

Digital Preservation of User-Created Game Modifications

Digital preservation can sometimes face unique challenges when confronted with born-digital works that do not neatly fit into the organizational categories that audiovisual preservationists have used for the past century. One such case is that of user-created modifications to video games, colloquially known as mods.¹ The goal of this paper is to examine how our traditional archival-centered preservation models fare when dealing with these items and whether community-centered models are possibly a better choice when considering the technical issues inherent in the preservation of these artifacts. It is intended that this paper serve as a general guideline for audiovisual and digital archivists unfamiliar with either this practice or these artifacts and how to begin to work with these files.

Videogames have existed for approximately fifty years, depending on what is considered to be the first videogame. This interactive media form may be young, but it has reached millions of players within its brief existence. This interactivity is key in that, unlike other forms of media, a player (or gamer) can live out the actions within a game and become fully immersed in the experience. Videogames are quickly replaced as technology improves, with a sequel to a game often being released anywhere between one and five years after its predecessor, but loyal fans continue to care for games even after the industry has moved on. Within this environment, using and creating mods become an extension of the gamer's interaction with the media and a way for the gamer to continue to experience a beloved game.

Many argue that modding, or the process of creating mods, is similar to other fan practices, such as the practice of writing fiction that takes place in these worlds or costumed role-play of media characters, but that opinion ignores the place modding has within the larger video game culture. Unlike those practices already described, modding is not a practice undertaken by a small subset of video game players. Instead, modding "is not just an additional hobby available for gamers, but an essential element of the current gaming scene."² The integral nature of modding within the cultural context of gaming is what sets it apart from other fan practices, and the previously described motivations serve as a rationale for saving such objects. The question is not whether mods should be preserved. Rather, the question becomes how to preserve them and how to deal with the technical concerns and issues endemic to such digital objects.

These issues will not apply equally to all types of mods, as not all mods are created equal. In common discourse, mods are often categorized as either partial or total conversion mods. The differentiation is clear within the terms themselves. Partial mods alter cosmetic aspects of a game rather than the game mechanics themselves. Total conversions, on the other hand, change a game so that it essentially becomes an entirely new game and experience. While total conversions are the most technically impressive to the user, as well as the most widely discussed, partial mods are far more common.

Partial mods create additional content; they are added to a game and, in general, do not alter the game mechanics or engine already within the original game. Many users create single object add-ons, like new types of furniture or clothing for a game such as *The Sims*³ or new vehicles and weapons within a first-person shooter⁴. Occasionally, these single add-ons are

¹ For this paper, the term "mod" will be used whenever discussing these types of modifications. Those who create mods are known as "modders."

² Sue. Morris, "WADs, Bots, and Mods."

³ Sihvonon, *Players Unleashed!*.

⁴ Sotamaa, "When the Game is Not Enough."

packaged together in thematic sets or used as part of a total conversion. Additionally, partial mods are a feature systemic to online multiplayer roleplaying games, such as *World of Warcraft*. Because these games do not legally allow total conversion mods, partial mods serve to aid the user in their game without giving them an unfair advantage. The use of partial mods has become so ubiquitous that the mods are required by many high-level guilds (associations of players that work together on multiplayer portions of the game); online databases of these items number in the hundreds.⁵ It is impossible to unify partial mods in terms of content produced. Instead, partial mods can be grouped as items requiring less programming expertise to create and requiring less storage capabilities to maintain. However, the widespread nature of partial mods also leads to such digital objects seen as less valuable than total conversion mods, leaving them more vulnerable to loss.

Total conversion mods involve far more alteration than their partial counterparts. In one common method of total conversion, all artistic aspects of a game, such as graphics and music, are altered to change the genre of the original game. The only connection between this mod and the game it is based upon is the use of the same game engine, in essence creating an entirely separate piece of media. A famous example of this is the game *Counter-Strike*, widely considered to be one of the most popular online video games of all time, which originated as a total conversion of the game *Half-Life*.⁶ Unlike partial mods, total conversion mods are far more likely to involve copyright infringement (due to the common practice of using intellectual property from other materials) and require a higher level of technical work by the users who create them. Still, their popularity and the legal concerns surrounding them also make them more publically visible. This, in turn, grants a higher probability that they will be considered digital objects worthy of long-term preservation.

