

# Navigating the Problem Space: The Medium of Simulation Games in the Teaching of History

Jeremiah McCall

*Cincinnati Country Day School*

AT ITS CORE, A SIMULATION is a simplified working model of one or more aspects of the real world, especially systems and processes. This definition encompasses the models used in the sciences to represent the universe from the astronomical to the microscopic. It also covers training systems used to teach humans to perform real-world tasks effectively, such as flight simulations and business simulations among many others.<sup>1</sup>

A simulation game, on the other hand, is a game, a rule-based, artificial conflict or competition that simulates dynamically one or more real-world systems. The concept of simulation game is an expansion of the regular use of the term by video-gamers, which has tended to refer to complex simulations of mechanical systems like aircraft and race cars. In this expanded definition, the digital historical simulation game includes any number of commercial and non-profit computer games that represent the past, placing the player in historical roles, ranging from traders and subsistence farmers, to rulers and generals.<sup>2</sup>

The interest roused by historical simulation games is readily explained. These games offer immersive, interactive, multimedia representations of the past that are radically different from other forms of media. They engage players through multiple modes of communication: visual, textual, aural, and tactile. Through these modes of communication, compelling problems are presented that invite the player to engage and make world-changing

decisions.<sup>3</sup> Given these features, it is not surprising that a growing number of educators want to use such games in the teaching and study of history. What teacher could frown on having students engrossed in such gameplay if it somehow effectively enabled them to achieve desired learning goals?

### **Simulation Games and History Education**

Though too little research has been done specifically on the benefits of simulation games in history education, research in related areas suggests the benefits may be significant. One such area concerns the use of multimedia instructional tools. Though there is still much to be learned about more and less effective applications, it is clear that multimedia instruction can be highly effective when the teacher is an active guide to a well-designed lesson.<sup>4</sup> Other research suggests active learning approaches such as role-play can enable students to retain more knowledge over time.<sup>5</sup> Since simulation games constitute both multimedia and active learning instructional approaches, they should have the advantages of both.

Beyond research on the benefits of multimedia instruction and active learning in general, there is considerable research on simulations for studying science, technology, engineering, and mathematics (STEM) subjects. It is well established that simulations are an effective means of studying the possibilities of complex systems and the consequences of certain choices in the physical and mathematical worlds.<sup>6</sup> This includes the use of microworlds, digital microcosms that model scientific and mathematical concepts for users, ranging from geometric properties to physical forces and chemical interactions.<sup>7</sup> Microworlds are governed by rules; this means students can learn by direct experience how these rules operate through manipulating an element in the world and observing its effects on other elements. Simple examples include adjusting the temperature and observing the resulting mobility of molecules or changing gravity and observing the thrust of a rocket. Students learn in powerful ways through microworlds by forming hypotheses, putting them into action, and observing the consequences. The decision to implement one hypothesis over another leads to certain outcomes based on the systems at work. What students learn from their choices in the microworld extends to the macro. This type of instructional tool has a record as an effective means of learning about complicated subjects.<sup>8</sup>

There is good reason to be cautious, however, when trying to extend general claims about multimedia instruction, active learning, and microworlds to games that simulate events and systems in the past. When it comes to the effectiveness of multimedia instruction and active learning, one might well ask, why not just combine images with text, show video

clips, or engage in role-play instead of delving into a computer game? Similarly, one might well question whether history, which lacks the quantitative precision of science and math, is a viable subject for study through microworlds. So, while it is not unreasonable to extrapolate that there are potential advantages to the use of simulation games, these advantages have not been sufficiently postulated and articulated, certainly not enough to justify their large-scale use in history classes.

What is needed to inaugurate the full-fledged research and development of historical simulations as learning tools is an understanding of the opportunities they provide to promote serious historical thinking and inspire historical imagination. This theory must be closely connected to classroom practice. In other words, what is needed is a theory that clarifies the strengths and weaknesses of simulation games as teaching tools and guides teachers to implement their own effective pedagogies with the tool.

During this past decade, there has been a flurry of activity from academics on the power of games to teach modes of thought, skills, and even, to some extent, content knowledge.<sup>9</sup> Too little of that work has been extended into practical guidelines for teachers. In *Gaming the Past*,<sup>10</sup> I offered a detailed set of practical guidelines for conceiving, designing, implementing, and assessing lessons incorporating simulation games. Here, I intend to elaborate on the theory that makes such lessons valid. Though this article advocates using historical simulation games as learning tools, the purpose is not to give a thorough list of arguments for their use—I have done that elsewhere. Rather, the point is to develop more fully what exactly it is that simulations can do as a form of educational media. Supplying this critical link will help focus history educators, from middle school to college, to develop learning environments and resources that leverage the power of simulation games. Perhaps this theory will also provide suggestions for game designers hoping to develop games that have value as interpretations of the past.

### **Historical Inquiry, Simulations, and Historical Problem Spaces as Learning Opportunities**

At their best, simulation games are powerful learning tools because they enable students to make meaningful choices within the problem spaces of the past. *Problem space* is a useful concept inspired by video game theory and problem solving theory that effectively encapsulates both game realms and historical scenarios. Historical simulation games present the player with problem spaces. These are visual, spatial, and aural worlds with challenges that the player must overcome. The challenges, in turn, generally take the form of limits on resources and actions, obstacles, and

antagonists designed to thwart player progress. Within reason, it is not too farfetched to suggest that many aspects of the past can be considered problem spaces of a sort.<sup>11</sup>

Important philosophical objections can be raised. Historical agents often did not have clearly identified goals. Perhaps they almost never had antagonists who existed for the sole purpose of thwarting them. Still, the broad idea of problem spaces, actors in spaces confined by resources, and rules of interactions with others is a fair sketch of cause and effect in societies past and present.

