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Art Thief: An Educational Computer Game Model for Art Historical Instruction

Jonathan Kinkley

ABSTRACT

Cognitive research has revealed learning techniques more effective than those utilized by the traditional art history lecture survey course. Informed by these insights, the author and fellow graduate researchers at the University of Illinois at Chicago designed a "serious" computer game demo, Art Thief, as a potential model for a learning tool that incorporates content from art history. The game design implements constructed learning, simulated cooperation and problem solving in a first-person, immersive, goal-oriented mystery set within a virtual art museum.

University undergraduate students are currently introduced to the subject of art history through two chronologically organized semester survey courses. The first semester covers art movements from prehistoric cave markings to medieval art and architecture; the second semester addresses art from the Western Renaissance to contemporary times [1]. Since the late 19th century, the traditional instruction method for these courses has been a slide lecture in a large auditorium by a professor who displays images of works on an overhead projector and discusses them [2]. Universities ubiquitously use texts such as Janson and Janson's *History of Art* or Gardner's *Art through the Ages* as reading supplements [3]. For the final exam, the students are expected to identify a work's artist, title, date and medium by memory from an overhead slide projection and then to compare and contrast images in essay format.

EVALUATING THE LECTURE-BASED CURRICULUM

For years, art history educators have questioned the value of the traditional lecture-based course curriculum compared to other teaching methods. The editorial board of *Art Journal* cited research from the National Training Lab in Bethel, Maine, showing that "the lecture method of teaching produces the lowest learner retention rate" [4]. Observing the educational shortcomings of the traditional lecture, art history professor Robert Bersson asked, "Why are we so tied to the lecture method?" [5]. He attributed the reliance on lecture to a lack of pedagogical background on the part of art history professors—who are generally not taught how to teach—and a tenure system in universities that rewards scholarly publication over teaching skills [6]. Such critiques from within art history resonate with broader studies of different cognitive processes used for memory retention. Well-known cognitive and developmental psychologist Ann L. Brown neatly summarized advances in learning research: "Learners came to be viewed as *active constructors*, rather than passive recipients of knowledge" [7].

The results of this evaluation of the lecture survey courses in art history instigated a comprehensive redesign of the course at many universities. The introduction of smaller discussion groups, the inclusion of non-Western art in the curriculum,

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field trips to museums and critical thinking exercises are all new methods implemented by art history colleges [8]. In addition to this significant restructuring of the survey course, some educators advocate the embrace of interactive technologies as a heuristic learning tool [9].

THE COMPUTER-ASSISTED COURSE

The implementation of computer-assisted learning in undergraduate art history has already proven effective in studies and practice. In a study that juxtaposed slide instruction with computer Interactive Multimedia (IM) instruction, Nancy Cason found that IM is an "effective tutorial for art history classes" and further that IM "can contribute to the attainment of higher-order understandings and choice of appropriate search strategies in thinking and writing about art" [10]. The usage of programs in education, especially with animation, video and graphics, can appeal to average college students today, who are "unaccustomed and unwilling to learn sequentially—to read the manual—and instead are inclined to plunge in and learn through participation and experimentation" [11]. Many of these students are already fluent in interactive media through lifelong experience with videogames and computers.

As a $7.4 billion industry [12], videogaming has become a dominant form of entertainment and can no longer be classified as a strictly juvenile pastime. The average videogame player is 33 years old and has been playing for 12 years; nearly half are women [13]. In reaction to the effectiveness of computer-assisted learning, the familiarity of students with computer media, and the recognizable visual language and interface of videogames, game developers have created a new genre of education and entertainment known as serious or persuasive games. As exemplified in projects such as Massachusetts Institute of Technology's Games-to-Teach workshop, the educational computer game advocate Serious Games Initiative and the Serious Games Summit conference, the quantity of serious games as educational or persuasive tools is growing quickly.

In response to this perceived potential for effective computer-assisted instructional software and the appeal of videogames among undergraduate youth, graduate researchers (Ben Dombek, Jason Gorski and myself) at the Electronic

Fig. 1. Art Thief, introductory narrative slide depicting museum security guard Wayne Kitsch preparing for work. (© Jonathan Kinkley, Jason Gorski and Ben Dombek)

Fig. 2. Introductory narrative slide of a shadowy black market art dealer who coerces Wayne Kitsch to "steal the Kandinsky." (© Jonathan Kinkley, Jason Gorski and Ben Dombek) As Kitsch's museum contains no wall labels, the user must communicate with museum patrons to discover which work Kandinsky created.

