Can we build it?: Using Experimental Prototyping and Iterative Development for Historical Game Design

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ABSTRACT

The experimental development of game prototypes has been gaining attention in academic circles as a valid research method to understand this medium and its potential for historical representation and learning. In spite that in recent years advances in game development technology have considerably lowered the technical skills and economic resources necessary to produce games, still most of the research done in this field concentrates in analysing existent games titles with a varied degree of historical focus. This study follows an action-research methodology, relying on the experimental development and critical analysis of a series of game prototypes designed to test the validity of design hypothesis for historical game-based learning environments. Although still in process, the project has permitted to draw interesting connections between historical epistemologies, educational theory, and game design, which could lead to general principles for the generation of better game-mediated historical experiences.

Keywords

video-games, game-based learning, genre, serious games, digital history

INTRODUCTION

So far, a considerable part of the efforts made in understanding the design of historical video games have been driven by the study of existent games and game genres, analysing their individual potential and problems for historical representation. William Uricchio (2005), for example, taking commercial game titles as references, defines two historical game genres with separate epistemological goals. The first one, "Event games", centre in the simulation of particular events, attempting to "maximise historical accuracy, allowing the setting, conditions, and period details to constrain and shape gameplay" (p. 328). As iconic examples of these type of games, Uricchio presents wargames, a particular genre that tends to show a high degree of fidelity in the simulation of historical conflicts. The second type, defined as "Process-oriented games", are built around a more abstract replication of historical processes, allowing players to engage speculatively with the past, focusing on "particular visions of longterm historical development" (p. 328). As an example of this type of historical engagement, this author cites the popular franchise *Civilization*, a strategy game series in which players can build and expand their nations with a high degree of freedom.

Focusing on the design of historical games for education, Kevin Kee (2008) makes the exercise of mirroring a set of historical pedagogies defined by Peter Seixas (2000), with specific game genres. In this scheme, the first of Seixa's pedagogical orientation, "Collective Memory", with a focus in factual fidelity, is coupled with the action game genre, in which players assume the role of a determined historical figure trying to achieve goals designed to match actual past events. The second of Seixa's orientation, "Disciplinary History", focused on driving students to think and work as professional historians, is mirrored with strategy game mechanics, allowing players to explore alternative historical paths. Finally, "Postmodern History", the last orientation proposed by Seixas, is matched with sandbox games, a genre in which players can creatively modify the game world, setting their own goals and sharing their experiences with extended communities of practice.

Champion (2008, 2015) presents a different classification of games with a potential for historical or cultural understanding. Compared to the previous authors, Champion selection of game genres is more extensive, comprising a number 11 types. His final list included: "Tourist games", "Puzzle games", "Resource management games", "Historical battle games", "Historical combat games", "Historical shooter games", "Role-playing games", "Control-games", "Social-mashup games", and "Games that allow classroom role-playing of history through in-game camera capture". This author recognises that his classification is not extensive nor definitive, but nevertheless a valid exercise to further the understanding of the connections between game mechanics and historical learning.

Although the definition of historical game genres proposed by these authors offers interesting insights, I think that seriously limits the analysis of what games can do as a historical medium and excessively constraints the design space of historical games. The problem derives from the rigid mapping that all of these authors do, between historical epistemologies and a set of game genres largely defined by the game industry, an ontology simply too volatile to be used productively in any theoretical analysis. Also, the rigid schemes that result from these exercises fail to acknowledge the malleability of the medium, still capable of expanding the number of game forms that result from innovative gameplay design. Further, all the visited schemes seem to consider games reductively as only one primary form of gameplay, overlooking the fact that many games present a combination of gameplay structures, making difficult to associate them with only one particular genre. Finally, none of the authors seem to acknowledge the variety of roles and identities that players assume while interacting with games, and the multiple ways in which they regularly switch between them (Salen and Zimmerman 2004).