Indeed, conceptualizing historical inquiry as an investigation of physical and psychological problem spaces provides great benefits for the history teacher and student. Emphasizing the problem solving aspects of history, including the extent to which actors faced challenges in the world that required the marshalling of resources and decision making can help students:

- Acquire a sense of the past as full of possibilities and not predetermined.
- Learn to identify and analyze the constraints and affordances (physical, emotional, and intellectual) that shape human actions.
- Develop skills of strategic problem solving.

The past as a problem space is certainly a kind of past we should encourage our students to explore, one filled with challenges, choices, consequences, influences, and possibilities.

This capacity for simulation games to provide navigable historical problem spaces is their greatest contribution to a 21<sup>st</sup>-century history education at any level of instruction. It is all too easy for students, and even teachers of history, to lose sight of the environmental and human-developed systems in which peoples of the past lived and functioned. Humans had to secure food, travel places (often on foot), and satisfy basic needs and comforts before they could even begin to tackle more sophisticated pursuits. They had certain resources available for these more complicated pursuits, and certain obstacles, relationships, and networks that shaped their actions and opportunities. These systems formed their problem spaces, the contexts that motivated, shaped, and informed their behaviors, ideas, and actions.<sup>12</sup>

Understanding these problem spaces—how these systems functioned and how they both limited and enabled certain kinds of actions—is critical to being a highly effective participant in the modern world, where action continues to be contextualized by systems. In history classes, however, it is all too easy to divorce humans from their systemic contexts. This can be done by teaching the study of the past as a purely literary exercise in which people are studied solely through texts. It can also happen by

teaching about the past through rote memorization of de-contextualized facts. It can happen when humans are divorced from their systemic contexts. If the study of the past is to help students better understand the limits and affordances, motivations, actions, and consequences of the past, it is critical to understand the role of these systemic contexts in helping explain human actions and events.

Simulation games are potentially powerful in the role of studying historical systems because they are systems themselves. The teaching principle at work here is simple enough: if the goal is to teach and learn about a system, use a representation of the system that is as analogous as possible. Too often, text is used to represent aspects of the past that were fundamentally non-textual, such as agriculture, crowd dynamics, battles, and family life. Since an effective simulation game is itself a simplified system, it bears a closer analogy to the real world it represents than text generally provides. Playing the game allows the player to experience—virtually—through the manipulation of elements of the system. Variables are adjusted in response to feedback from the game, resulting in new outcomes, which lead to more adjustments. All of this essentially allows students to engage more directly with causal relationships.

### **The Role of Choice in Simulation Games**

Most of all, the greatest analogue that a simulation game has to human actions in the past that no text, film, or static image can match is the presence of choice. At most, text, image, or video can present the motives and outcomes of one choice at a time, though many in a series. Using certain literary techniques can manipulate time a bit, but the narrative or analysis is still fixed in sequence at the point when the viewer sees it.<sup>13</sup> These media can certainly suggest possibilities, but none of them actually allow the student to make choices in any way similar to those faced by historical actors. The target audience of the text can interpret, not manipulate. When playing simulation games, however, students must make choices about how to respond to, influence, and control the “moving parts” of the historical processes in question—the interactions of people with each other and their environment. Making choices and experiencing the consequences of those choices serve as analogues for real-world environments and decisions. In contrast, a written secondary source, lecture, film, or even discussion is one or more static interpretations combined. These interpretations may be very sophisticated and valid, richly detailed and moving, but they are fixed. They cannot be manipulated in the way a simulation game can and they do not correspond as directly to the real-world decisions they are meant to represent.

A few examples illustrate how simulation games can present systems and choices that are roughly analogous to aspects the past. In *East India Company*, the player takes the role of a company leader in the 17<sup>th</sup> century. The player is tasked with generating profits and meeting goals in the form of importing certain trade goods. The player achieves these goals by outfitting trade ships, loading them with cargo from the home port in Europe, and directing the ships to trade with port cities in India. Since the game functions in real-time and the designers wanted to instill the sense that these overseas voyages took a great deal of time, the player will have to wait several minutes, even on the fastest game speed, for the first ships to reach Indian ports. Once a ship has reached its destination, the player can sell the cargo and then decide which goods to purchase and import home. Some other systemic constraints the player must face are: the amount of company funds available, the capacity of the trade ships, the desirability of the goods, and the specific instructions they are currently fulfilling. Further challenges are posed along the route by storms and pirates. Even hostile East India Companies from other European states may threaten the safety of the ships and the profits its cargo will bring. The player must choose how to best manage all these rewards and risks, making decisions based on the information available, assessing the results of those decisions, and adjusting strategies accordingly. To succeed, the player may send multiple fleets with the same cargo to increase the odds of a successful voyage, buy off rival companies, engage in short-range trade, outfit warships, or some combination of them all. Leaving aside important issues of accuracy for a bit, the central game model in *East India Company* provides a fair analogy to some of the systems at work in the past. Thus, the player-student can take the role of a historical actor navigating a historical problem space.

