Digital technologies are becoming a popular vehicle for the re-creation and dissemination of cultural heritage, in the form of modeling buildings, people, and their activities. Video game engines can be used to let user virtually “inhabit” the digitally recreated worlds made accessible via the Internet, opening them up to people who otherwise would never be exposed to these cultural sites. Yet, like every medium ever used to preserve cultural heritage, digital media is not neutral; it impacts the represented content and the ways the audience interprets it. Perhaps more than any older technology, it has the potential to affect the very meaning of the represented content in terms of the cultural image it creates. This paper examines the applications and implications of digital media for the recreation and communication of cultural heritage, drawing on the lessons learned from a project to recreate the thriving jazz and blues club scene in West Oakland, California, in the 1940s and 1950s.
1. Introduction

Traditional cultural heritage preservation techniques emphasize preservation of and improving access to major sites that have fallen into disuse, such as old palaces and temples, and the safekeeping of artifacts in museums, often separated from the context in which they were found. The only ways to preserve the vibrant life of the heritage—the way it appeared when the site was inhabited—is through static paintings or dioramas, or epic movies that dramatize certain aspects of the heritage, chosen by the director and presented to audience as passive, detached experiences. As a result, examples of living heritage, such as buildings in use, traditional everyday life and special ceremonies, are at high risk of becoming lost.

Immersive, interactive digital media presents a technology-driven alternative to preserving cultural heritage. In particular, Multiplayer Online Role Playing Games (MORPG) can move the state of the art of cultural heritage preservation beyond static three-dimensional displays, capturing in interactive, immersive, game-like form the social, cultural, and human aspects of the sites and the societies that inhabited them. In so doing, the technology provides viewers with a measure of presence in the site, allowing them to participate in events, interact with representations of the former inhabitants of the place, and meet fellow visitors.

This paper describes one such effort—the digital reconstruction of the jazz and blues club scene in Oakland, California, during its hey-day in the 1940s and 1950s. The project was a joint effort by graduate students in the UC Berkeley Architecture Department and students in a class at the UC Berkeley Graduate School of Journalism.

2. West Oakland, California

In the 1940s and 1950s, 7th street in West Oakland was a bustling commercial district, anchored by dozens of jazz and blues clubs that earned it a reputation as a West Coast rival of the Harlem music scene. Most of the legendary blues and jazz singers and musicians, as well as soul and rhythm and blues artists, performed at the clubs, including Jimmie Witherspoon, Sugar Pie DeSanto, Ivory Joe Hunter, Saunders King (Carlos Santana’s father-in-law), B.B. King and Aretha Franklin. The centerpiece of the club scene was Slim Jenkins Place, a sprawling upscale establishment that took up much of a city block with its huge dining area and elegant bar (Figure 1). Other clubs also crowded the street, and virtually every café had a juke box blaring out the jazz and blues songs of the time. Many musicians got their start performing at the 7th street clubs, defining a distinct Oakland blues sound and cutting their first records with local music promoters like Bob Geddins and his Big Town recording studio and production company.
Complementing the clubs were numerous other business establishments up and down an eight-block stretch of Seventh Street, all of which made it one of Oakland’s major commercial and retail centers at the time. The street was home to colorful characters such as “The Reverend” who, along with his wife, preached from street corners, and Charles “Raincoat Jones”—a former bootlegger turned loan shark and dice game operator—who was known as the unofficial mayor of Seventh Street and helped finance some of the jazz and blues clubs.

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Seventh Street had blossomed in the post-World-War-II era because of its proximity to Oakland's waterfront, where workers had migrated from around the country to work in the naval shipyards during the war and sailors and soldiers were stationed at the military bases along the bay. Many of them then settled in West Oakland during the post-War era, including a large number of African Americans from the South who brought with them the jazz and blues sounds from states like Louisiana and Texas. West Oakland also was the terminus of the transcontinental railroad and the West Coast headquarters of the International Brotherhood of Sleeping Car Porters, the first national black union. Many of the porters made their homes in Oakland, and they also served as a distribution network for the Seventh Street music, taking records cut by local artists and transporting them on the railcars for sale in cities across the country. While it was the influence of African Americans migrating from the South that defined the Seventh Street music scene, the population and culture of the area were very diverse. Greeks, Italians, Chinese, Latinos and people from many other ethnic backgrounds lived, worked and owned shops and businesses on and around Seventh Street.

