Peter Hallward attempts to simplify the concept thus: "An evental site is . . . an element of a situation that, as inspected from a perspective within the situation, has no recognizable elements or qualities of its own (no elements in common with the situation)."[37] Hallward offers clear examples as well. The participants of anti-Semitic situations do not conceive of individual Jews but only of an "indistinct gap in the normal social fabric."[38] Likewise, participants of homophobic situations do not see gays as "particular men and women engaged in particular relationships," but only as a singular element in an otherwise heterosexual situation.[39]

The evental site takes on special status in relation to the situation. It is the place where "radical innovation" emerges.[40] Actually changing the situation requires an event, but motivated recognition of the situation's structure can take place at the evental site. Procedural rhetorics couple particularly well with Badiou's set-theoretical ontology. Badiou understands situations as arrangements of elements, founded by the gesture of the count-as-one. The count-as-one explains the situation's state. I have extended this understanding of state in the concept of the unit operation, which refers not only to the organization of elements in a situation, but also to the logic by which the situation operates.

Persuasive games expose the logic of situations in an attempt to draw players' attention to an evental site and encourage them to problematize the situation. Videogames themselves cannot produce events; they are, after all, representations. But they can help members of a situation address the logic that guides it and begin to make movements to improve it. David Thomas's response to *The Howard Dean for Iowa Game* traces this gesture in a surprising way, one that both undermines the campaign's intentions and supports them in a new, more sophisticated way.

Previously, I have argued that videogames represent in the gap between procedural representation and individual subjectivity.[41] The disparity between the simulation and the player's understanding of the source system it models creates a crisis in the player; I named this crisis simulation fever, a madness

through which an interrogation of the rules that drive both systems begins.[42] The vertigo of this fever—one gets *simsick* as he might get seasick—motivates criticism.

Procedural rhetoric also produces simulation fever. It motivates a player to address the logic of a situation in general, and the point at which it breaks down and gives way to a new situation in particular. If we adopt Badiou's terminology, a procedural rhetoric persuades when it helps discern the evental site of a situation—the place where current practice breaks down. Players are persuaded when they enter a crisis in relation to this logic. Persuasion is related to the player's ability to see and understand the simulation author's implicit or explicit claims about the logic of the situation represented.

One can imagine several forms of procedural rhetoric. For one part, a persuasive game might attempt to foreclose the evental site, reinforcing the existing logic of the situation. *America's Army* is an example of such a game; it hopes to represent and reinforce the value system of the U.S. Army and the commutative nature of U.S. defense and military policy. For another part, a persuasive game might attempt to unseat the existing logic of a situation, highlighting one particular evental site. *Disaffected!* is an example of such a game; it hopes to convert consumer dissatisfaction into introspection about consumer practices. For yet another part, a persuasive game might sit ambiguously between the support and ouster of an existing logic. *The Howard Dean for Iowa Game* and *Grand Theft Auto: San Andreas* are examples of this type of game; the former intends to support the current state of affairs about campaigning, but in select cases it actually undermines that situation. The latter intends to abstract race and social class more than close readings reveal it to do.

Conversations

David Thomas's critique of *The Howard Dean for Iowa Game* and my own reading of *Grand Theft Auto: San Andreas* show how the production of discourse can help trace the status of persuasion in procedural rhetorics. The notion of reflection as articulated in the rhetorical goals of homily and artistic practice offer a useful extension to acts of gameplay. Procedural rhetorics expose the way things work, but reflection creates and prolongs this process. Criticism is one aspect of the reflective process. But criticism requires formal

discourse, often limiting itself to the academic and cultural elite. More generally, persuasive games can produce discourse in the general sense, like the blog conversations that cropped up around the Dean game.

Henry Jenkins and Kurt Squire argue that *Animal Crossing* is architected to create such informal discourse:

> At first glance, such simple game interactions as growing flowers may sound mundane, but imagine your spouse's frustration as she discovers that you chopped down her beloved tree for firewood, or the simple pleasures of your best friend leaving you a note to please go to the fresh market on Sunday morning for some produce she needs to complete a quest. Families (of all types) live increasingly disjointed lives, but the whole family can play *Animal Crossing* even if they can rarely all sit down to dinner together. When families do gather, the game offers common points of reference and common projects to discuss. At its best, *Animal Crossing* harkens back to the intense social interactions that surrounded Monopoly, Risk, or Life.[43]

The game's temporal structure—a persistent world directly bound to the console's system clock—creates rifts in the gameplay experience. Children, for example, might miss high-value fish that appear regularly at night and therefore after bedtime. A child might ask his parent to catch one on his behalf and send it via the in-game postal service.[44] This request might take place around the dinner table, as Jenkins and Squire suggest, where it could spur additional, informal discussion about the game's economic system. A parent might ask what the child hopes to do with the spoils of such an expedition, or he might even ask for a commission for the trouble. Such discussions help tease out the procedural rhetoric in the game—an informal, local criticism; they also help players share their ongoing relationship with the game's ambiguous position on consumption and satisfaction.

In advertising, conversations are increasingly valued as well, but only when they can be mustered in support of existing goals. Consider Seth Godin's meditation on the role of community in advertising:

> What makes them [groups of people] a community is that they talk to each other. They share ideas and adjust their biases and choices based on what other members of the community do. . . . I've decided to occasionally use the word community instead of market. That's because I think the best marketing goes on when you talk to a group that shares a worldview and also talks about it—a community.[45]

Just as Jenkins and Squire portray their family of *Animal Crossing* players, Godin argues that communities use discourse to establish and refine their beliefs. But the benefit of communities to advertisers comes from their demographic stability, not their discursive potential. Put differently, for advertisers the usefulness and benefit of communities arises from leverage, the ability to address a large group with a single message. Despite Godin's simplistic yet clever linguistic dance, he uses *community* merely as a euphemism for *market*, not as a disruption of it. The ability for a community to consider, refine, revise, and reinvent itself bears fruit for advertisers only if such opinions found a large enough collective to consume media-placed messages. Even a focus on niche markets rallies around the same logic; tools like blog advertising or search keyword networks simply replicate mass-market media advertising on a smaller scale.

