

Kevin Kee
Brock University
St. Catharines, Ontario, Canada

Jamshid Beheshti & Andrew Large
Graduate School of Library &
Information Studies
McGill University, Montreal, Quebec,
Canada

Charles Cole
Graduate School of Library &
Information Studies
McGill University, Montreal, Quebec,
Canada

“A Journey to the Past: A Quebec Village in 1890”: A Test Case for Best Practices for History Simulations

Abstract

How do we develop computer simulations to best support student learning of history? This paper describes a continuing research project into the design, development, and testing of a representation of late nineteenth-century small-town Quebec for elementary school students. It provides a preliminary report on the manner in which, by both theorizing about simulations and building a simulation with a commercial-sector partner, we are responding to some of the questions that have animated the literature on computer games and simulations for history education, especially those concerning best practices for their design, production, and use.

Introduction

Research on computer simulations and games for learning has grown to the point that a new body of literature is emerging. The rationale for using games in education goes beyond their appeal to

twenty-first youth – “digital natives” who have grown up with, and speak the language of, computers (Prensky, 2001). These technologies, as James Paul Gee has shown, are especially effective in allowing students to experience new worlds, where they can develop resources for problem solving and, ultimately, view the environment (in the game, but in other semiotic domains as well) as a design space that can be engaged and changed (Gee, 2003).

The emerging theory on games for learning has been built on several pillars, but few are more foundational than Seymour Papert’s notion of “constructionism” (Harel and Papert, 1991). It contends that knowledge is not deposited by the teacher into the student – what Paolo Freire termed “banking” (Freire, 1970) – but rather constructed in the mind of the learner.

In the realm of history education, the notion of constructionism, and the “active learning” movement it helped spawn, have challenged a culture that had formerly revolved around words on paper. A budding interest in the potential of “electronic history” (Seixas 1999, Lutz 2001) has blossomed into research on the potential for computer visualization in general (Staley, 2003), and games and simulations in particular. An important aspect of this inquiry has addressed the use of commercial games for history education (Taylor 2003, Squire 2004). This article charts a different course, outlining a research project involving the development of a history simulation, and reflecting on the articulation of best practices for the design, production and use of history simulations for learning.

There has been considerable debate concerning how best practices should be defined. For the purposes of this study, these will include design practices that support i. engagement with the simulation ii. appropriation of knowledge and iii. appropriation of the practices of the discipline of history. Researchers need to address best practices for engagement so that students remain in simulations long enough to learn the content and methods that

historians and history educators are trying to teach. Best practices also need to be articulated for the appropriation of content knowledge. Finally, researchers need to articulate best practices for moving students beyond the “facts” of history to an understanding of the skills of historical practice – generating, corroborating, representing and assessing interpretations of the past. We need to give attention to the concepts, methods and vocabulary required to do history, and underscore to students the challenge of knowing the past (Holt, 1990; Wineburg 2001).

Our methodology is premised on the notion that research of this nature must go beyond inquiring into simulations; it must also involve building them. As Geoffrey Rockwell observes, in order to understand how digital multimedia can be used to express ideas, we must engage in both “thinking about” multimedia through definitions, histories, examples and theoretical problems, and “thinking with” multimedia using computer technologies to explore and communicate ideas. As Rockwell notes, “In a field like multimedia, where what we think about is so new, it is important to think-with. Scholars of multimedia should take seriously the challenge of creating multimedia as a way of thinking about multimedia and attempt to create exemplary works of multimedia” (Rockwell, 2005, 117).

“Thinking with” simulations in this manner encourages us to think about the goals that we want to achieve as historians and teachers of history, and look for ways in which computer games and simulations might help us realize these goals. Following Bass (1997), we can search for “the critical and productive affinities” between our “materials, methods, and epistemology on the one hand, and the inherent structure and capabilities of interactive technologies, on the other”. (Bass 1997)

The research goal of the project outlined in the pages that follow was to design, develop and test an educational computer simulation to support the teaching of history in elementary school classrooms.

More specifically, the goal was to provide Grade 5 students with a platform through which they could learn about aspects of the social and cultural life of late nineteenth-century St. Hilaire – a village about 50 kilometres east of Montreal, and to enable students to draw comparisons with their own lives. Seymour Papert has called exploratory learning environments such as this, where students can manipulate objects and their relationships to one another, “microworlds” (Papert, 1980). More recently, these have been referred to as “serious games”. We will use “simulations” – a term that connotes a created environment that privileges fidelity to the historical record.