Most history of modding traces its origins to the popular first-person shooter *Doom*⁷ released in 1993, which invariably leads to an association between *Doom*-types of games and the entire culture of modding. However, the practice is older and more varied than these assumptions would suggest. Arguments have been made that games such as Electronic Arts' *Pinball Construction Set* in 1983, which functioned more as tools to create your own game rather than a game itself, are the true origins of modding.⁸ Others have demonstrated that the early text-based adventure game, *Colossal Cave Adventure*, released between 1975 and 1976, was "altered and revised multiple times over the years."⁹ Within the decades that have passed, modding has moved from a practice facilitated by the fans to one at least marginally accepted by the game industry itself. A study from 2003 noted that approximately one-third of modern computer games incorporated toolkits to facilitate modding their games.¹⁰ There is simply no doubt that the practice of modding has become a significant practice in video game communities.

That historians and cultural scholars have noted the practice does lend modding a sense of legitimacy, but it should also be noted that this research has also led to an oversimplification of the practice. In *Playing With Videogames*, cultural scholar James Newman pointed out that:

"...Although modding tools and communities exist for Real Time Strategy games...as well as specific titles such as *The Sims* and MMORPGs such as *World of*

⁵ Yong Ming Kow and Bonnie Nardi, "Who Owns the Mods?"

⁶ Morris, "WADs, Bots, and Mods."

⁷ James Newman, *Playing with Videogames*, 163.

⁸ Newman, *Playing with Videogames*, 163.

⁹ Tanja Sihvonen, *Players Unleashed!: Modding The Sims and the Culture of Gaming*, 63.

¹⁰ Lars Bo Jeppesen and Mans J. Molin, "Consumers as Co-Developers."

Warcraft, the First Person Shooter (FPS) has become particularly closely associated with modding and modding culture.”¹¹

This association has resulted in a chain of negative results. As the focus of most scholarly work dedicated to studying modding communities demonstrates¹², it seems most scholars and historians assume that the first-person shooter modding community is the dominant one. It is, therefore, assumed that the predominantly male, heteronormative modding practice of first-person shooters is the standard and that all others are deviations. This dismisses the work of communities that are predominantly female, such as modders of *The Sims*, but also negates the importance of modding practices specifically created as counterculture work. In considering the best-case scenario for preserving mods, it is essential that future models consider both what is considered the norm by scholars and the lesser-researched modding scenes that are still critical to gamers who use the items far more frequently than scholars.

Attempting to define a best-case scenario for mod preservation becomes difficult when one considers the varied groups that wish to access these mods for rather different purposes. Generally speaking, those interested in these digital artifacts can be divided into two groups: those interested in studying mods from a scholarly perspective and those interested in fan practices such as using and creating mods as an extension of play. In the former case, users must be able to answer why mods mattered within the larger cultures of gaming and what was their place as evidence of interdependent fan practices. In the latter, users are far more interested in utilizing the mods within gameplay, distributing the items, and possibly creating their own mods from the digital artifacts within a collection. Keeping these two users in mind, in many ways the digital preservation of mods does remain the same. Both groups want to access mods within the larger environment of the games themselves and use them within a play setting. Both would also be interested in documentation associated with the mods so they could understand how the items were created, what game version the mod is associated to, and when the digital artifact was made so that it can be placed within a larger gaming context. Most critically, it is necessary that any digital preservation of a single mod link to that file or other sets of files from the same game. Modding’s place as a community activity, as well as users wishing to interact with that community, must be able to see the relationships between all mods from a gaming group, or they will not be able to best use the items.