In *Civilization IV*, the player guides a civilization from the siting of its first city through 6,000 years of development. When the game begins, the player must choose a location to plant their first city on a stylized terrain map. Each location has distinct characteristics defined largely by geography. Different terrain produces different resources, different advantages and disadvantages in warfare, and different rates of travel for construction and military units. Settling on the coast allows the city to pursue naval activities. Settling inland avoids raiders. Settling near established cities of other civilizations can promote trade, but also increase diplomatic friction. Over time, geography's effects on the initial settlement accumulate. Cities in fertile farmland will grow larger and faster over time. Cities in regions rich in manufacturing resources will become economic powerhouses. Each time the player chooses to plant a new city, they are faced with the same types of choices about city placement. One key to

success in the game, then, is to select advantageous geographic locations for each city. But there are many more decisions to be made as the game progresses, just as there are in real-world time. Which buildings to construct, technologies to research, wars to pursue, trades to make with other civilizations, levels of spending to set, and a host of other choices must be made by the player, whose decisions will vary depending on their goals. Does the player hope to dominate militarily, outpace all rivals in scientific research, or bask in wealth and culture? Each choice has its own effects on the game systems; each has consequences for the player's civilization. The main conceit here is that a single choice-making force—i.e., the player—is able to make all the major decisions for a society throughout its thousands of years of development. Tabling this and other problems of accuracy, *Civilization*, like *East India Company*, provides students the ability to make choices within virtually imposed geographic, political, and cultural constraints.

The *Total War* series, to offer a final example, puts the player in the role of leader and lead general in settings ranging from ancient Rome, to the Middle Ages, to early Modern Europe, to feudal Japan. There are important variations in each setting, but the core of each game challenges players to build an empire through effective nation management, strategy, and battlefield tactics. Depending on the setting, cities or provinces are the core of nation management (let's call them provinces to simplify the discussion). Some increase the productivity and happiness of citizens; others allow the province to supply various military units to the player's armies. These provinces form the backbone of the player's military expeditions, supplying funds for armies and troops. With these troops and armies, the player engages in diplomacy, trade, and war with other historical powers from the relevant region and period. Battles between opposing armies take place in real-time, and the player commands infantry, artillery, and cavalry—each represented by units of individual soldiers that move and fight on the battlefield—by issuing orders and waiting for the soldiers to execute them. Soldiers are affected by their position, stamina, and morale. They will not all fight to the death, but are routed when their morale has dropped sufficiently. The choices the player faces in this problem space are expansive, ranging from issues of supply and economy, to diplomacy, to strategic and tactical decisions. Though there are serious flaws in the game's interpretations, many of the choices—especially the strategic and tactical choices—approximate those faced by historical actors and groups.

The examples of games that provide problem spaces could continue indefinitely. *Political Machine* challenges players to win the 2008 U.S. Presidential election. *City Life* focuses on the constructing and managing of a city struggling with tensions between different social groups and

interests. *Railroad Tycoon* encourages players to build a thriving rail empire in the time of the barons. This creation of historical problem spaces that are roughly, albeit simply, analogous to the real world and that can be navigated by players is the critical contribution of the simulation game. In one digital problem space, players must find the resources to provide cities with sufficient food or face starvation and riots, which can limit productivity and lead to destabilization. In another, they must choose well between short distance, low-risk, low-profit routes, and long distance, high-risk, high-profit commercial routes. These virtual problem spaces mimic real-world problems that historians study when determining causes in the past.

Gee's theoretical work on games as learning tools states the important principle at work when simulation games are used to present problem spaces:

Human understanding is not primarily a matter of storing general concepts in the head or applying abstract rules to experience. Rather, humans think and understand best when they can imagine [simulate] an experience in such a way that the simulation prepares them for actions they need and want to take in order to accomplish their goals....

Effective thinking is about perceiving the world such that the human actor sees how the world, at a specific time and place...can afford the opportunity for actions that will lead to a successful accomplishment of the actor's goals. Generalizations are formed, when they are, bottom up from experience and imagination of experience.<sup>14</sup>

Playing an effective game grounds the player, to a limited extent, in the realities of the past and contextualizes the options for actions in the past. This sort of experience is highly advantageous when considering the reasons, motives, and effects of human action in the past, the core of historical thought.

### **Problems with the Medium of Simulation Games**

Simulations are not an educational panacea, nor should they be employed for all learning objectives. Like all media, they have strengths and weaknesses that teachers must address. Beyond the particular problems posed by individual games, the medium itself has a tendency toward the following problems of interpretation:

**Entertainment Bias:** Though there are simulation games made primarily to teach players about the past, most are made to entertain players and, as a result, make money for their publishers through sales. This means historical detail and accuracy are regularly conceded to make game play

more engaging.<sup>15</sup> Even designers of games intended to teach history will be compelled at times to concede historical accuracy for considerations of playability and comprehensibility.

**Oversimplification:** To make an engaging and entertaining historical game requires leaving out a great number of complicating factors from the physical world. Games focus on a small subset of causes, effects, and constraints. In doing so, they can leave out many important issues. *East India Company*, for example, largely ignores the politics of interaction between European companies and the peoples and lands in Asia they dominated. *Civilization IV* does not concern itself directly with city-level social dynamics and politics. Games focused on building cities generally ignore how those cities fit together in a civilization. Games covering political campaigns tend to focus more on the money and tactics of campaigning than the substance of the political issues.

**Significantly Counterfactual Outcomes:** Simulation games must, by their inherent ability to offer meaningful choices, have the potential to present many outcomes that did not happen, and in some cases patently could not have happened. The Aztecs can discover gunpowder and conquer the Spanish in a round of *Civilization IV*; Ross Perot can win the 1996 election in *Political Machine*; the Reformation can drive Catholicism out of 17<sup>th</sup>-century France in *Europa Universalis*.

**Over-Access to Power and Information:** Though it is not always the case, the player of a game is often placed in a role and given power greater than any individual historical actor could have had. So, a general in the *Total War* series has a camera view of the battlefield that can zoom in, hover above the action, and rotate 360° around it. The general can also micromanage the tactics of units in action. Finally, the player—as the general—can see the status of each unit with a mouse-over, including their level of morale and exhaustion. None of this would have been true of a historical general. The player of a city builder game both decides where to plant each and every building and manages the city at the same time, conflating the roles of numerous people into one. The railroad manager knows precisely what goods are available in each city at all times and exactly where each of the trains is.

