

# Gamifying Archives, A Study of Docugames as a Preservation Medium

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## ABSTRACT

This paper introduces a novel concept in the use of game technology and education. Instead of employing gaming technology to create entertaining fictions or develop practical training environments, this paper introduces the concept and demonstrates the practical benefits of docugames for preservation. A docugame for preservation is a simulation that incorporates historical or culturally relevant artifacts to offer multiple perspectives on an historical or culturally relevant experience. Current trends in the growth of games, lowering production costs, and an increase in global collaborative production models have supported opportunities to employ games as a medium for preservation. As such, docugames for preservation demonstrate the promise of offering a 21st century educational experience for future learners. This research provides an analysis of existing docugames, overview of gamification principles and heuristics for improving the potential of docugames as a preservation medium.

## Categories and Subject Descriptors

K.3.1 [Computer Uses in Education]: Computer Assisted Learning (CAI)

## General Terms

Management, Documentation, Design, Experimentation, Theory

## Keywords

Serious games, educational games, docugame documentary, gamefication, game preservation.

## 1. INTRODUCTION

The term docugame is a general term applied to a wide range of digital interactive experiences. It typically refers to any game that is grounded in real events [1]. At its fringe this includes games whose subject is non-fiction, but whose representation is fiction. Such games are to be considered fact-based entertainment. The Medal of Honor[2] series and other historical action games fit in

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this category. On the other end of the docugame spectrum are interactive experiences that endeavor to simulate at the expense of engagement or entertainment. Applications in this category tend to be recreations of environments, such as the Mars Navigator [3]. Such experiences are considered pure simulation.

This paper refers to the middle of these two continuums. In this framing, docugames are software applications that seek to accurately depict historical events in an environment that supports exploration and investigation. This work is a collection of games that are both serious in their intention and reasonably accurate depictions of their subjects. Prime examples of this style of docugame are included in the Global Conflicts [4] series of games.

While this term is used for a wide range of reality based games, this paper is largely focused on the effort to preserve through digitization, the historical events and archives which may have otherwise been lost. Such efforts are identified as docugames for preservation. A docugame for preservation is a game which not only endeavors to accurately depict history; it posits archival elements into the game environment. These archival elements may be recordings of important speeches, photographs of historical events, or other elements of cultural heritage and history. As such it is not only a practice in recreation and model making, but in archiving and curating. The benefit of such practice depends on the subject and goal of the archive.

In recent history there have been games that sought to reproduce history through an accurate recreation. These interactive systems are similar in concept to theme parks that offer a glimpse into United States history through Colonial Williamsburg[5]. They are imitative and designed primarily as audience interactions, instead of player experiences. Such performances are constructed like interactive museums.

Docugame based preservations differentiate themselves from these environments in their simulation. Not only can such games pursue photorealism to imitate a former world, they can also visualize abstract worlds, transforming the world in which they are presented, and affording for large-scale exploration by their visitors. In short, such docugames extend what is possible in the real world, while greatly reducing the costs of maintaining their live-action compliments.

Docugames for preservation typically incorporate reasonable amounts of digitized content via integrated recorded audio, photographs, and other common media. The idea is to provide a context for the archived content. Much the way an important piece of art may be displayed in a reconstructed environment, or a plaster mold may substitute a previously lost portion of a famous sculpture, this additional media fills absence spaces.

Much like a museum, the focus of the docugame based archive is the archived content, not necessarily the space in which the material is presented. While the two should work harmoniously, game based archives are valued by their contents, not their structures.

Lastly, games based archives are games. They are not merely simulations. They engage learning and exploration. They endeavor to help people explore and offer some modicum of entertainment. Unlike simulation, they afford play and invite it. This paper surveys the attributes of existing docugames and describes the potential of game based archives based on the heuristic research.

## **2. BENEFITS OF DOCUGAMES AS PRESERVATION**

There are several benefits of digital game based archives. Game environments offer opportunities to archive multiple types of content allowing audio, static and moving image to appear in a single, cohesive environment. Similar to the benefits first trumpeted in web-based archives, game based archives achieve a unified integration of multimedia that exceeds the typical experience of web users. In contrast to the web, game environments offer more rich experiences in archiving.

When compared to archives in film, games provide more flexibility in presentation and organization. Where film is a linear medium, games can be non-linear. Games can also be algorithmic, allowing for on-the-fly reorganization of game elements. This affords game based archives the opportunity to provide multiple-perspectives, and more importantly the ability for users to explore at their will. Just as a museum visitor may choose which areas interest them, the use of games for archival preservations affords the browser the ability to choose and even reorganize.