Visualization Laboratory at the University of Illinois at Chicago [14], under the guidance of Jason Leigh, developed a computer game demo based on effective learning techniques to serve as a model for a supplement to the art history lecture survey. Titled "Art Thief," the project had as its goal to create a serious videogame demo that educational computer game developers could build upon and test for educational merit. The game was structured to immerse the user within a stimulating, goal-oriented virtual narrative and incidentally to educate the user with content from undergraduate art history survey courses.

ART THIEF'S DEVELOPMENT

The researchers designed the game to incorporate technology-mediated learning expert Maryam Alavi's evaluation of effective computer learning practices, which she finds to be characterized by three components: "active learning and construction of knowledge; cooperation and teamwork in learning; and learning via problem solving" [15]. The first component, active learning and the construction of knowledge, is facilitated through goal-oriented game design. The user gathers and assembles information to make decisions that affect the outcome of the game. The second, the method of cooperation and teamwork, is simulated through interpersonal interactions in the form of dialogue with non-player charac-

ters (NPCs). The last, problem solving, is the central mechanism, and the user must work through clues to advance the narrative of the game. Once completed, the Art Thief demo is meant to be published to a web site as a free, learner-oriented model for educational game developers to perfect. Once tested and refined, developers could then release games modeled on Art Thief as supplemental learning resources for art historical instruction.

We programmed and designed the game using free open-source or inexpensive software applications and used images available for educational purposes without copyright restriction. It was created using the open-source cross-platform development environment Electro [16], which uses the Lua programming language. Electro can display images, audio and 3D model files on a comprehensive scene graph with a simple but efficient scripting language. Free 3D models and textures were chosen from TurboSquid.com. Original models were sculpted in Inivis's ac3d, a 3D modeling program. Art historical images were copied from ARTstor.org, a site available for use for educational purposes by subscribers such as universities. Because of copyright issues, Art Thief users must open an account with ARTstor.org in order to participate in the game.

In order to instill optimal investment in the game by the user, we conceived of the gameplay as a first-person, immersive

experience using the classic mystery as an engaging governing narrative. A widely used entertainment trope, the mystery can also function for educational purposes as a puzzle to solve, which resonates with Alavi's conception of "active learning and construction of knowledge" [17]. The introductory and concluding sequences were designed to be slideshows of narrative stills with superimposed text. To emphasize the mystery element of the game, these sequences were created in black and white and utilized a high-contrast chiaroscuro visual quality, borrowed from the historic visual culture of film noir and embodied in films such as Orson Welles's *Touch of Evil*. The game itself features high-contrast visual environments and exaggerated character personalities to elicit the user's interest. Gameplay consists of both mouse and keyboard controls. The mouse controls the main character's head, allowing the user free range of vision. The W, A, S and D keys move the main character forward, left, back and right respectively. Clicking on characters engages them in conversation. Clicking on artwork causes the main character to walk in front of a painting for a close-up of the artwork that encompasses his entire range of vision.

GAMEPLAY

Upon the launching of the program, an introductory slideshow sequence introduces the user to the main character.

Fig. 3. Concluding narrative slide. (© Jonathan Kinkley, Jason Gorski and Ben Dombek) Wayne Kitsch ponders which artwork to steal based on the information he has received from museum patrons.

Each slide contains black-and-white noir images and narrative text framed within an array of ornate museum picture frames. The digitally manipulated, high-contrast black-and-white photographs and the computer-drawn character evoke a comic-book visual experience, yet the picture frames encompassing each image represent a visual cue for the subject matter of the game (Figs 1–3). This juxtaposition was intended to synthesize prevailing attitudes and stereotypes about high and low art or "Avant-garde and Kitsch"—as delineated in art theorist Clement Greenberg's historic 1939 essay [18]. Alluding to this binary, the user learns that his or her character is Wayne Kitsch, a disgruntled museum guard. Kitsch is designed to represent the opposite of the stereotype of an art aficionado—whose archetype in popular culture is personified by Pierce Brosnan in *The Thomas Crown Affair* as a rich, intellectual and dashing figure. Kitsch was conceived as a fine art–despising, unrefined man, whose popular culture precedents include Homer Simpson and the character of Bill from "King of the Hill." At the risk of perpetuating harmful or inaccurate stereotypes, the characters of Art Thief function as an often-used narrative device: stock characters that are instantly recognizable. These characters were used to expedite the narrative so users can quickly immerse themselves within Art Thief.