**Emphasis on Goal-Seeking and Individual Choice:** In most simulation games, the goals a player is expected to seek, the resources and obstacles available, and the choices to be made are reinforced through scores, badges, and assigned missions. The result is that the player's goals may often be far clearer than they were for an actor in the past.

**Quantification Bias:** Since simulations, especially computer simulations, are fundamentally mathematical models, they represent all things in terms of precise values. This is true even of abstract stocks we may feel incapable of assigning precise values. Happiness is an excellent example.<sup>16</sup> In most

any game where there are citizens or subjects, whether the game focuses on managing a single city or building a nation, there is a quantifiable happiness level. Often, that level is presented to the player as a number. Sometimes the player is shielded from the specific number and told that the happiness of subjects is high or low; there is still a number at the core. Different actions taken by the player and different events produced by the game affect that happiness number in quantifiable ways. So, a surplus of food might add  $x$  to the happiness level; a lack of certain institutions might subtract  $y$ . This becomes almost comical in earlier versions of the *Civilization* series, where religion's sole impact is to increase the happiness level of the population—no doubt, something Marx would have found amusing.

These flaws are only problematic, however, if simulation games are presented as truths, or if history is presented as primarily the transmission of accurate information—especially accurate narrative information—about the past rather than as a set of methods and habits for interpreting the past using problematic human sources of information. Neither of these premises should be part of a 21<sup>st</sup>-century history education. There was a time when some historians claimed that the discipline would—given enough time, research, and skillfully impartial historians—be able to present the past as it actually was. That time passed long ago, and there is no serious consideration that the most skillful historians do more than present compelling arguments about cause and effect in the past based on critical methodologies—in other words, interpretations.

The discipline is not fully free from an authoritarian presentation of the past, however, insofar as there remains a strong attachment to established narratives as the fundamental heart of the historian's discipline.<sup>17</sup> Even the most established narrative, however, can only be tentative, an interpretation. One generation's common-sense historical understandings of what happened and why are often rejected by the next in light of different approaches to evidence, different attitudes, even different questions. On top of this, the very ideas historians have about appropriate topics of investigation change with the times. The idea that women, minorities, and the masses of everyday people are worthy topics of study, for example, was rarely if ever held a century ago, nor the idea that historians should focus on long-term social and geographic processes and not simply the actions of distinguished individuals.<sup>18</sup> Therefore, one of the goals of a 21<sup>st</sup>-century history education must be to teach students that history is a set of methods and attitudes—discipline, based on interpretation—not a set of established facts to be memorized. Students who are taught that history is the record established by historians, not themselves, learn to surrender their right to reason and accept being taught that only the authorities have the right to assert why the world is the way it is.<sup>19</sup> Instead, they should

understand that history is a way of thinking and acting on evidence that cannot be reduced to simple binary terms such as true and false, accurate and inaccurate.

Accordingly, simulation games should be treated as human interpretations of the past, not oracles. They, like historical monographs and articles, presidential state-of-the-union addresses, film epics, and textbooks, are simplified versions of complicated realities that can never be fully recovered. They are secondary sources that must be handled with care and healthy skepticism. Now, one of the core skills of acting as a historian is to take a secondary source, a human interpretation of some aspect of the world, and use it critically to aid one's understanding of a historical phenomenon. More specifically, we draw upon secondary sources to help identify larger patterns in the primary sources. They serve as a crucial medium for discussion about cause, effect, and meaning in the past. But just as a secondary source interpretation of the past should not be accepted at face value, so the explanations in simulation games must be analyzed, criticized, and evaluated—never passively accepted. Presenting a simulation as perfect—regardless of how valid it might be—would simply teach students to switch from the traditional authorities of other secondary sources—history texts and teachers—to a digital authority. Really, history students should not be in the practice of finding authorities to subscribe to at all, but rather assessing more and less credible sources of evidence for use. Instead of using a simulation as a digital authority, therefore, the study of any simulation game must be accompanied by the meaningful study of relevant primary and meaningful secondary sources. It is when students study the available evidence and look at different ways to interpret and reconstruct it that the study and critique of simulations becomes its most meaningful as an exercise in developing historical understanding.

### **Problems with Seminal Forms of Historical Interpretation**

In this light, it is important to remember that no interpretation of the past is wholly unproblematic, not even the most meticulously researched and argued historical monographs or lectures. Since these idealized historical presentations, however, seem usually to be the standard by which simulation games are judged wanting, consider their inherent problems as media of interpretation:

**Bias:** The seminal point of history is that all interpretations are human interpretations. Every historian's treatment of the past will be shaped by his or her sense of what is important and what is trivial; what motivates and demotivates; generally speaking, what makes the world go round. The progressive historian might assume that societies are all on a road

to an ideal nation-state, and the neo-Enlightenment historian sees the spread of democratic institutions as inherently good. The social historian emphasizes the forces that drive human behavior, while those partial to rugged individualism insist that powerful people buck the trends. The list could continue indefinitely, but the point is clear: historians strive for objectivity but remain biased, and their personal senses of how the world works will influence their works significantly.

**Oversimplification:** Not only does narrative as a medium dictate that a historical account has an ultimately arbitrary beginning and end, historians pick and choose what to emphasize based on their personal interests, their sense of what is important, and their access to evidence. When one argues the causes of the Civil War or the reasons for the success of the Civil Rights Movement, one necessarily cannot consider all factors. When discussing the feudal system, the role of women in the Victorian factory system, or anything really, one cannot represent every relevant piece of information, even if it is available. Historical interpretation is an act of simplification, however detailed the product may be.