It is this non-linearity that affords particular potential. Consider a scenario where a game based archive has been created to preserve the vocabulary of an unwritten language. Researchers looking to learn more about the language may have very distinct needs. Instead of needing to scrub the archive by archivist mandated criteria, users can explore the space through conceptual topics. In traditional environments a language may be archived by alphabetical vocabulary or placed on an etymological timeline. The virtual environment of a game can be organized not only by time, but by space, color, size, and a variety of other distinct properties. Film is generally only organized by time. Web content is generally organized by linear relationships between text, image or film. Game based archives offer enhancements to both, as games can offer intrinsic and extrinsic context cues. In a game environment, day and night for example, are contexts easily read by changes in lighting effects. As such, understanding the use of a nighttime greeting and a daytime greeting in a language is somewhat eased by environment cues.

This organization through context is an important benefit. In concept, it is similar to the tradition of creating dioramas for natural history museums. Similar to dioramas that may offer scaled models of cultural artifacts or those that integrate historical elements in their historical context, games can provide the accoutrements that embellish an understanding of the elements preserved within them. Visitors need no longer view the glass

encased arrowhead of a Native American tribe, they can participate in its building and employ its use.

It is also important to note that with the growth of each medium, comes an increasingly mundane familiarity with it. Game based archives are a logical evolution, as a growth in literacy increased the usefulness of books and the growth of Internet experience increased the value of websites. Gamification, the steady incorporation of game mechanics and game-like experience into the everyday experience, is a clear trend [6].

## **3. MAKING DOCUGAMES AS PRESERVATION**

Computer game-making has had a history of being both expensive and highly specialized. This trend has changed in recent years as developers of game making software have sought to increase their audience. The cost of game-making can be quite low as rich game-making applications like Unity3D offer no-cost options. Technical hurdles have also been reduced by pre-packaged solutions that offer standard game mechanics immediately. Movement through a 3D environment often requires no traditional programming at all, as several products provide these mechanics immediately. Such tools include the Game Creator's First Person Shooter Creator and GameSalad.

The growth of game building communities also reduces the technical challenge of making a game based archive. Online communities of artists, programmers, and designers center themselves around specific technologies or game design topics. New companies have sprung from this model, offering solutions that support limited depth of implementation knowledge with communities of specialists [7,8]

Evidence of the increasing simplicity of computer game making also abounds in events like the Global Game Jam. Within small groups or as individuals, hundreds of participants make a game in less than 48 hours. It also exists in the demonstrable growth of independent game making, where as few as one person designs and develops a game that could achieve international recognition as demonstrated in the Independent Games Festival. Surprisingly much of this work can be accomplished on low-end computer systems that cost well under \$500 USD.

Even more importantly, games based archives can serve as educational experiences in themselves. Just as middle-school students may be asked to create dioramas depicting specific moments in time, those same students could be asked to create virtual environments that contextualize an historic artifact. Perhaps students are asked to create a docugame around a recording of Martin Luther King's I have a Dream speech, or to preserve a song from their own cultural heritage through a game experience.

Although easy to conceive as the activity of advanced research, practices in docugame based archives can be employed as educational experiences in technology and media for a wide range of individuals. By researching existing docugames and formalizing the qualities of such projects, it is hoped that the potential of such an approach can be realized

## 4. Identified Challenges

The production of game based archives also presents new challenges. The most important of which is the challenge of archiving games themselves. Where library sciences have much experience archiving books and other traditional media, the technical novelty of a game does offer an evolving set of challenges[9]. Yet, when faced with the question of archiving film more than 50 years ago, the community of archivists derived systems which have supported that effort.

It is also important to note that designing play supporting environments is challenging. Unlike the act of simulation, which uses reality as a template, there are few models from which to derive an engaging game based preservation. Fundamentally, such games should employ the heuristics of effective game design. However, effective game design is as much of an art as it is a science. Like the design of dioramas, the effective game based archive is likely the product of creative representation and execution..

## 5. Study of Existing Docugames

This research evaluated 11 docugames by recording 11 distinct attributes for each game. The games evaluated were JFK [10], Waco Resurrection [11], Global Conflicts Palestine, Mission US [12], Third World Shooter [13], Kuma War [14], Super Columbine Massacre RPG [15], 911 Survivor [16], Paris Riots [17], Medieval Unreality [18], Under Siege [19]. The attributes recorded were developer organization (company, cooperative group, or individual), developer type (commercial, educational or artistic), project type (realization or awareness), implementation type (game modification or custom programming), completeness, aesthetic form (natural or abstracted), number of plays, distribution model(download/disk, web playable, or exhibit installation), design goal (preservation or reconceptualization), primary game verb and whether the project contains content archives from history. The study was then augmented with an analysis of postmortems, developer interviews, and developer provided data.