This being said, there are differences between the two user groups, most especially in the valuation and selection criteria of what mods to collect for each user group. User groups interested in play will not necessarily want access to mods that are culturally or artistically significant, though these factors might be considered. Instead, there is a greater emphasis on mods already popular in online user communities and distribution channels. Unfortunately, many popular mods are also legally problematic, as will be discussed later, making the valuation of such items different, based upon whether the metaphoric archive is community or institutionally-based. Still, for users, the focus must remain on what is commonly used; understanding such needs will require enlisting online modding communities for their expertise. Scholarly user groups, on the contrary, will likely be most interested in mods that are culturally and artistically significant. This could include mods associated with historical events, such as the *Doom* mods created and played by the Columbine shooters. It could also include mods such as gender hacks, a practice in which players substitute a female character with a male one to draw attention to the

¹¹ Newman, *Playing with Videogames*, 165.

¹² Please see the works cited here for a beginner’s guide to academic and scholarly work on modding cultures.

lack of female representation in gaming. Institutions would be required to carefully study the needs of such groups to determine valuation, but it is likely that their selection criteria will be far narrower and more specific in scope than that of players. Additionally, while players would want to have access to the mod, so as to be able to distribute and modify it, these aspects would not be as critically important to a scholar. The ability to remix is, therefore, far more critical to one user group than the other. Similarly, while scholars would be more accustomed to using complex bibliographic records, players would become confused by such programs and would instead require more simplified records to display the relationships between various mods as well as the mods and their associated game(s).

In considering the best-case scenario for digital preservation, it is necessary to note that traditional archive-centered models of preservation may not be the best course of action for achieving the previously described goals. The dominant academic and professional view of video game preservation, as well as the preservation of all associated digital objects, has focused on the work of institutions. Academic support notwithstanding, this model marginalizes the work of community-driven archival practices. Such practices cannot necessarily be defined as archival, but they speak to an attempt to preserve a cultural history ignored by the mainstream. In many ways, such practices may be ideal for the preservation of mods, acting as a natural extension of the community-centered process central to the creation of these digital objects in the first place. There is certainly a place for archive-centered preservation of certain types of mods, but long-term preservation for a majority of mods may depend upon the much less restrictive regulation of community-centered archival approaches.

In many ways, digital preservation of mods within user communities is an extension of practices already in place. Video game communities have a long history of managing and aggregating data on the media they enjoy. MobyGames is just one example of a number of game databases that exists online; its sole purpose is to maintain all information related to a game, such as technical specifications, release dates and countries, and a slew of other metadata for gamers interested in continuing to play. Such websites can be central points for the study of games. The communal aspect of these websites allows anyone with information on the items to add it to the system and create a richer understanding of such digital objects. Harnessing the power of these fan communities makes it more likely that critical information about mods, such as the version they were created for and who developed the version can be discovered. Similar websites allow the free download of mods by any who want access to them. These community practices of storing, maintaining, and allowing access to mods can be considered rudimentary archives. Preserving mods is an overwhelming task that cannot be tackled by a single institution, but community-centered approaches ensure that a much larger group of interested parties can attempt to manage the issue and preserve a more diverse selection of digital objects than any single archive could hope to accomplish. This, in turn, minimizes the costs, whether they be financial or sheer manpower, of this type of digital preservation. As another advantage, community-centered archives can approach the concept of ownership in a way that would be more attuned to the desires of the users than copyright law, whereas a traditional archive would be forced to define ownership based on strict legal criteria that marginalizes rich fan practices.

By far the greatest advantage of community-centered archiving, however, is in how such groups deal with hacking and piracy. It has already been discussed that the creation and distribution of some mods is considered legally problematic. Archive-centered preservation models could not preserve digital objects whose copyright owners object to their existence. Technically, communities cannot preserve such objects, either. The difference is that these

communities simply do not care that they are violating the law, as they have done so from early on in the history of collecting video games and associated objects.¹³ Ironically, it is often noted that traditional archival-centered preservation models most benefit from such actions. One particular example illuminates these actions:

“According to industry insiders, the New York Philharmonic was ironically forced some years ago, when it began to think seriously about its preservation program, to purchase surreptitiously made sound recordings of its live performances from concert-goers who had smuggled their portable recording devices into the concert hall.”¹⁴

Using illegal actions to preserve beloved digital objects will only be an extension of what fans have always done, and as this is currently the only acceptable method for dealing with legally problematic digital objects, it is a major advantage to the efforts of community preservationists.