In “A Journey to the Past: A Quebec Village in 1890/Un voyage dans le passé: Un village québécois à la fin du 19^{ième} siècle”, produced in separate French- and English-language versions, students can freely move around the village, enter buildings, and interact with non-player characters (NPCs) and objects. Similar in nature to the seminal Virtual Harlem project (1999) in that it attempts to reproduce a physical place in the past, “A Journey” is notable for its delivery via the World Wide Web, and the incorporation of period NPCs to facilitate students’ exploration.

Development

We designed and developed “A Journey to the Past” from the ground up. This allowed us to control the content and the means by which it is delivered; at the same time, it required a significant investment of time and resources. The simulation was built using “Virtools” virtual reality development software. Deliverable via the Web, “Journey” requires that students download the free “Virtools Web Player” and then the simulation. “Journey” is generated in both 3-d (for the background) and virtual reality (for the primary environment), allowing students to explore as they wish, and pick up and manipulate digital objects. A variety of media were integrated into the 3-d/virtual reality

environment: Flash sequences for cut scenes, an artist's drawing of scenes in and around St. Hilaire, text to accompany the audio (allowing students to read along as they listened to NPCs' monologues, as well as support students with hearing problems), and links to external Web sites with supplemental information.

Researchers who want to study computer games to facilitate student learning in history, and educators who want to support this learning, may choose from other options for the delivery of the environment. As Tom Taylor (Taylor, 2003) and Kurt Squire (Squire, 2004) have shown, commercial games such as *Civilization III* can be effective tools for supporting in-classroom learning of history. At the same time, they point out that commercial games are not always suitable for a teacher's pedagogical goals.

A second choice is to customize a game using "Editors" supplied by the game developers (*Civilization IV*, for example, has included an "Editor" for this purpose), or manipulate sections of commercial game code and produce a new game. For all of the obvious advantages, "modding" a commercial game does come with significant drawbacks: students will need to buy the original game before they can play the modified version, and one may be unable to remove aspects of the original game that are not suitable to its "modded" purpose.

A third option with potential is the use of commercial online worlds such as "Second Life". These worlds provide a first-rate 3-d world experience, but researchers and educators have to build the environments within the world – these cannot be imported from other programs or environments, and cannot be exported for use in other domains.

Our decision to develop all aspects of the simulation provided us creative free reign, enabling us to deliver a free, Web-deliverable virtual reality simulation. These advantages came at a cost, however. Creating all aspects of the content required a significant investment of time and resources – although substantially less than the

millions of dollars and years of development that lie behind the simulations and games that crowd the shelves of your local electronic store. Assembling a multi-disciplinary team, coordinating the timing of different aspects of the production, and simultaneously developing the simulation in two languages proved particularly challenging. In the end, our goals far outstripped our resources and our significantly reduced timeline (scheduled for twelve months, but reduced, due to external constraints, to eight months). Serving the simulation over the Web created other constraints: we were forced to curtail the amount of data so that it might be effectively delivered within the bandwidth of most Canadian schools, and the memory of those schools' computers.

Development of this kind of project was not possible within the university alone: a project coordinator managed content research and production; school teachers ensured that the project met the needs of the classroom (the physical environment, but also the teacher, students, and curriculum); a scriptwriter crafted the research of graduate students into scripts and storyboards which were brought to life by actors and dancers; Virtuel-Age International, our commercial partner, used its technology and expertise to develop this content into the simulation.

The Simulation

"A Journey" takes as its starting point two drawings by Ozias Leduc, one of Quebec's leading artists in the late nineteenth and early twentieth century. "Road to the Church (St. Hilaire)" and "The Dance" were first published in *Claude Paysan* (1899), a novel by Ernest Choquette, a close friend of Leduc. *Claude Paysan* tells the story of Claude, a young farmer who falls in love with Fernande, a bourgeoisie who escapes the commotion of Montreal every summer for the bucolic charm of St. Hilaire.

The two drawings provide an entry point into this time and place: "The Road" is an idealized vision of the main village

thoroughfare in May; “The Dance” is a scene during the celebration of Mardi Gras, the feast that precedes the Lenten period of fasting and penance.



Figure 1: “The Road to the Church (St. Hilaire)”



Figure 2: “The Dance”

Entering the simulation, the user finds herself in a twenty-first century book store, where a young man and woman are debating the central question raised in the simulation: “was life one hundred years ago better or worse than today?” A guide approaches and offers to show them a “magic book” – *Claude Paysan* – that might provide an answer: he says that the book allows people to walk into pictures of the past. After providing a short introduction to the novel, the guide turns to a page showing “The Dance” and “Road to the Church”, and invites the user to choose which drawing to visit. Alongside the young man, woman, and guide, the student is then pulled into a time tunnel that drops all of them into the chosen scene.