By the mid 1960s this remarkable part of Oakland's heritage was all but destroyed, the victim of a number of different urban redevelopment schemes. In the 1950s the Cypress Freeway was built, an elevated highway that sliced across Seventh Street and effectively isolated it from the city's downtown. In the 1960s the Bay Area Rapid Transit (BART) rail and subway system was constructed, an elevated structure that created a huge eyesore and deafening noise from passing trains. Also in the 1960s, a stretch of several blocks along one side of Seventh Street was leveled to make way for a mammoth 12-square-block U.S. Postal Service distribution facility. A surplus World War II Sherman tank was used to demolish the old Victorian homes along side streets and make way for the postal facility (Figure 2).

Today, a walk down Seventh Street reveals almost no hint of the vitality of the area and the once thriving jazz and blues club scene. The street is marked by boarded up buildings and empty lots and plagued by drug dealing and crime. The only remaining music club from the 1950s is Esther's Orbit Room. The Cypress Freeway structure, which collapsed during the 1989 Loma Prieta earthquake, was torn down and the freeway re-routed around Seventh Street, the fruit of community pressure. Only a scattering of businesses now exist along Seventh Street.

The story of 7th has been told in bits and pieces over the years in a variety of different media. Newspaper stories have been written about the club scene [1]. More than a dozen books on Oakland or on jazz and blues music have included segments describing the 7th clubs or the redevelopment projects that caused their demise. The Seventh Street club scene was a main subject of two documentary films, and various reports done for governmental agencies have recounted the history of Seventh Street and its decline [2].
A couple of different oral history projects have preserved in audio interviews the remembrances of some of the key figures in the Seventh Street scene. A few photo collections exist, such as the Slim Jenkins Collection and the C.L. Dellums Collection at the African American Museum and Library at Oakland.

But none of these have told the story of the clubs and what happened to them in a comprehensive way. And most importantly, these media tell the story in a detached or visceral way that does not allow the reader or viewer to truly “experience” what Seventh Street was like. Newspaper stories, books and other printed formats can only employ descriptive terms or accompanying photographs to evoke what some of the characters on Seventh Street may have been like as people. They cannot convey what the experience would have been to talk to and interact with these characters or explore the music scene on Seventh Street. Oral histories and even video interviews of some of the characters from Seventh Street provide first-person and often highly emotive descriptions of what the people and the Seventh Street scene were like, but still require the listener/viewer to use his/her imagination to conjure up images and fill in the blanks. The listener/viewer remains detached from, rather than immersed in, the experience of Seventh Street. The viewing experience is passive, and in the case of documentaries requires the viewer to follow a linear storyline imposed by the filmmaker.

To recreate as faithfully as possible the experience of what Seventh Street was like requires a digital technology that is both interactive, allowing choice by the user, and immersive, using visual and audio stimuli simultaneously to
give the user the sense of being in a place: a new media technology that replicates a person’s real-life experience of moving about within the world [3].

3. Choosing the right metaphor

The convergence of the desire to re-tell the history of Seventh Street and the advent of new media have provided us with the opportunity to develop an immersive, interactive, non-linear narrative that will help visitors experience Seventh Street’s cultural heritage as it was in the 1940s and 1950s. We chose on-line, multiplayer digital gaming as the vehicle to communicate the experience. But digital gaming is a new technology, with a relatively short history, devoid of a comprehensive theory, and short on useful precedents to guide the development of virtual cultural heritage experiences [4]. Although in principle it is a cross between filmmaking and architectural design, it is a technology of illusion, creating an intangible reality like never before. Unlike architecture, whose principles it freely borrows, it can only be inhabited by proxy. Unlike film, it provides players with freedom to explore the “world” at their own volition.