Regardless of which archival model is considered superior, both archive and community centered models will face a number of technical impediments to the digital preservation of mods. Many issues in the digital preservation of mods are similar to those within the larger context of video game preservation or are otherwise affected by how the main game the mods were created for is preserved. For example, whether mods can be accessed depends upon whether one has access to a specific version of a game. Some technical issues, such as a lack of documentation as well as no consensus on how to catalogue such items, are similar to both video games and their respective mods. Other concerns are found within the larger world of user-created works, such as the legal status of the items. Those issues native to the modding community are also the most challenging. The lack of documentation with mods, as well as the frequent abandonment of mods, either before they are completed or once problems are found, is a large hurdle to overcome. Mod preservation in and of itself is not uniquely challenging, but the ways in which mods draw from a number of other digital preservation frameworks creates an alternative perspective on these common problems.

Perhaps the most daunting technical problem to overcome is a lack of documentation. These items might be “co-creative media,”¹⁵ but there are unwritten rules that the modding community governs itself by. Abandoned mods are governed by one such set of rules. It is generally understood that each mod has one owner, or several, if it is a particularly large project, which retain the ability to do whatever they choose with their mods. However, “the rule allowed innovations to continue to be developed if the original innovator had ceased working on it.”¹⁶ As with all user-created media, projects can be abandoned before completion with varying frequency. Mods that are only partially completed, or those not updated to match newer versions, become obsolete and cannot be used by those wishing to play the game or by scholars wishing to study them. It is necessary that such mods become active once again to remain usable, which is where the larger modding community steps in. As has been noted, abandoned mods are commonly brought back to life by other modders, but this is hindered by the fact that not all mods are released online along with documentation of how or when they were created. Completing such projects when documentation is missing is not always possible. As with all digital data, limited access to code, schematics, or even the most basic of background information on software leads to an increasing number of unanswerable questions over time. To

¹³ Kari Kraus, Rachel Donahue, and Megan Winget, “Game Change.”

¹⁴ Kari Kraus, “Prim Drift, CopyBots, and Folk Preservation.”

¹⁵ Morris, “WADs, Bots, and Mods.”

¹⁶ Kow and Nardi, “Who Owns the Mods?”

simplify the digital preservation of mods, it is imperative that preservationists and archivists have access to those processes, which the modding community has learned to do without.

Accessing mods is dependent upon the software they alter or add to and, as such, no mod can be accessed if the game and the proper software are not available. Unfortunately, what constitutes a version can be much larger than many would assume. This can affect mods in a variety of ways. Those mods created for a particular software version and then later ported to a different operating system with the same software version, such as a first-person shooter mod first created to be used on a Mac computer changing to require a Windows-based system, are not guaranteed to work be accessible after the porting is complete. Even if the mods can be used, they may act in a completely different way due to the change in operating system. If a mod was created for an earlier software version and that version is updated, such as during the weekly server maintenance times on the popular online game *World of Warcraft*, mods might cease to function entirely until they are updated for the newest version. This is further compounded by the fact that many mods do not retain information about the version for which they were created, producing a difficult situation where the user must attempt to infer or blindly guess the correct version so that the game can be accessed at all.

All of this assumes that those accessing the mods are also able to access data on how a game's versions evolved, but this is not always the case. For example, while Nintendo maintains that *The Legend of Zelda: Ocarina of Time* has only three versions (the original version released for the Nintendo 64 system, the updated *Master Quest* expansion, and the graphically updated 3D version released for the Nintendo 3DS system), fans have extensively documented a number of changes between different cartridges from the original Nintendo 64. At the minimum, three versions with significant changes have been noted, though Nintendo refuses to acknowledge these changes exist.¹⁷ Even when companies release their source code, the difference between versions is not exact. Though it will be discussed more in depth later in this paper, while *Doom* did release its source code to the public, they did not release their development tree. This leaves it to *Doom* players and modders to guess which versions followed one another and, therefore, what version a mod is most likely to be based upon.¹⁸ For the players, this can mean that playing a particular mod of *Doom* becomes impossible or only achievable by considering the hypothetical development trees created by other players. If long-time modders find these issues difficult to understand, then these issues are overwhelming difficult for digital preservationists who do not work with these materials on a constant basis.