In the introductory slide sequence, Wayne Kitsch is held at gunpoint on his way to work by a shadowy black market art dealer, who is visually reminiscent of the quintessential Dick Tracy comic-book villain with fedora hat, trench coat and obscured countenance. Kitsch is ordered to steal "the Kandinsky" from the museum collection because the dealer's client has developed an affinity for that artist. If Kitsch succeeds, he will be rewarded handsomely and will be escorted to retirement on an island paradise, safe from the police. If Kitsch fails, he faces certain imprisonment. This countercultural narrative was selected because of the popularity of countercultural videogames in entertainment—for example, the successful Grand Theft Auto series.

The user begins the game in the security office of an art museum that surveys art history through four collections in four separate rooms: Medieval, Renaissance/Baroque, 19th Century and Modern/Postmodern (Fig. 4). Each room holds approximately 15 works from each period by different artists. In this particular museum, there are no labels for the artwork, and thus the user must talk to different characters within the museum to determine which artwork he or she must steal (Color Plate A). Since the emphasis of the game is on the artwork,

Fig. 4. The user can access his or her map by pressing the M key. The map gives clues to the groupings of the artworks in the museum, which are Medieval, Renaissance/Baroque, 19th Century and Modern/Postmodern. (© Jonathan Kinkley, Jason Gorski and Ben Dombek)
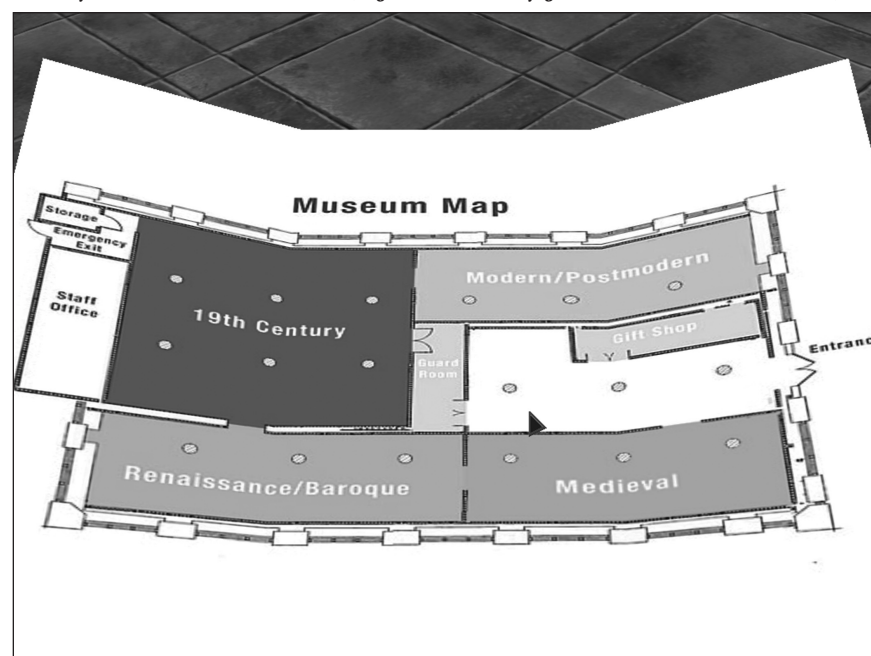
Fig. 5. Screenshot in the Modern/Postmodern room of a conversation with two students. (© Jonathan Kinkley, Jason Gorski and Ben Dombek) The user can select any of the five comments/questions that are available in the current stratum of conversation.

the colors of the game were designed to be dark and bland, with the exception of the paintings, photos and reliefs in the museum galleries, which are colorful and high resolution.

There are 13 characters in the museum, and each one knows a different nugget of information about the artwork that Kitsch must steal. These nuggets include clues such as "artist name," "period," "medium," "title," "date," "style" and "subject matter." When a user has discovered all the nuggets of information, he or she will be certain which artwork to steal. At the beginning of the game, Kitsch knows only the last name of the artist, which he mispronounces in his inquiries with many characters. He does not know whether it is a painting, an engraving, a photograph, a relief, etc.; what room it is in; when it was made; what the subject matter of the composition is;

or any peripheral information about the work. In order to find this information, Kitsch must engage in dialogue with each character. During each conversation, the user can select different topics of conversation to explore (Fig. 5). The game is programmed so that there are 13 different strata of conversation possibilities the user can engage in. Once the user reads a conversation nugget that is crucial to the game, Kitsch can use that newfound knowledge to unlock a different stratum of conversation with the other characters. With 13 nuggets, the user has all the information he or she needs to steal the correct painting. For example, at first conversation with characters is limited until Kitsch obtains a floor plan map of the museum from a docent that identifies the different time periods represented by the collection. Then Kitsch knows the groupings of the artwork and

can ask other characters about these four specific time periods in art history.