**Narrative Bias:** It is certainly not difficult for historians, like game designers, to overemphasize the clarity of goals and choices for historical individuals at the time they lived, especially in formats like biography. The greater inherent problems of representation in historical monographs and lectures, however, come from the structure of narrative itself. The simple organization of the past into sequences of events with a beginning, middle, and end imposes a clarity of cause and effect that few or no individual actors at the time likely had. Historical narrative also has difficulty, in its neatness, dealing with the role of contingency in producing outcomes. In addition, particularly coherent narratives can come to be regarded as established fact.<sup>20</sup> Not least of all, the implicit causal relationship expressed in conventional narratives can begin to be accepted as unproblematic, even complete. The statement that “the Civil War was caused by the tensions over slavery and the issues of states’ rights raised by slavery” is but one example of this type of potentially misleading neatness imposed by narrative. Certainly, narrative is a critical tool in the historian’s kit and it is by no means inferior to other methods of representation; perhaps it is indeed at the root of human experience. The point is simply that the medium of narrative is not without its own problems.<sup>21</sup>

**Qualification and Imprecision Bias:** Where simulation games have a quantification bias, history, in general, falls prey to the biases of qualification and its associated imprecision. This is most prevalent when only a few individuals’ testimonies on a subject are left behind as evidence and we use them to infer the thoughts and feelings of a larger segment of society. Trained historians are well aware of these dangers and strive to corroborate testimonies as much as possible. But that does not change the fact that the study of most periods and places in human history is conducted more

through the anecdotal and the personal. As a result, our explanations tend to be strongly skewed. Even where evidence is better subject to quantification, historical accounts tend to steer clear of the level of quantification that games embody. Put another way, causal relationships in history are often expressed in fuzzy terms. Going back to the idea of a happiness quotient expressed in many management games, many historians, no doubt, might explain certain human actions as a result of increases or decreases in happiness. Few, however, would be willing to offer a mathematical model of the impact of happiness as opposed to, say, anger, motivation, a sense of injustice, or other factors. In a sense, this is grounded in a desire to have the cake and eat it too: decrying the idea of happiness as a measurable quantity while declaring that action  $x$  made the population greatly unhappy and this contributed to revolution  $y$ —contributed how and how much?

Again, it is not the case that games are no more flawed than formal researched historical narratives presented in text and spoken word. Nor is it the case that games should replace narratives or text altogether; indeed, narratives are a critical component of historical understanding, and the importance of language for humanity is beyond critique. It is, however, simply not compelling to reject simulation games categorically on the basis of their being a problematic medium, as if any medium could be unproblematic. All interpretations are human and imperfect, no matter how skilled and earnest the authors. When history is practiced as a discipline, even formal interpretations must be subjected to scrutiny.

### **Using Flaws in Simulations as Learning Opportunities**

Since students of history should learn that all interpretations are subject to critique and all media have inherent problems, the inaccuracies in historical simulation games are actually a critical part of their effectiveness as learning tools. Through their flaws, they provide students with opportunities to make evidence-based critiques. Demonstrating, through reasoning based on independent primary and secondary source evidence, why an element of a game is inaccurate—say *Rome: Total War*'s representation of Roman military expansion as primarily in the control of a handful of aristocratic families—is a high-level act of historical thinking, one that is not *a priori* cognitively inferior to demonstrating why an interpretation is valid. Indeed, one great benefit of treating simulation games as interpretations with inherent strengths and flaws is the ability to allow them to inspire students' meaningful historical questions, questions that then can be researched through primary and secondary sources independent of the simulation. This ability to question deeply is one of the hallmarks of creative critical thinking. Though research on this point has not been conducted, there is something about the sense of immersion and problem solving presented

by simulation games that seems to inspire naturally a number of questions about historical reality.

Though it is important to handle the following anecdote with care, it is equally important not to dismiss its hint of a promising potential. After one extended use of *Rome: Total War*, a simulation game of Roman warfare and imperialism, a class of ninth-grade history students was tasked with crafting a set of detailed questions about the real Romans that were inspired by the game.<sup>22</sup> The questions they developed without further instruction or prompting included:

- How did the Romans treat captured cities?
- What were the strengths and weaknesses of the Roman alliance system in Italy?
- How did distance and geography affect communications between the senate and armies in the field?
- Did the Romans acquire an empire in self-defense or through active aggression?
- How were sieges conducted?
- What was the role of morale in battlefield victories, and how did the Romans raise and maintain morale?

These are high-level questions that have been raised by professional historians and subjected to serious debate. In short, the game inspired students to pose the kinds of questions that experts in the field do.<sup>23</sup> This questioning then led to research and debate as students established valid answers to the questions raised.

That simulation games can effectively inspire students to raise meaningful historical questions is sufficient reason to consider them as tools for history education. Is there reason to go further, to suppose that simulation games can be more effective than texts or lecture at inspiring historical questions from students? Here we enter risky ground: no substantial claims can be made without significant formal research. Nevertheless, there is important research on text as a medium in history education that suggests simulation games may indeed be more effective at provoking questions. Most of all, considerable research has indicated that students at the high school level tend to read texts, even eyewitness accounts, almost purely as sources of information, not as testimony that must be criticized, filtered, and corroborated in order to form valid conclusions.<sup>24</sup> Even the strongest traditional learners and achievers in secondary school history tend to read class texts for information, not for an author's point of view. When texts are not approached with a deep sense that they are human testimony and thus subject to all sorts of errors and bias, it is difficult to raise questions about the historical realities they mediate. It may well be the case that simulation games, perceived as a more popular media than textbooks,

teachers, and historical secondary sources, appear more vulnerable to questioning and criticism by students. In other words, it may simply be cognitively easier for students to accept that games, almost always created for entertainment purposes, are inherently flawed.