Such technical issues govern whether mods can be digitally preserved, but the process of preservation is only half the battle. It is commonly said that preservation without access is of little use, and the most common user groups for mods clearly demonstrate this need. Recently, the Open Archival Information System (OAIS) Reference Model has attempted to set guidelines on how digital preservation systems should function. Critical to this is the concept of an archival information package (AIP) for accessing digital items, but creating this type of package can quickly become complicated. In *Packaging Videogames for Long-Term Preservation*, Jerome P. McDonough cites several difficulties in creating AIPs for mods.¹⁹ Chief among these is noting what is shared between mods. As with video game versions, mods by definition are not independent objects but share some files with the objects from which they were created. It, therefore, becomes crucial for the digital preservation of mods to note these interrelationships,

¹⁷ "The Legend of Zelda: Ocarina of Time/Versions."

¹⁸ James Haley, "A Slightly Condensed Genealogy of Doom Source Ports."

¹⁹ Jerome McDonough, "Packing Videogames for Long-Term Preservation."

both for the mods themselves and the versions of the game to which they are related. To avoid unnecessary duplication and the loss of usable storage space, it is critical that AIPs find a way in which to separate the files independently of one another without duplicating files that are similar across mods or game versions. None of this is to say that OASIS is a less than ideal choice. On the contrary, the ability to create complicated relationships makes OASIS the perfect reference model for mods, but that does not mean the implementation of such a model is a simple effort.

As OASIS is a framework, creating bibliographic records within the OASIS model falls to a different model. The Functional Requirements for Bibliographic Records (FRBR) has been cited by *Preserving Virtual Worlds* as a strong candidate for creating records for video games as well as their modifications.²⁰ In this system, there are four Group 1 entities used to describe items: works, expressions, manifestations, and items. It is left up to the cataloguer to use their common sense to decide the differences between these terms. Unfortunately, as “a complete description of a computer game within the FRBR framework would need to identify all of the various subsidiary Works constituting the games’ technological components,”²¹ it is precisely the differences in subsidiary Works that pose a challenge in creating bibliographic records for mods. For example, if a mod for a game was created in one programming language for one operating system and then in a second programming language for a second operating system, it is unclear if the two digital files would qualify as separate expressions. To a scholarly user accessing the executable game file, they would appear to be identical, but a player looking at the lines of code would see completely different items. If a mod uses the original game engine but changes the graphic files, it is unclear how the change between the digital files would be catalogued. There is also the issue of how to thematically group mods associated with one game or version. One research paper has suggested the concept of a Superwork to group linked items and mods as “the ability to collocate these resources is important for users: they care quite a bit about which version of *Doom* was used in generating a particular mod.”²² Until such issues are solved, there is no one method in creating clear records that are helpful to scholarly users or players.

Should such cataloguing issues be eventually overcome, there are still legal issues to consider. Central to this is the question of ownership and copyright, as the issue of who owns mods is generally up for debate. This concerns collecting institutions, as the copyright owners of a work must be established for the work to be acquired by most archival digital repositories. According to the game companies, they own all copyrights for mods as “informed and protected by traditional copyright laws, [they] have acted under the assumption that they own the product as well as its derivatives.”²³ Contrary to this, modders insist that they instead own the copyright to their works and that they are able to build any mods they see fit. This becomes even more of a concern when modders use material from a variety of sources. In one famous case, a group of modders created a total conversion mod for the game *Battlefield 1942* that drew from the Hasbro toy line *GI Joe*. Hasbro insisted the mod be shut down, a fact that the original game creators agreed with. In contrast, the modders “were generally confused about what the motives would be for Hasbro to have such a strong grip on the *GI Joe* content if the mod team was not making any money from the development.”²⁴ It is possible to make a legal argument for mods due to the

²⁰ McDonough et al., *Preserving Virtual Worlds Final Report*.