To help us understand how video game technology could be used to create a virtual world, we chose the all-encompassing metaphor of Place. A “place” is a setting that affords the entire spectrum of human activities, including physical, social, and cultural activities, while affecting, and being affected by, those activities. The advantage of using this metaphor to guide our work is that it pertains to both physical and non-physical settings. On one hand, place is often used to describe the territory that we build. The boundaries of this territory are defined by a sense of being inside—a region, a town, a neighborhood, a building. But the boundary is identified not by a demarcation of its edge, but by the feeling of coherence of the spaces, objects, and activities within it, which give rise to a competence in the way a place is built and inhabited. We value such places because they give us a feeling of being somewhere as opposed to just anywhere [5].

Place is therefore a psychological phenomenon as much as it is a physical one. It is the consequence of the activities and conceptions of the inhabitants of a space. The physical attributes of the place frame those activities, and provide its inhabitants with a socially shareable setting for their activities, in terms of cues that organize and direct social behavior that is appropriate for that particular place [6].

Making virtual places is, however, not a matter of simply emulating physical form in digital environments. Objects and spaces that were functionally and conceptually ‘appropriate’ in the physical world lose their appropriateness in Cyberspace: there is no gravity, wind, or rain. Solid objects can easily intersect, and large distances can be traversed instantaneously. Yet, having been conditioned from birth to function and perceive the physical world, we carry the expectations and sense of ‘appropriateness’ to Cyberspace. Flying, for example, may be possible, but inappropriate. Hence,
choosing the right balance between emulating real, but unnecessary settings, vs. providing possible, but unnatural abilities to engender the desired sense of place, is the challenge facing virtual place-making.

To help us navigate among these possibilities, we chose to compare our virtual place-making to stage-plays. These comprises a stage (a context), a narrative (the play), and actors (which include the audience, in different ways). The notion of place as a stage-play drives literary works, films, video games, and architecture. It provides a framework for understanding the individual contributions of the components, and their mutual interactions. Figure 3 illustrates the components and their relationships.

![Diagram of the stage play metaphor]

The ‘stage’, or context, comprises both space and time. It affords spatial and temporal grounding for the entire enterprise, and includes spatial components like buildings, trees, topography, sky etc., and ‘props’—objects that can be manipulated by the actors or can act on their own (trains, cars, etc.). The ‘actors’ include avatars, or PCs (player characters), which are human characters controlled by the people who are logged into the system; as well as agents, or NPCs (non-player characters), which are pre-animated, semi-autonomous entities, that perform pre-scripted roles, but have action modification capabilities based on some sensory input (e.g., they can start some action sequence when an avatar approaches within some pre-defined range). The ‘play’, or narrative, includes both cultural heritage aspects, and the activities that take place in the environment (known together as simulation/action). They tell the story (or stories), and afford the freedom to participate in the story.

The interactions between these components are what make them a ‘place’: the avatars, which are the representations of the visitors, can ‘see’
other avatars (as well as the other components of the game), and be ‘seen’ by them. Hence, if one raises its hand, others will see the action and react to it, generating a kind of social awareness. Likewise, the NPC agents can be seen by the visitors, and can react to their presence. This reaction both conveys some of the essence of the cultural heritage (they can tell stories related to the history of the place), and add to the authenticity and ‘sense of place’ of the experience. And of course the context (buildings, cars, etc.) help locate the experience, both spatially and temporally.

4. The ‘stage’

The first problem facing digital reconstruction of a cultural heritage site is finding the appropriate documentation that describes the built environment and the ‘props’ for the period being reconstructed. In many cases, some buildings exist. They can be photographed, measured, or digitally scanned, providing a basis for the reconstruction. In other cases—such as West Oakland—extensive urban development has literally obliterated entire blocks of buildings, and significantly modified the remaining ones. The recourse, of course, is finding period photographs that depict the built environment at the time.

Surprisingly, this proved to be a difficult task in our case. While a number of different libraries, museums, public agencies and news media had photo archives of Oakland, getting street scenes of Seventh Street from the 1940s and 1950s proved very problematic. Some photo files were missing, others were inaccessible and still others were of buildings as they existed before or after the 1940s and 1950s, when the facades were very different. And most of the archived photos were of people, not street scenes.