That they are often created to entertain, if anything, adds to the importance of games as media for students. Indeed, one of the central questions that should be posed in a 21<sup>st</sup>-century history education is how the past is mediated, presented, and received in everyday life. Recently, interest has grown tremendously in historical consciousness, the means by which people learn about and perceive the past, as well as the representations they form of the past.<sup>25</sup> Excellent work, for example, has been done on how cinema represents and misrepresents the past. Plus, educational researchers are reinforcing that much, if not most, of what individuals believe about the past is informed by experiences outside the classroom.<sup>26</sup> Cinema, media, political and religious figures, celebrities, parodies and satires, videos, and forums—these are just some of the sources and forces that inform our understanding of the past, often in polemical and problematic ways. Students will spend far more time encountering these representations of the past than they will formally studying the past in classes. Games, too, have come to the fore as a medium in the past decade. They bring their own representations of the past. Learning to critique reinforces the importance of considering historical consciousness and treating modern representations of the world with a critical eye.

### **The Teacher as Guide**

Active, purposeful teacher-guides are the critical conductors of this whole process of inquiry, analysis, and evaluation. If students are to approach historical simulation games critically, teachers must play active roles in guiding them through the process. Research has been very clear that successful discovery and inquiry learning, which simulation game lessons fundamentally are, requires the active presence of a teacher as an effective guide and resource.<sup>27</sup> So, simulation games must be treated as interpretations, and the teacher must play an active role in any lesson involving them. When games are played in class, engaging teachers move about their rooms asking questions, offering suggestions, and nudging students to think about the problem spaces they are negotiating. Here, they offer advice to a struggling player. There, they comment on a side conversation about the historical accuracy of a game feature. These teachers remind their students frequently and firmly to avoid accepting passively a computer game. They raise provocative questions about the game and how it portrays the past and guide students through the rigorous

evaluation of simulations from questioning to research, from analysis to evaluation. In this model, teachers are the essential experts, the project managers. They are not the source of all information. Instead, they are the gadflies, to steal a phrase from Socrates, that push exercises with simulation games to be something far greater than unreflective game play or submission to a professional game designer's presentation of the past.

### **Putting Theory and Practice Together in the Classroom**

Simulation games can play a critical role in enabling students to navigate the problem spaces of the past while simultaneously critiquing the models designers offer to represent those problem spaces. There is much to be gained through their use. This includes rich opportunities for students to engage the past as independent historians; to consider choice, cause, and effect; to question and interrogate. Students who learn that interpretations are not only ensconced in writing, but are embedded in videos, podcasts, mash-ups, and, yes, video games, can gain valuable tools for negotiating the modern world.

Where does this theory leave us? Simulation games, like all interpretations, must be subjected to careful, evidence-supported scrutiny. They offer a superior means of exploring decision making in past—the constraints, available choices, and consequences of historical problem spaces. Theory without practice is not particularly helpful for classroom educators or for learners. Therefore, it is very important to end this article with some practical guidelines, principles really, for structuring studies involving simulation games. The following list provides a very general blueprint of considerations in the designing of effective simulation-based lessons. Readers who wish for more details should explore *Gaming the Past*.

#### *Principle 1: Introduce the Purpose of Simulation Gaming and the Characteristics of the Medium*

- Prepare students for a critical treatment of the games they will study by introducing the strengths and weaknesses of the medium. Consider the list set out above earlier in this article as a starting point.
- Prepare students for approaching history as the construction of valid, evidence-based interpretations and the critique of those interpretations.
- Propose that one is making statements about how the world works when affirming what seems accurate in a game and challenging what is clearly inaccurate. Both kinds of statements are interpretations that must be supported with sufficient valid evidence.

*Principle 2: Play Reflectively and Attentively; Observe and Engage in the Problem Space*

- Let students learn to play the game before jumping into higher-level analysis.
- Build in opportunities to engage in close observation of the game's problem space: player roles, goals, constraints, choices, and consequences. Consider requiring observation notes and check-up discussions.
- Encourage students to raise and keep track of questions about the physical past posed by the game.
- Build in opportunities for players to reflect on the biases of the game, the presentation of the game, and the choices offered by the game.

*Principle 3: Study Independent Historical Evidence on the Historical Problem Spaces*

- Read, analyze, and discuss a rich variety of primary and secondary sources on the topic. When possible, include quantitative analyses in addition to the regular qualitative evidence. These sources serve to support or check the models in the simulation, but also the foundation of historical interpretation in their own right.
- Use the questions posed by the games to help structure research.
- Base all arguments about the validities and invalidities of game models on clear, valid historical evidence.

*Principle 4: Discuss, Debrief, Evaluate, Extend*

- Devote time to discussing the problem space of the game—whether the presentation fits the available evidence, and to the extent it does not—and why the designers chose to present the past that way.
- Provide opportunities to research more thoroughly one or more questions raised by the game, the way the game presents the issue, and what historical evidence suggests.
- Provide opportunities to apply the models in the problem space to the historical realities. Be sure to critique them! If *Civilization IV* suggests that cities founded in the most resource-rich areas earliest will be most powerful, for example, does this explain the dominance of Europe over the Americas in the 16<sup>th</sup> century?
- Consider topics of historical study in terms of choices. How were decisions made in real East India Companies? To what extent were historical actors aware of the available choices?