In “Road to the Church”, the user finds herself on the main thoroughfare into St. Hilaire, beside an artist drawing his own picture of the scene – one significantly different from that of Leduc. Like all the NPCs she will encounter, he tells her a brief story of his own experience, and then prompts her to find out more. Choosing “Yes” produces a pop-up Web page that supplies textual information, and a short list of annotated Web links. Choosing “No”, the user continues her tour. Behind her lies a cottage where two farmers bicker about continuing the farming practices of the past, or adopting “newer” technologies and practices. Further along the road, in the center of the village, a priest dispenses advice on gender roles and job prospects for men and women. Inside the local inn, a maid and a cook – the cantankerous Madame Gauvin – are preparing a meal, and demand the user’s help.

In “The Dance”, the user is dropped into the parlour of the village inn during the middle of a traditional dance by a group of revellers. When the cut scene ends, the guide prompts the user to explore the inn and meet its occupants: an old man reflects on the meaning of Mardi Gras; a young woman hopes to meet a suitor; the artist relates his attempts to mimic Leduc’s style; and Madame Gauvin complains from the kitchen.

Articulating and applying best practices

Through the design and development of “A Journey to the Past”, we were able to engage some of the research questions related to history simulations for education, specifically questions concerning best practices for engagement, appropriation of the content of history, and appropriation of the practices of history.

1. Best practices for engagement

Returning to Madame Gauvin, the user has the choice to either engage or avoid her. The freedom to explore as she wishes is central to the user’s experience. Janet Murray has contended that immersion – the

feeling of being surrounded by another reality, where one has the freedom to make choices about where one will go, and to use objects and see them work – is an “essential pleasure” of digital media (Murray 1997). Madame Gauvin demands help in cooking a chicken, and if the user acquiesces, she must pick up a log, open the oven doors, place the log in the oven, light the log, close the doors before the kitchen fills with smoke, pick up a pitcher, fill it with water, pour the water into the pot on the stove, and finally pick up a plucked chicken and place it in the pot. If the user falters she will be aided by the maid, or scolded by Madame Gauvin. The potential for success or failure in manipulating objects and performing tasks in this “microworld” heightens the sense of immersion.



Figure 3: Madame Gauvin in the kitchen

We chose to engage students with several brief tasks, rather than a single overarching goal, for a variety of reasons. The teachers with whom we collaborated were convinced that this kind of learning tool in a classroom was engaging on its own – game strategies, such as a race against the clock, were at best unnecessary, and at worse, distracting. Users might require a first-rate gaming experience at home, the teachers pointed out, but their expectations in a classroom are different. Squire and Barab (2004) have made a similar observation. Furthermore, they have shown that game strategies can be as much a disincentive as an inducement in a classroom. While commercial games are designed for twenty or more hours of use, with rates of failure and success determined accordingly, we expected our simulation to occupy no more

than two hours of a user’s time, and adjusted our strategies for engagement to this time frame. Finally, by providing an open environment, rather than one that was governed by a single, over-arching quest or goal, we provided more opportunities for teachers to use the environment as they wished, prompted by the lesson plans and work sheets in our companion Web site.

At the same time, we attempted to heighten engagement through the use of forceful characters such as Madame Gauvin. Demanding and impatient, she is the least sympathetic, and yet, tellingly, the most appealing to users in our preliminary user tests. “A Journey” also includes affable male and female NPCs such as the guide, and the young man and woman that greet the user in the opening scene in the book store – our attempt to provide NPCs that would appeal to users of both sexes.

2. Best practices for the appropriation of content

Beyond engaging the user, NPCs such as Madame Gauvin were developed to support the appropriation of historical content. Gee has contended that computer games that support learning often employ “distributed authentic professionalism” (Gee, 2005), providing the player with characters that help the player do her job more effectively. Similarly, the NPCs in “A Journey” provide the user with information that helps the user fulfill her primary task of learning about life in late nineteenth-century small-town Quebec.

Our choice of content was guided by the curriculum – in our case, Quebec Grade 5/6 Social Sciences, which focuses on the history of “Canada and Quebec”, and requires “that users be encouraged to question social and territorial phenomena of the present and to seek their origins or explanations in social and territorial phenomena of the past” (Quebec Education Program – Approved Version, Preschool Education, Elementary Program, 194). Canada’s decentralized education system renders impossible the development of a single simulation that will fit the curricular

goals of all provinces. Nevertheless, the teaching of history at the elementary level is placed within the broader context of “social studies” across the country. In this way, a virtual reality simulation of an actual village populated by period characters provides what Bass has called “critical and productive affinities” with a curriculum that teaches history, geography, and citizenship as a single discipline.