Compare this approach to the revisionist demonstrative advertising of a game like *The Toilet Training Game* or *SeaWorld Adventure Park Tycoon*, which mount procedural rhetorics about the operational claims of products and services. Players contextualize these functional networks in their own social context, where they subject them to uniquely individual consideration. In some cases, these conversations might take place between multiple parties. For example, consider a family reflecting on the applicability of a Jeep Commander while playing *Xtreme Errands*. In other cases, perhaps most cases, the conversation takes place internally; the player asks himself questions about the intersection of a product's features with his own routine and values.

In educational technology, reflection is often measured through the quality or content of conversations that take place outside of a computer-mediated system like a videogame. MIT's Education Arcade created a game called *Revolution*, which simulates life in colonial Williamsburg.[46] Built as a modification of the popular role-playing game *Neverwinter Nights*,[47] *Revolution* gives the player a particular social role, "from an upper class lawyer, to a patriotic blacksmith, to an African American house slave," and allows exploration of the social environment from these varied perspectives.[48] In contrast to most Revolutionary War history curricula, the educational goals of *Revolution* cover the interrelated and often conflicting goals of eighteenth-century life.

Oxford University researcher Russell Francis deployed an unusual technique in an attempt to characterize the learning outcomes of *Revolution*. Because the game's value comes from the interrogation of social history, Francis determined that multiple, intersected conversations about aspects of

the game's complex social system would be necessary. Francis started by asking students to synthesize their in-game experiences by composing a diary for a game character. He then extended this approach to machinima, having the students create and narrate short films about their characters' virtual lives as evidence of synthesis.[49] Francis noted that the machinima diaries and their constituent artifacts could become platforms for further learning or discussions in email to friends, creating additional discourse.

Other researchers have attempted to build conversation systems directly into their educational games. Mary Ulicsak et al. describe a game created at the NESTA Futurelab called *Savannah*.[50] In the game, children take on the role of lions in a virtual savannah. Mobile devices map the game world onto the topology of a school playground. Ulicsak et al. explain the game dynamics as follows:

> Out in the field children are confronted with the challenges faced by lions (hunger, thirst, human and other hazards, the changing seasons). In the field, children play in a pride of 6 lions and have to develop collective strategies for hunting and survival. A separate space, the "den," is an indoor site in which the children act as "game players" rather than lions, planning strategies for field-play, and in which they have access to advisors, an interactive whiteboard that displays lions' movements in the field, and paper and other resources.[51]

In this case, a space for synthetic performance is architected into the game itself, with teacher interaction and whiteboard/paper scratchings constituting deliverables.

A similar situation takes place in *The Grocery Game*, discussed in chapter 1. The game is actually played in the aisles of the supermarket, but the website serves as a virtual clubhouse for its players. In addition to acquiring the latest bulkfood and coupon lists, players use the site's messageboards for encouragement. Many share their goals, including the things they are saving for or the reasons they are playing. Consider the following reports taken from the game's messageboards:

> I . . . paid off 2 credit cards, still working on a few others and have saved up enough for a down on a house. It won't be a huge house for our family of 7, but being able to go from $1,000.00 a month in rent to $400–$500 in a house note and being able to live out in the country is worth it.

> I used my savings to hire a housekeeper. So no matter how messy my four kids get, I know the entire house will be spotless at least once a week. For about 60 seconds . . . I saved more than enough to cover the costs by just lowering our out of control grocery/Sam's [Club]/Costco bills.[52]

Goals like these personalize the game's procedural rhetoric—beat the food retail business model and keep the money in your pocket. But more important, they help remind players that *The Grocery Game* itself is orthogonal to the acquisition of capital; the goal is not to save money for additional consumption, but to rethink their personal finances and financial goals after mastering this logic.

Social scientists may note that such conversations could be measured using qualitative analysis. The social construction of meaning is a common subject of qualitative research, especially in fields like sociology. Statistical validity is downplayed or avoided entirely, and *in situ* research like ethnography helps contextualize the meaning-making process in actual rather than ideal social situations. By analyzing the conversations and synthetic artifacts produced—*Revolution* machinima diaries or *Savannah* whiteboard strategies—a social scientist or educational technologist might correlate player performance against desired pedagogical goals. Most frequently, such research relies on field observations, participant interviews, and analysis of materials produced by subjects of study. All of these approaches are potentially applicable to persuasive games, especially games whose procedural rhetoric does not produce simplistic numerical results.

But qualitative research too relies on an economy of return. Such research often establishes commonalities between individual instances through sampling or induction. The common use of qualitative research in general and ethnography in particular among anthropologists helps justify their particular interest in characterizing the general operation of social and cultural systems. Researchers spend time—sometimes considerable time—with their subjects, drawing inferences and establishing subjective accounts of social dynamics. Sometimes these observations are correlated with known or desired behaviors, such as the actual versus desired performance of pupils. But even where predefined goals are set aside, qualitative research still accounts for its observations in theoretical wholes. Based on ethnography, researchers draw conclusions that neatly tie up their observations. A place for every social gesture, and every gesture in its place.

Assessment of all kinds demands accountability, assurance that money, time, and commitment will return value in like kind to the sponsoring institution. Political institutions hope for assent and commitment. Advertisers and businesses hope for commercial return. Educational institutions hope for predictable and desired synthetic response. Like a neurotic or a codependent, assessment always sticks around until it can be certain that a result, positive or negative, has come to pass.