²¹ Jerome McDonough, et al. “Twisty Little Passages Almost All Alike.”

²² McDonough, et al., “Twisty Little Passages Almost All Alike.”

²³ Kow and Nardi. “Who Owns the Mods?”

²⁴ Postigo, “Video Game Appropriation through Modifications.”

transformative nature of the process, but this also would have to be tested in court.²⁵ One must exercise caution when considering the acquisition and preservation of digital objects that contain unsolved legal quandaries.

These methods and concerns serve to illustrate the general state of mod preservation, but the topic remains difficult to understand from a theoretical level. As such, noting specific case studies can serve as an illumination of how the issues discussed so far can be applied in a practical setting. To demonstrate a wide range of applications, two games from vastly different categories have been selected for these studies. The first, *Doom*, is an example of the quintessential first-person shooter game often cited by scholarly work on mods. The second, *The Sims*, functions as an example of an alternative modding community removed from much scholarly research but still critically important when studying modding. Difficulties in preserving mods from both games will be examined by considering the effects of lack of documentation, version-specificity and cross-platform portability, cataloguing, and tackling legal issues. Finally, solutions to all these concerns will be addressed through community- and archive-centered methods of digital preservation to contrast which choices are the best for these digital objects. By examining the digital preservation of mods in this framework, it is possible to illustrate the diverse nature of the community and how such materials can remain accessible to future generations.

Doom, released by id Software in 1993, is considered by many game scholars to be one of the most important if not contentious video games of the past few decades. As one of the most popular of the early first-person shooters, it has been widely credited for ushering in the popularity of that genre. Sadly, the game's notable aspects in terms of level and programming design have been significantly marred by the public controversy surrounding the game. Critics of violent video games have blamed *Doom* for the Columbine Massacre largely due to the fact that one of the two shooters designed mods for the game and both were fans of it. In time, even United States Congressmen cited the game as the epitome of the negative impact of video games on modern youth.²⁶ The dual aspects of creativity and controversy only serve to cement just how popular this game was and, as such, its importance in game history.

What makes this game a strong case study for preserving mods is that the game was largely designed to accommodate modders. The creators of the original *Doom* were intrigued by user-created modifications because another popular first person shooter called *Wolfenstein*. Carmack, one of *Doom*'s programmers, wanted to let the fans of his games modify its code without destroying it. He facilitated this through his arrangement of the *Doom* source code. The game's levels, graphics, and sound were stored in WAD files (which stands for Where's All the Data?) separate from the game's engine. This allowed users the ability to easily modify nearly all aspects of the game except for the main engine.²⁷ These user-created WADs were released online and even in compact disc compilations sold in stores. They range from relatively simple add-ons that change the cosmetic appearance of weapons to total-conversions that place *Doom* within diverse environments such as *Barney Doom* and *Star Trek Doom*.²⁸ Four years after the game's release, when id Software realized the popularity of the original game had begun to fade, they took an additional step and released the source code to the *Doom* engine under a Doom Use

²⁵ "Spare the Mod."

²⁶ Kushner, David, *Masters of Doom*.

²⁷ "WAD."

²⁸ Morris, "WADs, Bots, and Mods."

License and later under a GNU General Use License.²⁹ Copyright concerns over the DMX sound library of the original DOS version of *Doom* resulted in the release of the more technically problematic Linux port of *Doom* under a general public license.³⁰ It is impossible to know exactly how many mods were created, but tens of thousands can still be downloaded online. The historical precedent of *Doom*'s modding community makes it an ideal case study when considering how limitations on digital preservation of mods might affect a particular set of digital objects.

The Sims, in many ways, is the complete opposite of *Doom* in all respects. Developed by Maxis and released by Electronic Arts in 1999, it has gone on to surpass *Myst* as the highest-selling computer game of all time. The open-ended nature of the game, which has no clear goals of its own, has led to its general derision by many game fans and scholars as a toy rather than a game. As the game has a demographic that is over half female, a rarity in video games, much of this critique (and even casual commentary) about the game follows sexist stereotypes. One scholar examining the modding community noted this popularity was likely due to “the game’s leisurely pace, non-threatening interface, offbeat humor, dollhouse aspects, and the traditionally feminine subject matter of interpersonal relationships.”³¹ It is precisely the sexism surrounding the game that makes its study so critical. Video games have had a noticeable issue in representation of all sorts, but women face a particularly steep climb to be accepted and represented within the larger gaming community. By studying a game that has managed to find a place among an underrepresented demographic, it is possible to challenge the incorrect assumptions scholars have made about video game culture as a whole.