In addition to using traditional research methods to recover photographic evidence, we reached out to the community in two different meetings of Seventh Street “old timers” organized and promoted by the Oakland Post, the black community newspaper in Oakland that co-sponsored our project, where we requested any old photos the people attending the meetings might be able to provide. This again produced some photographs, but mostly of individuals, rather than the buildings or the general street scenes. As a result, at least in the initial phase of our project, the re-creation of many of the buildings on Seventh Street had to rely in large part on using photographs of a few blocks of Seventh Street or of other nearby commercial streets from the 1940s and 1950s to produce generic representations of the building.

The development of the eight city blocks comprising the target of our study then became a matter of modeling buildings, street furniture, and other ‘props’ in 3DStudioMax, a conventional modeling software (Figure 4).
The models were exported to Torque, a game engine, made by Garage Games, which powers our virtual world. Like other similar engines, Torque incorporates a physics engine, whereby ‘gravity’ is imposed, solidity of objects can be enforced, and time of day and weather phenomena can be included. Torque also provides mechanisms to support PCs and NPCs (player characters and non-player characters), which were useful for implementing the actors, as discussed in the next section.

Finally, since all our photographs from the 1940s and 1950s were in black and white (actually, grayscale), we decided that all buildings will be rendered in gray scale. The time of day was set to be early evening, while there is still enough light to see objects and characters clearly, but late enough to support the story line when bars are open.

5. The ‘actors’

The second main challenge in building the virtual world was character development, both physical and literary. The physical challenge has been mostly technical: modeling human beings is difficult, because we are so accustomed to seeing them in real life that any discrepancy is immediately, and disturbingly, obvious. We needed to develop a wide range of characters, both avatars for the player characters and ‘bots’ for the non-player characters (the NPCs), who would resemble some of the real people who inhabited Seventh Street in the 1940s and 1950s. We relied, again, on photographs, which in this case proved to be plentiful (Figure 5).
There also was a wealth of information available for creating realistic personas for the NPCs. Newspaper stories, primarily from the Oakland Tribune, had detailed biographical information on many of the musicians, club and business owners, and other characters on Seventh Street. The Internet similarly had many stories and other documents posted at various websites that contained biographies of the more famous jazz and blues musicians and singers. But most important were the memories of people who lived or worked on Seventh Street or in nearby neighborhoods who were interviewed for the project.

We incorporated this information into the game by writing interactive dialogs in which the player could engage in a conversation with an NPC, and ask a series of questions that would prompt the NPC to recount details about their personal history. Thus the player could learn about many of the main characters of Seventh Street—Raincoat Jones, Slim Jenkins, Sugar Pie DeSanto, C. L. Dellums—by engaging them in conversation directly or by interacting with other NPCs who would provide some biographical information about the characters.

A bigger challenge was developing the literary ‘persona’ of each NPC. It was our intent from the beginning to tell the story of Seventh Street as much as possible through these NPCs. This included not only delivering the factual parts of the history of Seventh Street, but also its flavor. This flavor, which is a major component of the ‘sense of place’, is intimately intertwined with the characters—how they talked and the particular colloquialisms they used, how they behaved, such as whether they were animated and funny or somber and gloomy [7].

This raised an interesting issue in character development: to what degree were we bound by the verifiable, factual biographical information we
had learned about a Seventh Street character in developing its corresponding NPC, and to what degree were we allowed to interpolate the persona of that NPC as it would emerge in an interactive dialog with the player? In most video games, characters are almost wholly fictional. Fiction allows the developer to invent aspects of a character or the game world to improve game play, make a character more compelling or make the interaction between player and character more natural or meaningful. But our project was an attempt to portray Seventh Street and its people in as authentic a way as possible. In a standard journalistic treatment, this would be done by writing in the third person and specifically attributing any biographical information about a character to others who know him or her or to direct observation. But this wasn’t possible in a video game story, where an NPC’s background was disclosed in first-person interactions with the player. Injecting attributions for biographical information into the interactions would have ruined the game play experience. The personalities we developed for the Seventh Street characters, so they would be more like “real” people, could not possibly be truly realistic, as we only had other people’s often vague recollections of a particular character’s behavior, personality traits or speech patterns, or—in a few cases where a central character was still alive—that person’s own recollections of what they were like 40 or 50 years ago. We therefore adopted the following rules for character development for the NPCs:

1. Any factual biographical information about a character had to be drawn from a reputable source (interviews with people who knew the character or news stories and other documents that described the character). Nothing about a character’s life could be made up. The attribution for those facts also would be detailed on a website accompanying the game, which would describe in detail the various sources used for developing each character.