Philosophy has offered numerous meditations on the vicious economic cycle. Jacques Derrida argued that the true gift confounds economics because it neither demands nor expects recompense.[53] Many gifts wear the guise of generosity but still demand some type of benefit in return, even if that benefit comes from an unrelated form of real or simulated currency. The sacrifice, for example, "proposes an offering but only in the form of a destruction against which it exchanges, hopes for, or counts on a benefit, namely a surplus-value or at least an amortization, a protection, and a security."[54] Emmanuel Levinas advances a secular conception of religion as an uncrossable separation between the self and the other, "a link established between the Self and the Other, but one that does not create a totality."[55] This relationship founds ethics as well, which is characterized by a respect for that infinite separation. In Badiou's conception of the situation, the event erupts when the elements in a multiple (a set, in the mathematical sense) no longer suffice. A new situation is constructed out of the void (the empty set, Ø), which is always a member of every set. Even if a procedural rhetoric produces such intense simulation fever around an evental site that an event erupts, the event itself can never understand its consequences.

Derrida drew a connection between the gift and what he called *dissemination*, a replacement for communication that admits that the source of a message has no certain knowledge about its successful delivery. Literary expression is disseminated; the reader interprets in the face of the inaccessibility of the author—even if the author is physically present, the separation between his and the reader's subjectivity is impassable. Nevertheless, we continue to read, interpret, and critique literature—or art, or film, or even videogames. Assessment strives to close down expressive systems by accounting for their output as a function of their design. Assessment helps affirm the institutions that structure our world, giving them evidence that their tactics support existing strategies. In the eyes of these institutions, we are always on trial, and "evidence" serves to prove our guilt or innocence. Assessment

demands wholesale accountability, in advance, for how something serves an authority.

But if procedural rhetorics challenge the logics of structures that contain them, then the only way to address their success is through transformation. In Badiou's ontology, the individuals who reconfigure situations—for example, by falling in love—never cease to pay tribute to this event. The new logic that rules their situation can never be assessed in the present, at a single moment in time, because it must always play out over time through a process of fidelity. Once a procedural rhetoric advances a new logic that a subject interrogates, it no longer remains possible to feign ignorance about that logic. Like love and revolution, procedural rhetorics persuade through intervention, by setting the stage for a new understanding unthinkable in the present.

Like literature, poetry, and art, videogames cannot necessarily know their effects on individual players. As an expressive practice, procedural rhetoric is intimately related to humanism. The *humanities* were originally coextensive with the liberal arts, which formed the basis of the classical trivium and quadrivium, discussed earlier in relation to Dorothy Sayers' medieval classicism. Today, we use the term more generally, usually referring to subjects concerned with human culture, such as literature, history, art, philosophy, music. These domains of human production create discourse—they express our joys, anger, fears, confusion, affection, and hope. The humanities attempt to get to the bottom of human experience in specific situations, to expose their structures. Procedural media like videogames get to the heart of things by mounting arguments about the processes inherent in them. When we create videogames, we are making claims about these processes, which ones we celebrate, which ones we ignore, which ones we want to question. When we play these games, we interrogate those claims, we consider them, incorporate them into our lives, and carry them forward into our future experiences. When we read books, watch cinema, view art, attend theater, listen to music, pore over comics—and indeed when we play videogames—these media influence and change us. They contribute to the type of person each of us becomes, each text, each film, each song, each game making a mark, a unique inspiration or aversion. Humanistic approaches to cultural artifacts could be seen to trace the procedural construction of human subjectivity—the interlocking logics, histories, and cultural influences recent and past that drive our perspectives on new challenges. As the name suggests, the humanities help us understand what it means to be human, no matter the contingencies of profession,

economics, or current affairs. The humanities offer insights into human experience that we need when industries, militaries, governments, game engines, middleware, and all else fails. This is the knowledge that helps us to recover from heartbreak, to make sense of tragedy, to understand betrayal.

Most importantly, these observations take place over time. In part, they take place over the time of an individual's life. Just as we return to books, films, and art that have challenged the ways we understand the world, so we return to videogames for the same reason—to renew our fidelity to their procedural rhetorics, or to revise our relationship to their claims based on new experiences. And the cultural value of videogames goes beyond even the longitudinal experience of an individual life. It takes place over the course of many lives, generations—entire eras of human experience. The videogames we make and play today may have meaning for us now, but they also defer that meaning for future players, who will experience these artifacts in different contexts. Meaning takes place on the historical scale.

We must recognize the persuasive and expressive power of procedurality. Processes influence us. They seed changes in our attitudes, which in turn, and over time, change our culture. As players of videogames and other computational artifacts, we should recognize procedural rhetoric as a new way to interrogate our world, to comment on it, to disrupt and challenge it. As creators and players of videogames, we must be conscious of the procedural claims we make, why we make them, and what kind of social fabric we hope to cultivate through the processes we unleash on the world. Despite the computers that host them, despite the futuristic and mechanical fictional worlds they often render, videogames are not expressions of the machine. They are expressions of being human. And the logics that drive our games make claims about who we are, how our world functions, and what we want it to become.

Notes

Preface

1. To wit, some $7.3 billion in 2004. See the Entertainment Software Association, "Essential Facts about the Computer and Video Game Industry" (Washington, D.C.: The Entertainment Software Association, 2005).