The NPCs communicate via short monologues, and then ask the user if she would like to learn more about the specific content via binary menus. Here we encountered the single greatest challenge to effective computer gaming within, but also beyond education. While game developers have made great strides in simulating the visual world, comparatively less progress has been made in the simulation of social interaction. In a historical setting such as ours, the result is an experience that effectively supports exploration of the physical environment, allowing the user to inquire further or choose another topic, but does not provide a framework for meaningful discussion or debate.

In the absence of substantive dialogue, users can gain important historical knowledge through their exploration of the environment. Content was delivered via multiple formalisms: the audio of the NPCs’ monologues, the accompanying text (to support learners’ textual literacy), drawings, the text in explanatory Web sites, and video clips in cut scenes such as the dance. The primary mode of content delivery, however, was via virtual reality. Here, however, we were faced by the central challenge of those who create Web-deliverable virtual environments: the limits of bandwidth. In the spirit of the “microhistory” promoted by historians and anthropologists since the 1970s, our goal was to provide users with the sense that they were immersed in the past. Yet our attempt to virtually reproduce the past in all of its gritty detail was limited by the amount of data that we could effectively deliver. For instance, rather than reproducing a late nineteenth-century barn with all of its sights, if not its smells, we

provided an empty structure – the details of animals, implements and dirt too data-rich to deliver.

3. Best practices for the appropriation of the practices of history

Perhaps there is a silver lining to this ahistoricity – it reminds the user that what she is exploring is a representation, and a highly delimited one at that, of a place in time past. Peter Seixas has warned against making history look too familiar to users. For Seixas, the effective communication of history must go beyond communicating the content of the past; it must also involve communicating “the pastness of the past – the distance and difficulty involved in knowing the past” (Seixas, 1999, 690).

The past is a foreign country, poststructuralist historiographers remind us, to which we can never return. A history is a representation of the past, a snapshot of an aspect of a vast, unfathomably complex, reality (Jenkins, 2003). Underscoring the “constructed” nature of history is an important aspect of history education, even at the elementary level. Seixas has suggested that the effective teaching of history might encourage users to approach the discipline from a postmodern orientation, providing users with opportunities to look behind constructed historical narratives to examine, for instance, what has been included or omitted, or the order in which the pieces of the story have been arranged (Seixas, 2000).

We tried to underscore the constructed nature of the virtual environment in a variety of ways. When the user arrives to “The Road”, she finds herself facing the artist NPC, Frederic Garneau, sitting at his easel. His drawing of 1890 St. Hilaire, he explains, looks fundamentally different from that of Leduc. Leduc had carefully excised all traces of the new technologies that were transforming his hometown at the end of the nineteenth century, but Garneau includes the train, railroad track, and telephone poles. In “The Dance”, the guide explains that the time machine has malfunctioned, and several

twenty-first century objects have been transported into the environment. Madame Gauvin enlists the user to help her locate these, and dispose of them, returning order to her virtual world.



Figure 4: Felix Garneau at his easel

Conclusion

How effective is this game, and how does it compare with Garneau's story, in supporting user learning of the "constructed" nature of historical representations? How engaging are Garneau and the other NPCs, and how do they compare to different strategies for engagement? How effective are our strategies for supporting user learning of the content and practices of history? These and other questions will be addressed in the next few months as our research shifts from the design and development stage to the testing stage.

We developed "A Journey" to provide the user with freedom to explore, and created several small tasks, rather than one over-arching goal, to support user engagement in a classroom setting, governed by activities chosen by the teacher. NPCs were created to engage the user, but also to provide content knowledge, though with little capacity for meaningful dialogue. Other formalisms, including text and video, were used to supplement digital virtual reality, but our capacity to enrich the environment was limited by our decision to serve the environment via the Web. While we tried to develop a convincing representation of St. Hilaire in the late nineteenth century, we also attempted to support the examination of the environment as a representation of history, rather than

historical "fact". As we move from the design and development to the testing phase of "A Journey to the Past: A Quebec Village in 1890", we will be able to evaluate these decisions, and, in the process, provide some conclusions about the refinement of best practices for the effective design and development of simulations for history education.