*Principle 5: Critique, Critique, Critique*

- Question every game's accuracy while also making a case for reasonable elements. Do not compare the game to "how it really was." Instead, question other sources that refer to the topic. Ask why designers make the decisions they do. Ask how the medium might seduce and clarify. Simply put, stir students not to take the game at face value.

## Notes

1. For some definitions, see Sigmund Tobias and J. D. Fletcher, "What Research Has to Say about Designing Computer Games for Learning," *Educational Technology* 47, no. 5 (September-October 2007): 20-29; Christian Elverdam and Espen Aarseth, "Game Classification and Game Design: Construction through Critical Analysis," *Games and Culture* 2, no. 1 (January 2007): 3-22, <<http://gac.sagepub.com/cgi/reprint/2/1/3>>; Katie Salen and Eric Zimmerman, *Rules of Play: Game Design Fundamentals* (Cambridge, MA: Massachusetts Institute of Technology Press, 2003), 452-458.

2. Jeremiah McCall, *Gaming the Past: Using Video Games to Teach Secondary History* (New York: Routledge, 2011), 1-4.

3. A number of researchers and practitioners of game-based learning have arrived at this conclusion, often independently, but James Gee deserves substantial credit for bringing this point to a large audience in *What Video Games Have to Teach Us about Learning and Literacy* (New York: Palgrave Macmillan, 2003). See also Rosemary Garris, Robert Ahlers, and James Driskell, "Games, Motivation, and Learning: A Research and Practice Model," *Simulation & Gaming* 33, no. 4 (December 2002): 441-467, esp. 444-447, which surveys research on the motivational aspects of video games and offers these common elements: fantasy, goals, sensory stimuli, challenge, mystery, and control.

4. See, for example, Roxana Moreno and Richard Mayer, "Cognitive Principles of Multimedia Learning: The Role of Modality and Contiguity," *Journal of Educational Psychology* 91, no. 2 (June 1999): 358-368; Richard Mayer, Patricia Mautone, and William Prothero, "Pictorial Aids for Learning by Doing in a Multimedia Geology Simulation Game," *Journal of Educational Psychology* 94, no. 1 (March 2002): 171-185.

5. George Semb and John Ellis, "Knowledge Taught in School: What is Remembered?" *Review of Educational Research* 64, no. 2 (Summer 1994): 277.

6. See, for example, James Monaghan and John Clement, "Algorithms, Visualization, and Mental Models: High School Students' Interactions with a Relative Motion Simulation," *Journal of Science Education and Technology* 9, no. 4 (December 2000): 311-325; Barbara White and John Frederiksen, "Inquiry, Modeling, and Metacognition: Making Science Accessible to All Students," *Cognition and Instruction* 16, no. 1 (1998): 3-118; Leslie Steffe and Heide Wiegel, "Cognitive Play and Mathematical Learning in Computer Microworlds," *Educational Studies in Mathematics* 26, no. 2-3 (March 1994): 111-134; Roxana Moreno, Richard Mayer, Hiller Spires, and James Lester, "The Case for Social Agency in Computer-Based Teaching: Do Students Learn More Deeply When They Interact with Animated Pedagogical Agents?" *Cognition and Instruction* 19, no. 2 (2001): 177-213; Maria Kordaki, "The Effect of Tools of a Computer Microworld on Students' Strategies Regarding the Concept of Conservation of Area," *Educational Studies in Mathematics* 52, no. 2 (2003): 177-209.

7. David Shaffer, *How Computer Games Help Children Learn* (New York: Palgrave Macmillan, 2006), 67-71.

8. John Bransford, Ann Brown, and Rodney Cocking, eds., *How People Learn* (Washington, D.C.: National Academies Press, 1999), 216; Shaffer, 67-71.

9. Gee, *What Video Games Have to Teach Us about Learning and Literacy*; James Gee, *Good Video Games and Good Learning* (New York: Peter Lang, 2007); Shaffer, *How Computer Games Help Children Learn*; and, most recently, Kurt Squire, *Video Games and Learning: Teaching and Participatory Culture in the Digital Age* (New York: Teachers College Press, 2011). There are articles on myriad aspects of games and learning. The following offer good points of introduction to the field: Kurt Squire, Henry Jenkins, Walter Holland, Heather Miller, Alice O'Driscoll, Katie Tan, and Katie Todd, "Design

Principles of Next-Generation Digital Gaming for Education,” *Educational Technology* 43, no. 5 (September-October 2003): 17-23; Susan McLester, “Game Plan,” *Technology & Learning* 26, no. 3 (October 2005): 18-26; Tobias and Fletcher. For a counterpoint to these studies, see Richard Clark, “Learning from Serious Games? Arguments, Evidence, and Research Suggestions,” *Educational Technology* 47, no. 3 (May-June 2007): 56-59. Be sure to read Squire’s response to Clark in Kurt Squire, “Games, Learning, and Society: Building a Field,” *Educational Technology* 47, no. 5 (September-October 2007): 51-55.

10. See note 2.

11. The field of cognitive problem solving has used the term “problem space” for decades to refer to the mental map of choices one can make to reach a goal or the various states of the problem. There is no implication of physical space. Theoretical work on video games, on the other hand, most notably by Henry Jenkins and Kurt Squire, “The Art of Contested Spaces,” in *Game On!*, ed. Lucien King (London, U.K.: Barbican Press, 2002), 64-75, emphasize the critical importance of physical space (or rather its virtual representation) in video game problems.