2. James Newman, *Videogames* (London: Routledge, 2004), 5.

3. The first videogame, *Spacewar!*, was created by Steve Russell in 1962 at the Massachusetts Institute of Technology (Steve Russell, *Spacewar!*, Cambridge, Mass.: Massachusetts Institute of Technology, 1962). Nolan Bushnell's 1971 coin-op adaptation of *Spacewar!*, called *Computer Space* (Nolan Bushnell, *Computer Space*, Mountain View, Calif.: Nutting Associates, 1971) and the Atari follow-up *Pong* (Atari, *Pong*, Sunnyvale, Calif.: Atari, 1972) were largely deployed in venues like bars and pool halls. Arcade culture of the 1970s primarily took place in such adult spaces. While the video arcades and home consoles of the late 1970s and early 1980s catered to children more than adults, the prehistory of such videogames (the 1950s to the 1970s) make simplistic games about videogames as children's media untenable.

4. See http://muse.jhu.edu/journals/childrens_literature/.

5. See http://www.hollins.edu/grad/childlit/childlit.htm/.

6. See Les Daniels, *Comix: A History of Comic Books in America* (New York: Outerbridge and Deinstfrey, 1971).

7. See http://www.english.ufl.edu/comics/; http://www.english.ufl.edu/imagetext/.

8. Newman, *Videogames*, 5.

9. Atticus XI (pseudonym), *A Conversation with Dr. Henry Jenkins* (2004 [cited February 4, 2005]); available from http://www.penny-arcade.com/lodjenkins.php/.

10. Ian Bogost, *Unit Operations: An Approach to Videogame Criticism* (Cambridge, Mass.: MIT Press, 2006).

11. Ian Bogost, "Videogames and Ideological Frames," *Popular Communication* 4, no. 2 (2006).

12. Ian Bogost, "Frame and Metaphor in Political Games," in *Worlds in Play*, ed. Suzanne de Castell and Jen Jenson (Berlin and New York: Peter Lang, forthcoming).

13. Ian Bogost, "Videogames and the Future of Education," *On the Horizon* 13, no. 2 (2005).

14. 12. Ian Bogost, "Playing Politics: Videogames for Politics, Activism, and Advocacy," *First Monday* 11, no. 9 (2006).

15. See http://www.watercoolergames.org/.

Chapter 1

1. Owen Gaede, *Tenure* (Minneapolis: Control Data Corporation, 1975). PLATO was a computer instruction system first developed at the University of Illinois in 1960. The name is an acronym for Programmed Logic for Automatic Teaching Operations. The system was commercially produced by Control Data Corporation (CDC) until the 1990s, and despite its eventual failure PLATO is acknowledged to have pioneered now-familiar tools like online forums, instant messaging, and multiplayer games. I am indebted to Noah Falstein for introducing me to this particular PLATO title.

2. Owen Gaede has also written a Windows version of *Tenure*, available at http://home.earthlink.net/~tenure/abouttenure.html/.

3. This is similar to Marshall McLuhan's suggestion that we see a medium only when we are moving beyond it.

4. Seymour M. Hersh, "Torture at Abu Ghraib," *New Yorker*, May 10, 2004.

5. Janet Murray, *Hamlet on the Holodeck* (New York: Free Press, 1997), 71.

6. Ibid.

7. Ibid., 72.

8. Bogost, *Unit Operations.*

9. Stevan Harnad, "Computation Is Just Interpretable Symbol Manipulation; Cognition Isn't," *Minds and Machines* 4, no. 4 (2004): 379.

10. Ibid.

11. Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, trans. Talcott Parsons (London: Unwin Hyman, 1930), 181.

12. Bogost, *Unit Operations*, 3.

13. Jared Diamond, *Guns, Germs, and Steel* (New York: W. W. Norton, 1999).

14. Steven J. Levitt and Stephen J. Dubner, *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything* (New York: William Morrow, 2005), 7.

15. Ibid., 137–141.

16. Ibid., 139. My emphasis.

17. Joseph Weizenbaum, "ELIZA—A Computer Program for the Study of Natural Language Communication between Man and Machine," *Communications of the ACM* 9, no. 1 (1966).

18. Ibid., 36–37.

19. For example, see Michael Mateas and Andrew Stern, "A Behavior Language for Story-Based Believable Agents," *IEEE Intelligent Systems* 7, no. 4 (2002).

20. The assembly instructions given here apply to the 6502 processor. The 6502 is an 8-bit processor widely used in microcomputers of the 1980s, including the Apple

7. See http://www.english.ufl.edu/comics/; http://www.english.ufl.edu/imagetext/.

8. Newman, *Videogames*, 5.

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10. Ibid.

11. Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, trans. Talcott Parsons (London: Unwin Hyman, 1930), 181.

12. Bogost, *Unit Operations*, 3.

13. Jared Diamond, *Guns, Germs, and Steel* (New York: W. W. Norton, 1999).

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19. For example, see Michael Mateas and Andrew Stern, "A Behavior Language for Story-Based Believable Agents," *IEEE Intelligent Systems* 7, no. 4 (2002).

20. The assembly instructions given here apply to the 6502 processor. The 6502 is an 8-bit processor widely used in microcomputers of the 1980s, including the Apple

II, the Commodore 64, the Atari 400 and 800, and, with modifications, as the 6507 in the Atari VCS (2600) and the Nintendo Entertainment System (NES). Assembly instructions may vary from processor to processor.

21. Noah Wardrip-Fruin, "Expressive Processing: On Process-Intensive Literature and Digital Media," Doctoral dissertation (Brown University, 2006).

22. For more on game engines and unit operations, see Bogost, *Unit Operations*, 56–66.

23. Infocom, *Zork* (Cambridge, Mass.: Infocom, 1980).

24. For more on the use of n-grams to construct computational, textual artifacts, see Noah Wardrip-Fruin, "Playable Media and Textual Instruments," *Dichtung Digital, Journal für Digitale Ästhetik* 5, no. 34 (2005).