This general survey of docugames illustrates the state of docugame production in its relatively short history. Developers of docugames were fairly equally mixed between education institutions (4), artistic enterprises (4) and commercial entities (3). Because the nature of some docugame projects evolved, the research recorded the project's developer type at the start of the project. Only 7 of the 11 projects were complete beyond a demonstration or beta project status. Games were considered complete upon official release or when all of the game functions described in press releases, websites or other promotional material were realized in a publicly available version of the game.

Developers were only slightly more commonly organized as companies (5), although companies ranged in size from as few as 3 employees to teams larger than 25. Three games were made by non-paid cooperative groups, and three were made by individuals. Only 4 of the projects were modifications of existing games, while the remainders were constructed entirely by the developer. The majority of games were provided as downloads (9). Mission US was provided entirely on the web as a Flash based experience. Waco Resurrection was designed to be played as a costumed installation art piece, requiring masks and in-person peer play.

The study used the artistic distinction of visual forms as either natural and imitative of forms existing in nature or abstracted and merely suggestive of familiar forms. The majority of docugames studied were natural in their aesthetic implementation. Only 2 games, Super Columbine RPG and Mission US used abstracted forms, relying on cartoon like proportions in visual forms. Although not an original factor in study, it is important to note that these two games were also the only two to use 2D graphics, instead of 3D.

Four factors related to design objectives were considered, design goal, project type, and the use of archived content. Design goal and project type were used to distinguish the games' intended documentary purpose from its design implementation strategy. Design goals were designated as an archival or a reconceptualization. The six preservations sought to provide an environment that incorporated historical events and offered players the ability to manipulate factors that changed historical events or offered new perspective on their subjects. The 5 archival games were designed to support little if any derivation from historical events or prescribed perspective.

Projects were dichotomous in their aim to realize or simulate an event and their desire to merely draw attention and awareness of their subjects by providing the experience in the game medium. Seven games explicitly aimed to realize history, while the remainder worked to make players aware of a situation. This distinction was tricky; as it can be argued that by accurately simulating developers can raise awareness. The research relied on the initial design intention, not its sociologic results. Six of the games relied on shoot as the primary game verb, while two offered collect (information or items) as their primary verb. The remainder offered context dependent verbs (e.g. speak or enact an abstract verb).

Few of the games completely pursued the notion of a game based archive. Only 2 games incorporated archived media from their subjects. Third World Shooter prominently integrated audio recordings into gameplay, while much of Global Conflict Palestine's experience includes the integration of media from its subject. Interestingly JFK Reloaded contained a significant amount of player produced content comparing and contrasting video of the event with player experience. Since JFK Reloaded focuses on a very specific event and offered a contest encouraging such comparison, this behavior requires further study.

The number of plays was ultimately dismissed as a useful study attribute. Developer reported downloads varied from provable metrics and some projects were too small to accurately study. In addition, artistic docugames were often exhibited in galleries that did not report number of visitors, while educational games could be used repeatedly in classroom environments without accurately reported play statistics. Distribution models vary widely, with some games tightly held by their developer and others made available only through redistributors.

## 6. HEURISTICS FOR GAME BASED ARCHIVES

From the assessment of these games, three high value attributes emerged as patterns, the value of realism, player determined experience, and clarity of purpose. While none of these games is a perfect example of a docugame based archive, each demonstrates

a few of the basic principles in making an effective experience centered on historic preservation. Each of the games case studied demonstrates effective efforts in docugame-making, regardless of the social-political tensions behind them.

In researching game play experiences, post-mortems and related process documentation a few basic patterns emerged. For the majority of games that pursue objectivity, realism is integral. Unlike comparable solutions in independent gaming and games for change, many of the games in the docugame domain seek realism in the visual and aural aesthetic.

This is likely because most successful docugames begin with an historical kernel on which the game is to be based. This may be a floor plan for an ancient city or a single artifact of cultural relevance. As game based archives, it is from that kernel that the game develops the contextual cues from which the archive grows. In some cases they are initiated from a conversion of archival contents from one medium to another. JFK Reloaded and Third World Shooter both convert black and white photographs, film, and witness reports into game experiences. Waco Resurrection extends the archival qualities of the experience by providing players with physical props that enhance the notion that players are the infamous David Koresh.