Acknowledgements

Research assistants: Maryse Beaulieu, Leanne Bowler, Jean-Francois Constant, Duncan Cowie, Amelie Gagne, Michel Hellman, Charles-Antoine Julien, Audrey Laplante, Yang Lin, Sarah Mitchell, Evelyne Mondou, Valerie Nessel, Emeka Nwakanma; Educational consultants: Sam Allison, Walter Baslyk, Virginia Robertson; Script Consultant: Frances Gallagher; at Virtuel-Age International: Claude Frasson, Ph.D., Orly Benchetrit, Marie-France Frasson, Stephane Payette and Felipe Quinzanos. This research was made possible by funding from Heritage Canada's Canadian Culture Online Program, and the Canada Research Chairs Program

Works Cited

Barab, S., Squire, K. 2004. "Replaying history." *Proceedings of the 2004 International Conference of the Learning Sciences*.

<http://website.education.wisc.edu/kdsquire/manuscripts/icls2004/icls-civ3.doc> [Accessed July 12, 2006].

Bass, R. 1997. "The Garden in the Machine: The Impact of American Studies on New Technologies".

<http://www.georgetown.edu/faculty/bassr/garden.html> [Accessed July 7, 2006].

Freire, P. 1970. *Pedagogy of the Oppressed*. New York: Herder and Herder.

Gee, J. 2003. *What Games Have to Teach Us About Learning and Literacy*. New York: Palgrave/Macmillan.

- Gee J. 2005. "What would a state of the art instructional video game look like?" *Innovate* 1 (6). <http://www.innovateonline.info/index.php?view=article&id=80> [Accessed July 11, 2006].
- Harel, I., Papert, S. 1991. *Constructionism*. Norwood, NJ: Ablex.
- Holt, T. 1990. *Thinking Historically: Narrative, Imagination, and Understanding*. New York: College Entrance Examination Board.
- Jenkins, K. 2003. *Rethinking History*. New York: Routledge.
- Leduc, O. 1899 "The Dance". At *Cybermuseum, National Gallery of Canada*. http://cybermuseum.gallery.ca/cybermuseum/search/artwork_zoom_e.jsp?mkey=8753 [Accessed July 10, 2006].
- . 1899. "Road to the Church (St. Hilaire)". At *Cybermuseum, National Gallery of Canada* http://cybermuseum.gallery.ca/cybermuseum/search/artwork_e.jsp?mkey=8754[Accessed July 10, 2006].
- Lutz, J. 2001. "Riding the horseless carriage to the computer revolution: teaching history in the twenty-first century." *Histoire Sociale/Social History* (34).
- Murray, J. 1997. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. Cambridge: MIT Press.
- N.A. 2001. *Quebec Education Program – Approved Version, Preschool Education, Elementary Program, Curriculum*. http://www.mels.gouv.qc.ca/DGFJ/dp/programme_de_formation/primaire/pdf/educprg2001/educprg2001-071.pdf [Accessed July 12, 2006].
- N.A. 1999. *The Virtual Harlem Project*: <http://www.evl.uic.edu/cavern/harlem/> [Accessed July 7, 2006].
- Papert, S. 1990. "Introduction" to I. Harel (ed.). *Constructionist Learning*. Boston: MIT Laboratory.
- . 1980. *Mindstorms: Children, Computers, and Powerful Ideas*. New York: Basic Books.
- Prensky, M. 2001. *Digital Game-Based Learning*. New York: McGraw-Hill Education.
- Seixas, P. 1999. "Negotiating Past and Present: A Review of New Materials for Teaching Canadian History in the Schools". *The Canadian Historical Review* 80:4 (December).
- . 2000. "Schweigen! die Kinder! Or, Does Postmodern History Have a Place in the Schools?" Stearns, P, Seixas, P, Wineburg, S. (eds.). *Knowing, Teaching and Learning History: National and International Perspectives*. New York: New York University Press.
- Squire, K. 2004. "Replaying History: Learning World History through Playing Civilization III". Ph.D. Dissertation, School of Education, Indiana University.
- Staley, D. 2003. *Computers, Visualization and History: How New Technology Will Transform Our Understanding of the Past*. Armonk, NY: M.E. Sharpe.
- Taylor, T. 2003. "Historical Simulations and the Future of the Historical Narrative". *Journal of the American Association of History and Computing* 6:2 (September). <http://mcel.pacificu.edu/JAHC/JAHCVI2/ARTICLES/taylor.HTML> [Accessed July 12, 2006].
- Wineburg, S. 2001. *Historical Thinking and Other Unnatural Acts*. Philadelphia: Temple University Press.