25. Lawrence Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999), 6.

26. *Plato: Complete Works* (New York: Hackett, 1997), 453a.

27. Ibid., 266d.

28. Ibid., 266d–267d.

29. George A. Kennedy, *Classical Rhetoric and Its Christian and Secular Tradition* (Chapel Hill: University of North Carolina Press, 1999), 33.

30. Ibid., 34.

31. *Plato: Complete Works*, 464c.

32. Aristotle, *Physics*, trans. Robin Waterfield (Oxford and New York: Oxford University Press, 1999), 39 (II.33, 194b132).

33. Aristotle, *The Rhetoric and Poetics of Aristotle* (New York: McGraw Hill, 1984), 32 (I.33, 1358b–1355).

34. Ibid., 24 (I.22, 1355b–1326).

35. Ibid., 30–31 (I.32, 1358a–1358b).

36. Ibid., 199 (III.112, 1414a–1414b).

37. Kennedy, *Classical Rhetoric and Its Christian and Secular Tradition*, 3.

38. Sonja K. Foss, Karen A. Foss, and Robert Trapp, *Contemporary Perspectives on Rhetoric* (Prospect Heights, Ill.: Waveland Press, 1985), 11.

39. Kevin Michael DeLuca, *Image Politics: The New Rhetoric of Environmental Activism* (New York: Guilford Press, 1999), 14.

40. Foss, Foss, and Trapp, *Contemporary Perspectives on Rhetoric*, 12.

41. Kenneth Burke, *A Rhetoric of Motives* (Berkeley and Los Angeles: University of California Press, 1969), 19.

42. Ibid., 41.

43. Ibid., 20.

44. Foss, Foss, and Trapp, *Contemporary Perspectives on Rhetoric*, 193.

45. Burke, *A Rhetoric of Motives*, 172.

46. See Foss, Foss, and Trapp, *Contemporary Perspectives on Rhetoric*, 214.

47. Marguerite Helmers and Charles A. Hill, "Introduction," in *Defining Visual Rhetorics*, ed. Charles A. Hill and Marguerite Helmers (Mahwah, N.J.: Lawrence Erlbaum Associates, 2004), 2.

48. Charles A. Hill, "The Psychology of Rhetorical Images," in *Defining Visual Rhetorics*, 25.

49. Ibid., 33.

50. Ibid., 37.

51. Ibid.

52. Ibid., 38.

53. J. Anthony Blair, "The Rhetoric of Visual Arguments," in *Defining Visual Rhetorics*, 44.

54. Ibid.

55. Ibid., 47.

56. Ibid., 49.

57. Ibid., 51.

58. Jacques Derrida, *Of Grammatology*, trans. Gayatri Chakravorty Spivak (Baltimore: The Johns Hopkins Press, 1974), 3, 11–23.

59. David S. Birdsell and Leo Groarke, "Toward a Theory of Visual Argument," *Argumentation and Advocacy* 33 (1996): 2.

60. Randall A. Lake and Barbara A. Pickering, "Argumentation, the Visual, and the Possibility of Refutation: An exploration," *Argumentation and Advocacy* 12 (1988): 82.

61. Keith Kenney, "Building Visual Communication Theory by Borrowing from Rhetoric," in *Visual Rhetoric in a Digital World*, ed. Carolyn Handa (New York: Bedford St. Martins, 2004).

62. DeLuca, *Image Politics*, 1.

63. James P. Zappen, "Digital Rhetoric: Toward an Integrated Theory," *Technical Communication Quarterly* 14, no. 3 (2005): 319.

64. Ibid., 321.

65. Laura J. Gurak, *Cyberliteracy: Navigating the Internet with Awareness* (New Haven: Yale University Press, 2001), 29.

66. Ibid., 44.

67. Barbara Warnick, *Critical Literacy in a Digital Era: Technology, Rhetoric, and the Public Interest* (Mahwah, N.J.: Lawrence Erlbaum Associates, 2002), 82.

68. Richard A. Lanham, *The Electronic Word: Democracy, Technology, and the Arts* (Chicago: University of Chicago Press, 1995), 17, 39, 76, 152.

69. Lev Manovich, *The Language of New Media* (Cambridge, Mass.: MIT Press, 2001), 77–78.

70. For concise coverage of these two important works, see their respective chapters in Nick Montfort and Noah Wardrip-Fruin, eds., *The New Media Reader* (Cambridge, Mass.: MIT Press, 2003), 35–48, 301–338.

71. Chris Crawford, "Process Intensity," *Journal of Computer Game Development* 1, no. 5 (1987).

72. Manovich, *The Language of New Media*, 77.

73. Elizabeth Losh, *Virtualpolitik: Digital Rhetoric and the Subversive Potential of Information Culture*, manuscript in progress.

74. See chapter 7 for more on anti-advergames.

75. Patrick Dugan, "Hot off the Grill: la Molleindustria's Paolo Pedercini on The McDonald's Video Game," *Gamasutra*, February 27, 2006.

76. Richard Linklater, *Fast Food Nation* (Participant Productions, 2006); Eric Schlosser, *Fast Food Nation: The Dark Side of the All-American Meal* (New York: Harper, 2001).

77. See http://demo.fb.se/e/girlpower/retouch/.

78. See http://www.pbskids.com/. PBS is the American Public Broadcasting System, a public television network.

79. See http://pbskids.org/dontbuyit/.

80. See http://pbskids.org/dontbuyit/advertisingtricks/foodadtricks_burger2.html/.

81. Hill, "The Psychology of Rhetorical Images," 31.

82. Blair, "The Rhetoric of Visual Arguments," 51–52.

83. One might wonder if this omission suggests rhetoricians' general blindness toward computational media.

84. One could make additional claims about the relative vividness of different types of procedural interaction, for example screen-based applications as compared with augmented reality (AR), virtual reality (VR), or other forms. This is a valid question which I do not intend to address in the present context. That said, I do discuss physical interfaces in chapter 10, and the reader is referred there for more on this topic.