At their foundation, these types of experiences are dependent on a faithful recreation of objective elements. Beyond the murkiness of philosophies of fact, there are a few elements of fact-finding that are immune from subjective evaluations. Physical characteristics, such as the scale of a mountain or the shape and texture of buildings are often easily obtained and reasonably easy to recreate through developer authored visual and audio content. Many of these games make note of their attention to such detail.

Yet, these aforementioned attributes are also characteristics of good simulations. Beyond the basic qualifications of good digital simulation, docugames that provided the most potential for archiving and preservation were also, entertaining, non-determinant, and supported multiple perspectives.

Simulations may employ game technology, but they may not be entertaining experiences. Games based archives attempt at the least to entertain. Each of these games constructed a narrative as a basis for increasing player investment and entertainment. Global Conflicts Palestine and Mission US are some of the strongest examples of narrative from the set. These games also employed collect as their primary game verb, which may indicate a high interdependence between narrative and game verbs other than shoot.

Ideally, game based archives are also non-determinant. This means that designers must be flexible in their acceptance of player results and chosen paths. If there is a fiction in the game, that fiction could produce two very different themes based on player actions. This attribute differentiates game based archives from games with very clear political intentions. So called games of rhetoric, such as Harpooned[20] offer a single perspective on political issues. Docugames for preservation differentiate themselves from games of rhetoric, in the same way that historical non-fiction differentiates itself from poetry on a library shelf. A game such as JFK Reloaded does not endeavor to argue for or against the murder of the American President; it merely creates the environment for analyzing it. Global Conflicts Palestine likewise provides information for the player to collect, but allows for degrees of freedom in the conclusion players make.

Lastly, several of these games offer multiple perspectives. They allow their visitors an opportunity to see the world from another vantage point. Although not part of the study because it is much more of an interactive documentary than a game, Simulation: Inside the Haiti Earthquake [21] does this immediately. Visitors are asked to begin as survivors, journalists or aid workers. Third World Shooter attempted a play experience that required the player to complete a mission, die in the process, and return in subsequent missions as another character. Waco Resurrection chooses instead to drive players toward the uncomfortable single perspective of its subject. More conservatively, Global Conflicts: Palestine allows players only the role of a journalist, but additional perspectives are provided through non-player characters that provide the basis for reporting.

Not surprisingly, each of the games analyzed was also very clearly focused on a single docugame purpose. These experiences were often designed to focus on very specific moments in time. Some were as specific as a few minutes as in JFK Reloaded, where other spanned several years. It is clear that docugames are most clear when they clearly frame the scope and agenda of the project.

## 7. Conclusion

From the analysis of existing docugames it is apparent that few games currently incorporate archival content in their games. The potential is demonstrated in the few games that do, but it is also apparent that docugame projects are a relatively immature area of game design and development. The survey analysis of docugames should help orient future projects and formalizes the general assumptions about making such games. It is hoped that a formalized understanding will promote continued docugame production and ultimately encourage the production of docugames for preservation.

It is important to note that the designs and topics for the games were fairly uniform. Many docugames seem to seek the documentation of conflict, and in particular war. As mentioned, this is but one opportunity in a very large space of archive subjects. This may be due to the number of games based on modification of first person shooters or simply because designers and developers are looking to capitalize on the popularity of familiar mechanics. Qualitatively, many of the most popular and researched games employed shoot as their primary game verb (JFK Reloaded, Super Columbine Massacre RPG, Waco Resurrection). The one prominent exception is Global Conflicts Palestine, which employs a collect information game verb instead.

While the most common examples of historical accuracy are typically focused on moments of conflict, it is comforting to imagine that these game experiences can be created for a variety of positive historical events as well. While such game do not abound, it is not much of a creative effort to imagine non-violent docugames for preservation. Further exploration may illustrate the potential for such technology in education and training. Most importantly it reveals a relatively un-explored space in serious game-making.

Determining objectivity in docugames and game based archives was beyond the scope of this project. Objectivity in game experiences is particularly tricky to analyze when compared to other media because political and social bias is not only easily integrated into dialogue and art, but also into the programming code itself. It is conceivable that a game might encode

conclusions and prevent win scenarios that accentuate bias. Subsequent research could investigate this, although the topic of objectivity is a research area perhaps better left to communications and humanities disciplines.

Like any archiving activity, there are tradeoffs between perfect fidelity to the subject and attainable goals. From the post-mortems of several developers it is clear that developers should choose a specific focus early in their project to facilitate success. An archive can be very specific or it can be very general. It can be most concerned with the representation of historical floor plans, or of events. Just as a scaled model must represent its scale, any application in this domain should be clear in communicating its compromises.

## 8. ACKNOWLEDGMENTS

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