BUILDING HISTORICAL GAMES TO UNDERSTAND THEM
One of the most important challenges in any design process is to overcome the ever-present tendency to replicate existent referents, missing along the way valuable opportunities to push forward the boundaries of what is possible to attain. While designing or envisioning new forms of historical gameplay, the excessive focus on existent genres completely prevents designers to explore aspects for which specific designs have not yet been produced. In spite of the myriad of games that have been released, we can argue that still many parts of the problem lie in "terra incognita", as grey areas waiting to be explored. The limitations of focusing the scope of the study only to existent games or game categories is acknowledged by game researchers Mateas and Stern (2005), who propose an alternative research methodology, complementary to the study of existent games, driven by the development of experimental game prototypes as a mean to research new design problems and context of use. In their words:

> Building games that explore new regions of design space helps uncover game forms that commercial developers have not yet ventured into, and allows us to directly experiment with some of the most vexing questions in game studies, helping the field avoid making taxonomic and prescriptive errors (Mateas and Stern 2005, p.2).

In spite of the amount of commercially published games that in one way or another deal with historical subjects, and the relatively small number of games produced in academic circles for research purposes, still the study of games as a historical medium remains largely as an unexplored design space. Although some researchers have raised interesting points from the examination of existent games, still many important aspects remain unclear. To further the understanding of these grey areas, it is necessary to go beyond the study of existent products, experimenting with new design hypothesis, and testing the validity of provisional theories and models of historical game-based learning. Consequently, I have chosen to study the problem of designing historical games by developing, testing, and critically assessing a collection of game prototypes, framed within an action-research process.

The prototypes are constructed to test initial ideas and to devise provisional models of game-based historical learning. Concerning the games' historical background, I decided to situate them in the early medieval period of Anglo-Saxon England, a turbulent period in British history in which this land, on the fringe of being colonised by Danish invaders, became a single unified state, with an identity that last to this day. This particular period forms part of the national school curriculum for key stage 2; covering years 3 to 6 in schools in England and Wales. This choice greatly facilitates the implementation of the project in a formal school setting, a key part of the next phase of my research plan.

From a general perspective, the game prototypes were constructed to articulate layers of representation, simulation, narrative and play around the chosen historical period. From a representational viewpoint, the games had to allow players to visit the Anglo-Saxon world, granting the exploration of representative buildings, the meaningful interaction with believable characters, and the manipulation of objects and tools of cultural significance. Integrated simulations had to communicate "how things worked" at the time. Non-player agents had to exhibit believable behaviours, expressing social and cultural patterns of interaction with other agents and the environment, reflecting the meanings associated with the struggle of surviving in the harsh living conditions of the medieval time. Narrative layers had to convey factual information about the historical time while also letting players participate in the construction of a non-linear storyline. Finally, and perhaps most importantly, the game needed to work as a game. It needed to be engaging and fun, setting into motion all the mechanisms that make games intrinsically motivating.

Ultimately, the primary goal of this process consists in the definition of a set of design hypothesis grounded on provisional theories of historical game-based learning. Design hypothesis in this context is defined as the set of ideas or concepts that are possible to translate into a testable form. In this sense, the process follows a deductive rationale: every new system or feature introduced to the prototype constitute a small-scale experiment, susceptible to be validated through play-testing methods. According to Squair (2012), a design hypothesis must comply with four defining criteria: (1) Identify the designs provenance, e.g the theory, practice or standards from it is derived; (2) Provide a concise description of the design; (3) State what the design must achieve in a verifiable fashion; and, (4) Identify critical assumptions that support the hypothesis. As the project moves forward, we not just advance into the development and production of a concrete product, but also gain a better understanding of the theoretical issues involved in its design.

DESIGN HYPOTHESIS

At its current stage of development, the production of the final game prototype is driven by four development paths. The first line of work explores the ways in which game design can help players to establish meaningful links between environment and culture. The second line of work examines the design and implementation of narrative components, and the roles they can play in furthering the understanding of cultural traits. A third line of development concentrates on the perception of space, distance and scale in games and the ways in which it can be used to further the understanding of micro and macro-historical processes. Finally, the last line of development explores the social dynamics established by adding multiplayer functionality to the game, expanding the boundaries of the game world with other forms of creative reenactment and interaction between participants

Environmental determinism

In its current version, the historical game prototype borrows mechanics from adventure and survival games to create a base gameplay layer. These mechanics open multiple opportunities to explore causal relationships between environmental components and player actions, motivated by the ultimate goal of self-preservation in the harsh conditions of the medieval time. To implement this layer, the 9th-century English environment needed to be modelled with an adequate degree of fidelity, simulating the past world as an entity in constant change, that requires to be understood in order to survive.