12. The following works provide just a few examples of the importance of what can be termed “systemic context” in shaping individuals and societies. These are well known and reasonably accessible works that emphasize the role of systems; it is not my intention to weigh in on the debate over any particular arguments raised by authors. Fernand Braudel, *Civilization and Capitalism, 15th-18th Century: The Structure of Everyday Life* (Los Angeles, CA: University of California Press, 1992), is a tour de force of systemic context, considering in depth the context of everyday life, from disease, bread, food, housing, and clothing, to money, as well as technology. The discussion in Carlo Ginzburg, *The Cheese and the Worms* (Baltimore, MD: Johns Hopkins, 1980), xiii–xxvi, of the relationship between literate culture and that of the so-called masses, the problems of reconstructing “popular culture,” and the dynamic relationship between the 16<sup>th</sup>-century miller Menocchio and the literary and popular cultures of his day is an excellent (perhaps now classic) illustration of intellectual context, the systems of ideas and beliefs that encompass an individual. In *Carnage and Culture* (New York: Anchor Books, 2002), Victor Hanson argues that the dominance of western armies over the world can be explained in large part by the ability of liberal political and economic institutions to produce more effective soldiers; in other words, the culture creates the effective soldiers. See also my analysis of Roman politics in the Republic in Jeremiah McCall, *Sword of Rome: A Biography of Marcellus* (Barnsley, U.K.: Pen and Sword, 2012).

13. Experiments with hypertext and similar conventions do allow readers to explore branching texts, but this is essentially taking on a game-like attribute and untypical of most text.

14. Gee, *Good Video Games and Good Learning*, 148-149.

15. As recently as his interview for Kotaku Talk Radio on 5 May 2010 (MP3 interview file at <<http://kotaku.com/5531995/an-hour-of-sid-meier-brilliance-including-his-surprise-guitar-hero-regret>>), Sid Meier, the creator of the *Civilization* series, noted once again that he and his design teams focused on making an entertaining and engaging game first and added the historical research afterwards.

16. Jeremiah McCall, “The Happiness Metric in CivCity: Rome and the Critique of Simulation Games,” Play the Past (blog), 27 September 2010, <<http://www.playthepast.org/?p=94>>.

17. For a recent defense of narrative as integral to human action and explanation that explores various means of representing the past textually, see David Carr, “Narrative Explanation and its Malcontents,” *History and Theory* 47, no. 1 (February 2008): 19-30.

18. There are a number of excellent examinations of the historical craft that illuminate

the inherent subjectivity in the history while not succumbing to nihilism and abandoning the discipline altogether. Though fifty years old, the discussion of “The Historian and His Facts” is still a terrific place to start; see Edward Carr, *What is History* (New York: Vintage Books, 1961), 3-35. See also Arthur Schlesinger, Jr., “History: Text vs. Context,” *Proceedings of the Massachusetts Historical Society*, Third Series, 103 (1991): 1-8; Charles Larmore, “History & Truth,” *Dædalus* 133, no. 3 (Summer 2004): 46-55; John Arnold, *History: A Very Short Introduction* (Oxford, U.K.: Oxford University Press, 2000).

19. One can do no better than to start with Sam Wineburg, *Historical Thinking and Other Unnatural Acts* (Philadelphia, PA: Temple University Press, 2001) to appreciate the gulf between expert views on history and how history is perceived and practiced by secondary school students.

20. Many a historical dissertation turned monograph, including my own—Jeremiah McCall, *The Cavalry of the Roman Republic* (New York: Routledge, 2001), 1-2—is based on rejecting an established narrative that has come to be taken for granted. For a recent new-media example of how difficult it can be to revise an accepted narrative, see Timothy Messer-Kreuse, “The ‘Undue Weight’ of Truth on Wikipedia,” *The Chronicle of Higher Education Review*, 12 February 2012, <<http://chronicle.com/article/The-Undue-Weight-of-Truth-on/130704/>>. Be sure to read the comment chain.

21. See insightful comments raised throughout in Patrick Hutton, “Recent Scholarship on Memory and History,” *The History Teacher* 33, no. 4 (August 2000): 533-548. In their explorations and defense of narrative, these scholars do unearth some of the constraints of narrative. See George A. Reisch, “Chaos, History, and Narrative,” *History and Theory* 30, no. 1 (February 1991): 1-20; Carr, “Narrative Explanation and its Malcontents.”

22. This discussion is based on a series of my history classes at Cincinnati Country Day School in 2010.

23. Entries in John Rich and Graham Shipley, *War and Society in the Roman World* (London, U.K.: Routledge, 1993) cover most of these subjects. The groundbreaking works on communications and the motives for imperialism, respectively, are Arthur Eckstein, *Senate and General: Individual Decision Making and Roman Foreign Relations 264-194 B.C.* (Berkeley, CA: University of California Press, 1987) and William V. Harris, *War and Imperialism in Republican Rome 327-70 B.C.* (New York: Oxford University Press, 1979).

24. Wineburg, 63-88, based on an earlier article, is a seminal experiment in the difference between how students and professional historians read texts.

25. For example, Peter C. Seixas, ed., *Theorizing Historical Consciousness* (Toronto, Canada: University of Toronto Press, 2004).

26. Sam Wineburg, Susan Mosborg, Dan Porat, and Ariel Duncan, “*Forrest Gump* and the Future of Teaching the Past,” *Phi Delta Kappan* 89, no. 3 (November 2007): 168-177; Sam Wineburg, Susan Mosborg, Dan Porat, and Ariel Duncan, “Common Belief and the Cultural Curriculum: An Intergenerational Study of Historical Consciousness,” *American Educational Research Journal* 44, no. 1 (March 2007): 40-76.

27. Mayer, Mautone, and Prothero; Richard Mayer, “Should There Be a Three-Strikes Rule against Pure Discovery? The Case for Guided Methods of Instruction,” *American Psychologist* 59, no. 1 (January 2004): 14-19; Tobias and Fletcher.