One factor *The Sims* shares with *Doom* is that the game was also designed to accommodate and encourage modders. Maxis released content creation tools months before the first commercial release of the game. These tools allowed the customization of relatively simple add-ons, such as the clothes characters could wear, the wallpapers available in their homes, or the color of furniture and other objects. Unlike *Doom*, the game never released its source code to the public, which has resulted in millions of smaller add-on mods and no total-conversion mods. However, while fans were not given access to the source code, they were never restricted from receiving financial compensation for their creations. Dozens of sites exist which require a player to pay a subscription fee to access these mods, none of which have been shut down by Maxis. In later sequels of the game, the game’s main website consolidated these actions by creating their own pay-to-download marketplace for add-ons, demonstrating an implicit encouragement of the economic advantages of modding. What places this modding culture as a stark outlier is how the larger modding community has been largely dismissive of this work. In general, modders and even academics have:

“A tendency to regard the Sims modding as a ‘casual’ practice that does not demand great skill or dedication, unlike FPS modding that is allegedly powered by a highly competitive attitude and the pursuit of the widest possible peer recognition.”³²

That a community creating millions of individual add-ons is not mentioned in a majority of academic papers on modding practices corroborates this review. If mods are to be digitally preserved, all must be considered equally. It is therefore necessary that sexist attitudes towards

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³⁰ Haley, “A Slightly Condensed Genealogy of Doom Source Ports.”

³¹ Tero Laukkanen, *Modding Scenes*.

³² Sihvonen, *Players Unleashed!*.

The Sims be ignored in favor of a more equalitarian view of the concerns in preserving the output of its modding community.

On the surface, it would appear that *Doom* mods would not be as affected by a lack of documentation as other games. The public release of the source code should have facilitated a better understanding of how all the game's versions and releases coincide and, therefore, how mods created for certain releases can be accessed. Instead, this example illustrates that even the release of a game's source code will not solve all problems. As the released source code for *Doom* came from the Linux port of the game, any mods created using that code will only function for games that derive from this branch of the game's development tree. Unfortunately, id Software never released the game's development tree, leaving it to the fans to attempt to understand the relationships between versions, best summed up like this:

“Most problematic for today's ports, though, are the facts that Ultimate DOOM, Final DOOM, and DOOM 95 are based on a totally separate fork of the source code than the DOOM II v1.9 build, and that Final DOOM contains various changes which can break Ultimate DOOM v1.9 demos.”³³

It is at this point that it becomes apparent that, at least in the particular case of *Doom*, lack of documentation is not a separate issue from the specific version of the game. They are, instead, interrelated. Cross-platform compatibility is also tangled into this mess. In an attempt to reach the original DOS source code that was not released by id Software, one developer created a source port to move Linux *Doom* back to a DOS system. This is not to be confused with other uses of the word source port, as the term refers both to ports created for cross-platform compatibility but also to user-created mods.³⁴ To summarize, to access mods for *Doom*, the user must be aware of which source port the mod is based on, which in turn depends upon the version of the game, and none of this information can be verified as the company has not yet released that information to the public. Therefore, the digital preservation of mods for scholars as well as players depends upon also preserving the correct software version of the game, something that is not easy to unravel. All of this is actually a best-case scenario for the digital preservation of mods, as even the release of the source code to begin with is an almost unheard of event within the realm of video games. If one imagines how confusing this is to fans that have worked with these mods for two decades and then considers how the average digital archivist or librarian were to attempt to understand this mess, then a blatant example of the confusing nature of this sort of preservation emerges.