Figure 1: The player's avatar cooking inside his hut, from a third person perspective.

In many ways, this type of environment and gameplay closely follows the ideas of historical change proposed by Jarred Diamond in his Pulitzer-winning "Guns, Germs and Steel" (1998) and "Collapse" (2005). As Bogost (2010), explains, by de-emphasising the role or events and individual achievement and concentrating history into the procedural aspects of historical change, Diamond presents "its own rhetoric about how history takes place - one in which geographic accidents generate historical events" (p. 254).

Within the prototype, the Anglo-Saxon world is implemented through nested simulations, an approach that has been used in physical war-games (Sabin 2012), but to my knowledge not yet sufficiently explored in digital historical games. Digital implementations of this pattern consist of a series of relatively independent, but interconnected simulations running historical processes at different scales. In more

concrete terms, a first simulation runs an immersive, navigable third-person interface, which allows the player to walk around and interact with non-player agents and other objects from the environment. The player experience focuses on surviving the harsh life conditions or early medieval England, something that can only be achieved by establishing a successful, self-sustainable village. To do this, the player needs to interact with the second level of simulation, which drives the point of perception to the perspective of the entire game world. This system is modelled in more abstract terms trough a hex grid, in which each hex represents a discrete patch of land and contains detailed information about the village's physical environment. Although separate, the interaction at both the immersive and village levels are necessary to achieve the game goals and any change in either the upper or lower simulation level have a measurable effect on the other.

By connecting different levels of perception and interaction, historical games can help players to build more complex representations of the past, driving them to reflect about the effects of their decisions at multiple levels. Moreover, games can be constructed to explore the role of non-rational human processing and their consequences as drivers of historical change. While reconstructing the past, historians and archaeologists alike, many times forget that humans are not entirely driven by logical mental processes. This "messiness" of culture is many times better represented when a human agent — the player — take control of things, imposing his/her views on how to do deal with the environment, exploring different techniques and methods to get things done, and contrasting his/her results with versions of the past more or less academically accepted. In this sense, the game becomes a platform for creative and experimental reenactment, a form of historical engagement that has gained considerable attention in the last years.

Distance and space

The ability of the computer to generate three-dimensional environments, along with the unique capacity to navigate and change a point of perception in real-time have significant implications concerning historical representation. For a good extent, historical semantics in computer games are primarily represented and interfaced by the metaphor of the camera. For Aarseth, (2003) the perception of space can be used as a key meta-category to categorise games, as all of them utilise space and spatial representation in one way or another. Aarseth distinguishes between two broad categories: (1), Omni-present perspective, in which the player can examine and interact with the entire game arena; and (2), games based on visual perspective, in which the player sees the world using first person, third person, or isomorphic camera views.

Coincidentally, the same dualism in spatial representation can be seen in two opposed forms of academic historical writing. These two traditions, micro and macro-history, have evolved as different epistemologies, each one with its particular methods, and distinct ways of representing accounts, agents and objects from the past. The metaphor of the camera, and its effects in terms of distance, scale and detail, becomes apparent when we analyse each tradition separately.

Micro-histories study a particular period with a high level of detail, focusing on a single person, place, or event. The emphasis is on describing the personal experiences of everyday life, constructing thick narratives that also provide good standpoints to look into the broader social and cultural structures of a past community.

In the opposite side of the spectrum, macro-history studies the "histories of social systems, along separate trajectories, through space and time, in search of patterns, even laws of social change" (Inayatullah 1998). In contrast to the micro-historical approach,

the macro-historical emphasis is "less on language than on ideas of space, size and distance and their relationship to effects and historical interpretation" (Brewer 2010 p. 1). The definition of the distance from the object of study acquires bigger significance, as the project can include "many different larger scales up to and including the largest scale of all, those of cosmology" (Christian 2005, p. 23).