85. Hill, "The Psychology of Rhetorical Images," 33.

86. The spot is available online at http://www.pbs.org/30secondcandidate/timeline/years/1964b.html/.

87. See http://en.wikipedia.org/wiki/Daisy_(television_commercial)/.

88. Blair, "The Rhetoric of Visual Arguments," 52.

89. Ibid.

90. This does not imply that all procedural arguments are logically consistent, but merely that computationally implemented procedural arguments are assured to execute according to the particular logic a human author has imposed upon them.

91. Sherry Turkle, "Seeing through Computers," *American Prospect* 8, no. 31 (March 1997).

92. Maxis, *Sim City* (Alameda, Calif.: Brøderbund, 1989).

93. Bogost, *Unit Operations*, 106–109.

94. Http://www.thegrocerygame.com/.

95. This sample was collected in October 2003 from the game's old messageboard system at http://pub28.ezboard.com/bterisshoppinglist/. The site has since created a new board and purged these previous messages.

96. The mathematician Laplace devised a solution to Buffon's needle problem that provided an efficient means of estimating the value of π.

97. Chris Crawford, *Balance of the Planet* (Self-published, 1990).

98. Murray, *Hamlet on the Holodeck*, 128.

99. Ibid.

100. Ibid., 74.

101. Katie Salen and Eric Zimmerman, *Rules of Play: Game Design Fundamentals* (Cambridge, Mass.: MIT Press, 2004), 28.

102. Rockstar Games, *Grand Theft Auto III* (New York: Take Two Interactive, 2001).

103. Eric Qualls, "*Grand Theft Auto: San Andreas* (Review)" (GamesFirst, 2004 [cited March 2, 2006]); available from http://www.gamesfirst.com/index.php?id=188/.

104. Adam Woolcott, "*Grand Theft Auto* Retrospective" (Gaming Target, 2005 [cited March 1, 2006]); available from http://www.gamingtarget.com/article.php?artid=4739/.

105. Bogost, *Unit Operations*, 107.

106. Chris Crawford, *The Art of Interactive Design: A Euphonious and Illuminating Guide to Building Successful Software* (San Francisco: No Starch Press, 2002).

107. When I say "videogames," I mean to include non- or low-graphical procedural works like interactive fiction and text adventures.

108. Friedrich Kittler, "There Is No Software," in *Literature, Media, Information Systems*, ed. John Johnston (Amsterdam: Overseas Publishers Association, 1997).

109. Andrew Rollings and Ernest Adams, *Andrew Rollings and Ernest Adams on Game Design* (New York: New Riders, 2003), 200.

110. Bushnell, *Computer Space*.

111. Rollings and Adams, *Andrew Rollings and Ernest Adams on Game Design*, 46.

112. Geoffrey R. Loftus and Elizabeth F. Loftus, *Mind at Play: The Psychology of Video Games* (New York: Basic Books, 1983).

113. Shuen-shing Lee, "I Lose, Therefore I Think: A Search for Contemplation amid Wars of Push-Button Glare," *Game Studies* 3, no. 2 (2003).

114. We discuss this matter further in Ian Bogost and Gonzalo Frasca, "Videogames Go to Washington: the Story Behind Howard Dean's Videogame Propaganda," in *Second Person: Roleplaying and Story in Games and Playable Media*, ed. Pat Harrigan and Noah Wardrip-Fruin (Cambridge, Mass.: MIT Press, 2007), 233–246.

115. Alelo Inc. and USC Information Sciences Institute, *Tactical Iraqi* (Los Angeles: Tactical Language Training LLC, 2005).

116. Elizabeth Losh, "In Country with Tactical Iraqi: Trust, Identity, and Language Learning in a Military Video Game" (paper presented at the Digital Arts and Cultures Conference, IT University, Copenhagen, Denmark, December 1–4, 2005).

117. See http://www.watercoolergames.org/archives/000526.shtml#c7429/.

118. Republican National Committee, *Tax Invaders* (Washington, D.C.: RNC/gop.com, 2004); Taito, *Space Invaders* (Tokyo: Taito, 1978).

119. Ben Woodhouse and Martyn Williams, *Congo Jones and the Raiders of the Lost Bark* (London: The Rainforest Foundation, 2004).

120. Nintendo, *Super Mario Bros.* (Kyoto, Japan: Nintendo, 1985).

121. Banff Centre and Global Arcade, *P.o.N.G* (San Francisco: Global Arcade, 1999).

122. See http://www.globalarcade.org/pong/index.html/.

123. Dunhill Electronics, *Tax Avoiders* (American Videogame, 1982).

124. So reads the game's packaging and the cartridge label.

125. Some have observed that the mechanics of *Tax Avoiders* bear very close resemblance to those of the Atari 2600 title *Porky's*, based on the 1982 film of the same name. Dunhill Electronics created both games, although *Porky's* enjoyed much greater success, and perhaps understandably so. *Tax Avoiders* was the sole title released by American Videogame, which went bankrupt soon after its release, a victim of the so-called videogame crash of 1983. Bob Clark, *Porky's* (20th Century Fox, 1982); Dunhill Electronics, *Porky's* (Santa Clara, Calif.: Fox Video Games, 1983).