2. In writing the dialog that occurred between an NPC and the player, we would not attribute any strong personality traits or particular language to the NPC unless we had some documentation to support this interpretation of the NPC’s behavior.

3. We could invent other, lesser aspects of the conversational style and behavior of an NPC as needed to make the interactions with players more meaningful or to keep game play moving more smoothly.

6. The ‘play’

Finally, the component that brings everything together, is the activity, or narrative. What does the player do in the virtual world and game environment, and how are all those actions and interactions tied together in a larger experience of the meaning of the virtual world and the story that unravels about it? In the case of the Seventh Street project we tried to do this by creating both individual ‘quests’—small missions the player must
accomplish in order to learn the history of Seventh Street, and developing an overall narrative that tied these individual quests together in some meaningful way.

The latter issue of the larger narrative begged the question of what genre of video game we wanted to employ to provide a structure for gameplay and a meaningful experience for the player [8]. One possibility was a “simulation” game, in which the virtual world is based on a real world and the player finds meaning by mimicking some of the real-world activities in the virtual world environment. While our recreation of Seventh Street as a virtual world obviously had strong elements of simulation games, we decided, for at least the initial phase of the project, to limit the simulation to events that have actually happened on Seventh Street, but to not allow the player to make significant changes in the game world, such as create characters that would not have been present on Seventh Street in the 1940s and 1950s and would look out of place to other players of the game (as virtual worlds like SecondLife allow), or they might create a music club that played modern music, not the blues and jazz of the era, which might diminish the game experience for other players [9].

A second genre of video game play that had obvious application to our project was the multi-player game. From the beginning we had decided that our game should be multi-player, allowing many people to log in to the game at the same time and interact with each other in the virtual world. This was in part because Seventh Street was very much a social scene, and our game therefore needed to be a social experience. But multi-player games, particularly massively multi-player ones like EverQuest or World of Warcraft, also often include the ability for players to join with each other in common tasks to heighten the social experience and add further meaning to gameplay. Thus players might form guilds and then go on joint expeditions or engage in competition or even combat with other groups. In our game, this could mean allowing players to band together and form civic opposition to the government agencies sponsoring the redevelopment projects that led to the clubs’ demise. But this approach ran the risk of reducing complex urban planning decisions to the simplistic narratives that characterize many video games. So for the initial phase of the game we allowed basic social interaction among players but did not include the ability to actually change the fate of Seventh Street.

The third genre of video game that had obvious application to our project was the adventure game. In adventure games, the player usually explores a virtual world and gradually unravels the mystery of that world through a series of tasks and quests. In games like Myst, meaning is derived from navigating through the virtual world, interacting with a series of characters and objects that yield clues about the nature of the world, and finally piecing those together to solve a larger puzzle about the world or gain a deeper understanding of it. This was a natural fit with our conception of the Seventh Street project and thus was the main approach we took in
designing the initial phase of the game—giving the player a series of tasks that could be performed to gain a sense of what the Seventh Street scene was like and to learn about the forces that prompted the decline of the clubs.

To implement this approach, the students in the journalism class wrote a series of interactive narratives, which we called "quests", in which the player would interact with NPCs or objects to learn about various aspects of the Seventh Street scene or the development projects that threatened the area. Some of these quests were very simple and essentially linear (Figure 6). The player would encounter an NPC and be allowed to ask a question using the chat feature of the game engine. The NPC would respond, and that would open up the chance to ask a second question to which the NPC would respond, and so on. From this interchange, the player would learn about the NPC or about some other aspect of Seventh Street. These simple quests were later expanded to allow the player multiple choices, so the player had the option of asking several different questions during the encounter. This approach made the player/NPC interactions less linear and enhanced the game play by providing the player with multiple routes through which an NPC's background could be explored.