EDUCATIONAL CONTENT

Each character within the museum loosely represents a different art historical or art criticism methodology that relies on a particular technique to assess meaning in art: biography, psychoanalysis, iconography, formalism, etc. Their personalities are designed to reflect their approach to art within the museum. For example, Professor Wilhelm "Bookworm" Winckelmann is an amalgam of seminal Germanic art critics, historians and philosophers like Johann Joachim Winckelmann and Jacob Burckhardt; Giorgio Venturi is an Italian art enthusiast with much anecdotal knowledge about artists and is modeled after Giorgio Vasari, the 16th-century writer of the biographical

Lives of the Artists; Clem Bergreen is an art critic aligned with formal and Modernist art criticism and is a thinly veiled version of the 20th century's best-known art critic, Clement Greenberg. Overall character language is extraordinarily colorful in order to sustain interest and reflects the relationship of Kitsch and the museum patrons. The following is an excerpt of a conversation that uncovers educational content after the user selects a question from the options for dialogue with Claire D'Avignon, a Frenchwoman in the Renaissance/Baroque room:

> WK: I've figured out today that the subject matter of paintings is kinda important. From what you were saying earlier about the Renaissance and Baroque time, why does that painting look so different . . . the one with the vase and flowers?

> CD: *Très bien Monsieur*! Willem van Aelst painted that still life in Holland around the same time as many of these other paintings, in the middle of the 17th century. The Dutch Reformed Protestant Church banned religious imagery so painters had to focus on secular objects. They usually had moralizing messages, like that of *vanitas*, the reminder of vanity for the wealthy Dutch middle class, governors of their extensive trading empire. Also *trompe l'oeil* was a popular means of art execution. To trick the eye into believing that something 2-dimensional was actually 3-dimensional.

> WK: What can you tell me about abstraction?

> CD: You are in the wrong room Monsieur; do you see any abstraction here?

> WK: I'm not 100% sure I know what it is?

> CD: This is representative painting. It's the opposite of this.

The user then realizes he or she needs to discover someone who knows about abstraction. This realization, like others in the game, demands problem solving and the construction of accumulated knowledge to accomplish a goal, incorporating effective learning strategies within the context of an enjoyable videogame. After unlocking the final nugget of information, the user makes an educated guess about which work in the collection is the correct one to steal. The user clicks on the painting to steal it, and the decision determines the fate of Wayne Kitsch. If the user selects Wassily Kandinsky's *Fragment 2 for Composition VII,* then the image of a tropical island paradise and final narrative ensues. An incorrect decision prompts the widely recognizable image of Alcatraz Prison.

TECHNICAL ISSUES

As of this writing, the Art Thief computer-game demo still requires substantial development before it can be considered for addition to an art history survey course or even evaluated regarding its effectiveness as a learning tool. The game suffers from technical issues that range from minor errors from within the Electro development environment to flickering textures as the user walks through the museum. The gameplay of Art Thief currently allows for cheating; users can click on any artwork in the museum and through trial and error eventually steal the correct painting. Also, Art Thief has little replay value. Once the user has learned which work of art to steal, the goal has been accomplished, and there are currently no alternate endings. As a demo, Art Thief lacks both breadth and quality of art-historical content. The game has approximately 15,000 words of unedited dialogue. The educational dialogue would benefit from far more art-historical information and comparison to art-historical survey texts for accuracy.

Conspicuously absent from Art Thief are non-Western art objects, a gap that is acknowledged by an art patron during the game. In addition, although many images fall within the public domain, ARTstor.org holds copyright over the documentation of the images. Thus, only subscribers to ARTstor.org can legally access Art Thief. Future developers will either have to gain permission to republish those images or restrict access for educational purposes to ARTstor.org subscribers. Developers may also wish to consider their audiences. Although the Art Thief demo was designed for collegiate art history courses, a tool such as Art Thief could be used to address the relative dearth of art history classes for high school students and the lack of widespread access to brick-and-mortar museums.

CONCLUSION

The gameplay of the Art Thief demo was built on Alavi's conception of effective learning techniques: constructed learning, collaboration and problem solving. With these techniques at its center, Art Thief's mystery narrative, colorful characters and art-historical educational content were designed to create an immersive, engaging gaming experience. Art Thief is available for free download for ARTstor.org subscribers only from: <www.evl.uic.edu/spiff/class/cs426/projects/fall2006/Navi/pages/media.htm>.

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