126. Brian Sutton-Smith, *The Ambiguity of Play* (Cambridge, Mass.: Harvard University Press, 1997), 8.

127. Katie Salen and Eric Zimmerman, *Rules of Play: Game Design Fundamentals* (Cambridge, Mass.: MIT Press, 2004).

128. Sutton-Smith, *The Ambiguity of Play*, 9–12.

129. Ibid.

130. Salen and Zimmerman, *Rules of Play*, 520.

131. I discuss ideology in more detail in the next section.

132. Salen and Zimmerman, *Rules of Play*.

133. Johan Huizinga, *Homo ludens* (New York: Beacon, 1955), 5.

134. Ibid.

135. Ibid., 8.

136. Ibid., 45.

137. Clark C. Abt, *Serious Games* (New York: Viking, 1970), 9.

138. Michael Schrage, *Serious Play: How the World's Best Companies Simulate to Innovate* (Cambridge, Mass.: Harvard Business School Press, 1999), 12–15.

139. The report in question is Ben Sawyer, "Serious Games: Improving Public Policy through Game-Based Learning and Simulation" (Washington, D.C.: Woodrow Wilson International Center for Scholars, 2002). The origin of the title was related to me in a personal communication with Ben Sawyer, March 31, 2006.

140. See http://www.seriousgames.org/.

141. See http://www.seriousgames.org/about2.html/.

142. See http://www.seriousgamessummit.com/home.html/. This messaging may change in the future, but it has been used for the last three Serious Games Summits,

one each per year held in Washington, D.C., in the fall and at the Game Developers Conference in the spring.

143. I have jokingly suggested that this particular use of *serious* must always be preceded by the informal vocative *dude*, as if to signal that the alternative, slang use of the term *serious* will follow. Cf. Stuart Moulthrop, "Taking Cyberculture Seriously" (paper presented at the Digital Arts and Culture Conference, ITU, Copenhagen, Denmark, December 1–4, 2005).

144. Alain Badiou, *Being and Event*, trans. Oliver Feltham (London and New York: Continuum, 2005), 25.

145. Ibid., 26.

146. Bogost, *Unit Operations*, 11–14.

147. Badiou, *Being and Event*, 95.

148. Ibid., 179.

149. See http://captology.stanford.edu/index.html#captologyOverview/.

150. B. J. Fogg, *Persuasive Technology: Using Computers to Change What We Think and Do* (San Francisco: Morgan Kauffman, 2003).

151. Ibid., 17.

152. Ibid., 33.

153. Ibid., 34.

154. Ibid., 37.

155. Ibid., 41.

156. Ibid., 44.

157. Ibid., 46.

158. Ibid., 49.

159. Ibid., 24.

160. Ibid.

161. Ibid., 51.

162. Bogost, *Unit Operations*, 55–64.

163. Jacques Derrida uses the term dissemination in his critique of Plato's preference of spoken to written discourse, arguing that centrality and authority elude meaning in all forms, whether textual, verbal, or otherwise. See "Plato's Pharmacy," in Jacques Derrida, *Dissemination*, trans. Barbara Johnson (Chicago: University of Chicago Press, 1981), 61–84.

164. Gonzalo Frasca, "Videogames of the Oppressed" (master's thesis, The Georgia Institute of Technology, 2001).

165. One form of this type of critical activity has been called "Software Studies," although much of this work still does not interrogate the cultural implications of computational systems through close readings of the software or hardware architectures that underlie them. For two good examples of the latter, see Brett Camper, "Reveling in Restrictions: Technical Mastery and Game Boy Advance Homebrew Software" (paper presented at the Digital Arts and Cultures 2005, IT University, Copenhagen, Denmark, December 1–3, 2005); Michael Mateas and Nick Montfort, "A Box, Darkly: Obfuscation, Weird Languages, and Code Aesthetics" (paper presented at the Digital Arts and Cultures 2005, IT University, Copenhagen, Denmark, December 1–3, 2005).

Chapter 2

1. 3D Pipeline Corporation, *BioChemFX* (La Jolla, Calif.: 3D Pipeline Corporation, 2003).

2. For another discussion of *BioChemFX*, see Bogost, *Unit Operations*, 98–99.

3. Mary Foster, "The Search for the Dead Is Renewed," *Louisiana Weekly*, March 6, 2006.

4. Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, "A Failure of Initiative: The Final Report of the Select Bipartisan

31. Amiga, *Surf's Up* (Santa Clara, Calif.: Amiga Corp., unreleased).

32. Nintendo, *Super Mario Bros.*

33. Konami, *Contra* (Tokyo: Konami, 1988).

34. Polyphony Digital, *Gran Turismo* (Tokyo: SCIE, 1997).

35. Exus, *Video Reflex* (Exus, 1987).

36. Nintendo, *Eggsplode* (Kyoto, Japan: Nintendo, 1990).

37. SCEE, *Eye Toy: Play* (Sony Computer Entertainment Europe, 2003).

38. Bandai, *Dance Aerobics* (Tokyo: Nintendo, 1988).

39. ResponDesign, *Yourself! Fitness* (Portland, Ore.: ResponDesign, 2004).

40. I am indebted to Vish Unnithan for this observation.

41. Phineas Barnes, "A Fitness Game for Xbox and PC" (paper presented at the Games for Health Conference, Madison, Wisc., September 20, 2004).

42. Nintendo's increasingly popular *Brain Age* series of cognitive training games also rewards consistency with new exercises.

43. As of late 2006, ResponDesign remains mired in a two-year long infringement lawsuit (see http://xbox.ign.com/articles/567/567385p1.html), which has hampered the company's ability to release new products.