The quests written for the first phase of the project were kept independent of one another, so completion of one quest did not require completion of another. Keeping the various quests independent of one another made writing the elements of the game narrative much less time-consuming, and made "playing" the game easier for people who might only want to learn about Seventh Street, and did not want to be forced to go...
through a complicated series of steps to gain knowledge about a club or character [10]. But this simplified approach proved unsatisfactory because it reduced the game experience to a somewhat rudimentary form. We then attempted to group together some of the quests and arrange them into stages, or “levels,” so certain quests had to be performed in order to gain access to another level of quests, which in turn led to a third level of quests and the ultimate completion of a portion of the game story. This increased the degree of game play, but complicated the storytelling with a multitude of options that the narrative now had to take account of, depending on what NPCs the player had interacted with and in what order. It also posed challenges for the character development of individual NPCs: they often became more of a vehicle in the service of the game play, rather than providing an opportunity for detailed knowledge about that NPC’s character (and thus getting to “know” the character). This problem underscored a long-standing tension in the video game world between game play and narrative [11].

In our project, narrative clearly was essential, as our original purpose was to tell the “story” of the Seventh Street clubs and what happened to them. But game play was equally important. We had selected a video game as the best way to tell the story because it allowed people to truly experience Seventh Street as it was through meaningful game play, rather than simply producing an objectified linear narrative in one media form or another, or opting for a museum-like experience that would have a stage and actors, but no overall play. To create the experience we sought through a video game and effectively combine story and game play requires going back and mapping out a particular narrative—a way of telling the story—and then drawing on the different aspects of video game play to help tell that story. In accordance with the place metaphor, this narrative must be played out both spatially and temporally: spatially, along the street, and temporally, as the player interacts with the NPCs and other players (Figure 7).
7. Discussion

New media reconstructions of historically sites, artifacts, and activities bring new opportunities to the practice of preservation and the communication of cultural heritage. Visual verisimilitude, coupled with non-linear storytelling, immersion, and interactivity, affect each aspect of the practice. But their critical implications are not limited to the technical aspects of representation. Rather, new media have the power to transform the practice of cultural heritage preservation and communication wholesale, possibly affecting the meaning of the heritage itself.

The relationship between representational technologies and the cultural heritage they communicate is an ancient one. Cave drawings from the upper Paleolithic age, Homer and others’ oral epics, and later scrolls and codices, have each exerted its own influence through the process of remediation. The invention of photography early in the 19th century had a particularly strong impact on the representation of cultural heritage, an impact that was further enhanced with the invention of cinema—a medium able to capture the passage of time itself. The advent of digital game technology—the new medium of remediation—has the potential to affect cultural heritage in even more profound ways than before.

New media is a technology that has the power to create world-altering experiences of places and times that are no longer accessible. Although New Media is an imagined, intangible experience, it is a real one, nonetheless. The image of history it communicates is mediated both through technology itself, and through the authors and technicians who render it. The authors and technicians who wield the storytelling power may know how something is done, but are only now discovering the values implicit in their particular way of rendering the narrative.

Which brings us back to the original question of how best to construct the “play” aspect of the methodology we have adopted: which one of the various video game genres is more appropriate than others? Should we use the adventure game approach, but write an overall narrative first about what 7th street was like and what happened to it, with the characters, quests and levels of game play stitched together within that framework? Is that narrative compelling enough to motivate people to want to play this game? Is simple curiosity or a desire to learn about or re-experience Seventh Street, its music and its history an alluring enough adventure? Or does the story instead need to be written more as a mystery to be solved (an aspect of most adventure games), with the player unlocking the secrets of Seventh Street and what led to its demise? Should we give the player the ability to change the course of history and make the game about saving 7th Street (thus drawing on simulation games and the player’s ability to re-create aspects of the virtual world)? Or should we make the game more of a social experience and allow players to band together, perhaps in competition with one another, to save or destroy Seventh Street (as in massively multi-player games)?
These are all questions to be resolved as the genre of games as a means communicating cultural evolve and assumes its place among other forms of historical remediation.

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