In the current version of the game prototype, the player assumes the role of a particular individual – a powerful *ealdorman* (nobleman), *ðegn* (land owner), *ceorl* (free man) or slave – looking to the world through his eyes, and experiencing their everyday life, problems, and limitations. As the camera moves further away from the character, the game allows the player to connect with a macro-historical perspective. At this level, the emphasis is less on personal narratives and more on ideas of space and geographical relationships between agents and environment.

The variations in point of perception, by moving the game camera from the character to the world and vice-versa, completely change the way in which the player appreciates the game world, both psychologically and aesthetically, and can be used to create meaningful links between micro and macro forms of historical understanding.

Narrative components

In the Anglo-Saxon game, a set of parallel simulations generates a dynamic representation of the world, conveying the complex relationships and interdependency between the player avatar, agents, and environment. While these systems can potentially build a complex understanding of culture and environment, some social and cultural elements result tough to model by relying solely on simulations. To introduce these elements, I decided to add a secondary layer of interaction, implemented through text-based narrative components. These could be programmed to pop up randomly or be linked to specific player actions; text-based components are comparatively very inexpensive to build, and can potentially add considerable depth to the game. As examples, narrative systems can be introduced to provide contextual information, add background stories, raise conflicts, or generate dialogues with fictional or historical characters.

As an example, a possible application of text-based components is the simulation and player engagement with the cultural clashes and processes of identity shifting that characterised early medieval time in Britain, motivated by the arrival and coexistence of people from entirely different cultural origins.

Moreover, the game's narrative overlay can be an advantageous medium to make players aware of the sharp contrasts between our own cultural frames and the attitudes, customs and beliefs of people from the past. In this sense, a strategic implementation of such systems could contribute to breaking the well-documented tendency of regarding present-day cultural beliefs as fundamentally trans-historical.

Adding social dynamics

Multiplayer mechanics were incorporated in the last version of the game. While this new layer significantly increased the technical complexity of the project, it was considered necessary to present a more complete re-enactment gaming experience. In its current version, players can interact with each other, chat, trade, and work collaboratively in order to achieve demanding tasks.

The research goal of this added layer of gameplay is to study the extent to which it is possible to replicate some of the social dynamics of an early medieval Anglo-saxon

community, using narrative and ludic components to help students understand the cultural conventions, social structures and power relationships of this historical period

Figure 2: Pilot testing of the multiplayer game prototype.

By engaging in social interactions regulated by rules of play, students can get a privileged standpoint to understand past communities, overcoming anachronistic modes of thinking about the past. This type of gameplay finds its inspiration on the theatrical techniques developed by Augusto Boal (2000), a form of interactive drama suggested by game researcher Gonzalo Frasca (2001) as a possible way to overcome the limitations that educational simulations, such as micro-worlds, present in humanistic fields such as history. In Boal's Theatre, spectators are encouraged to take an active role in the development of the drama, losing the critical distance that characterises Aristotelian drama techniques. By engaging audiences in this form of participatory simulation, the medium becomes a powerful mean to challenge previous ideological assumptions and naive forms of understanding about the world.

CONCLUSION

The experimental development of historical game prototypes, which have followed a process of iterative refinement and validation with disciplinary experts, has contributed to establishing a productive dialogue between theory and praxis, leading to the development of provisional theories of historical game design, along with the visualisation of further areas to explore. In many ways, the adopted research process, action-research through creative practice, has granted access to aspects of the research problem that would most likely be remained unseen using more traditional research methods.

The design hypothesis briefly described in this paper are in the process of being implemented in a final game prototype, which will be tested in further stages in formal and informal educational settings. This final prototype integrates concepts from scientific simulations and a range of different game mechanics, which makes it distinctive, in terms of development process and final product, from commercial games commonly studied in historical game research. As the investigation progresses in new iterations of design, evaluation, and refinement, new ideas and hypothesis are expected to raise, along with a better theoretical understanding of the design problem.

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