44. Nintendo, *Short Order* (Kyoto, Japan: Nintendo, 1990).

45. Data East, *BurgerTime.*

46. Harmonix Music Systems, *Eye Toy: Antigrav* (Foster City, Calif.: SCEA, 2004).

47. Namco, *Taiko Drum Master* (Tokyo: Namco, 2004); Nintendo, *Donkey Konga* (Kyoto, Japan: Nintendo, 2004).

48. Nintendo, *Donkey Kong Jungle Beat* (Kyoto, Japan: Nintendo, 2005).

49. See http://www.myhometheater.homestead.com/viewingdistancecalculator.html/.

Chapter 11

1. Aristotle, *Physics*, 39 (II.33, 194b132).

2. Kennedy, *Classical Rhetoric and Its Christian and Secular Tradition*, 77.

3. Aristotle, *The Rhetoric and Poetics of Aristotle*, 32–33 (1358b).

4. Ibid., 27 (1356b).

5. See http://www.metacritic.com/about/scoring.html/ for a complete description of the process.

6. Bing Gordon, "Developing and Educating Creative Leaders at EA" (paper presented at the Living Game Worlds 2005, The Georgia Institute of Technology, March 16, 2005).

7. Michael and Chen, *Serious Games*, 37.

8. Ibid., 38.

9. Ibid.

10. Ibid.

11. Mark Prensky, *Digital Game-Based Learning* (New York: McGraw-Hill, 2001), 340.

12. See Benjamin Bloom, *Taxonomy of Educational Objectives: The Classification of Educational Goals* (White Plains, N.Y.: Longman, 1956).

13. Bryan Bergeron, *Developing Serious Games* (Hingham, Mass.: Charles River Media, 2006), 216.

14. Chris Marlowe, "Nielsen to Measure Massive Ads," *Inside Branded Entertainment*, December 16, 2004.

15. Paul Hyman, "Technology Seeks to Measure Game Ad ROI," *Hollywood Reporter*, February 24, 2006.

16. Mark Baldwin, *EyeSpy: The Matrix* (Montréal, Quebec: McGill University, 2004).

17. Mark Baldwin, Jodene Baccus, and Dominic J. Packer, "Increasing Implicit Self-Esteem through Classical Conditioning," *Psychological Science* 7 (2004).

18. Michael and Chen, *Serious Games*, 185.

19. See http://www.thegamersforum.com/showthread.php?t=7506/.

20. See http://www.radiosilent.org/mt/http:/www.radiosilent.org/mt/000152.html/ (no longer online).

21. See http://www.gendeanblog.com/ (no longer online).

22. Justin Hall, *Clicking for Dean* (Game Girl Advance, 2003 [cited December 23, 2003]); available from http://www.gamegirladvance.com/archives/2003/12/23/clicking_for_dean.html/.

23. David Thomas, *The Dean of Political Games* (Buzzcut: Critical Videogame Theory, December 24, 2003); available from http://www.buzzcut.com/article.php?story=20031224234034103/.

24. Ibid.

25. Badiou, *Infinite Thought*, 73.

26. Thomas, *The Dean of Political Games*.

27. Kennedy, *Classical Rhetoric and Its Christian and Secular Tradition*, 141.

28. Ibid., 159.

29. Ibid., 157.

30. Badiou, *Being and Event*, 232.

31. Ibid.

32. Ibid., 233.

33. Hallward, *Badiou*, 128.

34. Badiou, *Being and Event*, 175.

35. Ibid.

36. Ibid.

37. Hallward, *Badiou*, 118.

38. Ibid.

39. Ibid.

40. Ibid., 120.

41. Bogost, *Unit Operations*, 107.

42. Ibid., 108.

43. Jenkins and Squire, "Playing Together, Staying Together." Also available at http://educationarcade.org/node/102/.

44. For more on this topic, see Bogost, "Asynchronous Multiplay."

45. Godin, *All Marketers Are Liars*, 55.

46. MIT Education Arcade, *Revolution* (Cambridge, Mass.: MIT, 2004).

47. BioWare, *Neverwinter Nights* (New York: Infogrames, 2003).

48. See http://educationarcade.org/revolution/.

49. Russell Francis, "Revolution: Learning about History through Interactive Role Play in a Virtual Environment" (paper presented at The Education Arcade Conference, Los Angeles, May 19, 2005).

50. Mary Ulicsak et al., "Time Out? Exploring the Role of Reflection in the Design of Games for Learning."

51. Ibid.

52. Grocery Game message boards are found at http://www.terismessageboard.com/. The site's administrators appear to archive and remove old posts regularly, and these particular posts are no longer visible.

53. Jacques Derrida, *Given Time 1. Counterfeit Money*, trans. Peggy Kamuf (Chicago: University of Chicago Press, 1992), 137–138.

54. Ibid., 137.

55. Emmanuel Levinas, *Totalité et Infini* (Paris: Kluwer, 1971), 30.

Bibliography

ABC News. "Toys to Get Kids off the Couch." *ABC News Good Morning America*, December 15, 2005.

Abt, Clark C. *Serious Games*. New York: Viking, 1970.

Ackerman, Peter, and Jack DuVall. *A Force More Powerful*. New York: Palgrave Macmillan, 2001.

Ackermann, Edith. 2001. "Piaget's Constructivism, Papert's Constructionism: What's the Difference?" *MIT Media Lab Publications*, http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf/ (accessed February 10, 2006).

Activision. *Caterpillar Construction Tycoon* (videogame). Santa Monica, Calif.: Activision Value Publishing, 2005.

Agency.com. *Agency.com Snowball Fight* (videogame). New York: Agency.com, 2005.

Alelo, Inc., and USC Information Sciences Institute. *Tactical Iraqi* (videogame). Los Angeles, Calif.: Tactical Language Training LLC, 2005.

Allen, Andre, and Bill Berner. *Chappelle's Show*. Edited by Dave Chappelle. Comedy Central, 2003.

Alliance, Groove. *Mountain Dew Skateboarding* (videogame). Somers, N.Y.: PepsiCo, 2003.