In *The Sims*, lack of documentation becomes a facet of versionality within this game. This is directly related to how these mods function. Each object within the game triggers a specific action within the character that is interacting with it. For example, a chair will trigger an animation in which the character sits down. If the chair is modified to look like a completely different item, the character will continue to sit, as only the surface aspects of the item can be altered. However, these animations are tied to specific expansion packs. If the originally released stand-alone game of *The Sims* is the only item considered when discussing mods, then there are no version differences, but the game was not a stand-alone item. Over time, several expansion packs to the original game were released. These added new features, game mechanics and actions, and an assortment of new objects with new animations. If a user is attempting to use a mod whose corresponding action is tied to a later expansion, and the game does not have that expansion, the mod will not function. Most online databases note what expansions are required

³³ Haley, “A Slightly Condensed Genealogy of Doom Source Ports.”

³⁴ “Source Port.”

for an item to function, but this information is not always kept when the add-on is downloaded. If there is a proper level of documentation, the issue of versionality can be managed so long as access to specific expansion packs is maintained. Should documentation be lacking, accessing mods cannot be guaranteed.³⁵

Hardware requirements for preserving mods for both games are actually quite simple. If an archivist received files even of the most complicated total-conversion mods, they would still only be a series of WADs. A WAD file contains any code in *Doom* not related specifically to the game's engine. They can include graphics, sound files, or even entirely new levels.³⁶ The arrangement and hierarchy of all lines of code within a WAD, even down to the number of bytes required in each line of code and the arrangement of the file directories, can be quickly found online.³⁷ If preservationists are concerned this information may disappear in the future, those websites that aid in breaking down the files can be downloaded and stored, as well, as they are generally maintained on free fan-created Wikipedia pages. In addition, the amount of storage space required for these files is generally quite small compared to the size of more modern games and applications. The first registered release of *Doom* was only one hundred forty megabytes, which is considerably larger than even the largest total conversion of a game.³⁸ Skins, those character-clothing items that constitute the majority of add-ons within *The Sims*, vary widely but rarely are larger than seventy-five kilobytes.³⁹ If the files are downloaded as zip files, accessing those files might require another program, but unzipped files need no hardware or software. In terms of technical specifications, running these files is not a difficult task for a digital repository.

Cataloguing mods for both games is similar. If a digital repository were to attempt to create a bibliographic record within FRBR about a single *Doom* WAD file or add-on in *The Sims*, a host of interrelationships would emerge. The mod itself can be considered a work, but each version of the source could constitute a separate expression. For example, if the source code is written for one type of operating system but modified for a second, each separate source port would constitute another expression. As each manifestation is another physical embodiment of an expression, a mod obtained as a ZIP file would have a different manifestation than the same mod's download from another website. Using the OAIS model, all information necessary to accessing a digital object must be included. Therefore, the version of *Doom* or *The Sims* used to access the mod would also require its own interrelated set of relationships that follow the same pattern.⁴⁰ However, a major drawback is the inability to link this specific WAD within the larger context of all mods from that game. It is unlikely that a researcher would only want to look at a single mod, but instead would want to study the modding of a game. Earlier, the concept of a Superwork was mentioned, and this would be perfect for this case, but until then, these crucial relationships cannot be added to a bibliographic record.⁴¹ Instead, less institutionally determined methods of documentation should be considered. As bibliographic records currently exist, even the most detailed are insufficient for a more contextual analysis of these digital objects.

³⁵ Laukkanen, *Modding Scenes*.

³⁶ "WAD."

³⁷ "WAD."

³⁸ "Versions of Doom I and II."

³⁹ This was established by searching through a number of fan websites such as "The Sims Zone."

⁴⁰ McDonough, "Packing Videogames for Long-Term Preservation."

⁴¹ McDonough, et al., "Twisty Little Passages Almost All Alike."

The issue of legality for *Doom* mods is a lesser concern for these mods than would be for *The Sims*. The initial release of the game's source code under a Doom Source License forbids commercial exploitation of the code, heavily restricts the distribution of copies of the source code, and grants permission for distribution of the code only for educational purposes. Later, the source code was released under a GNU (General Public License) and all modders were given the option to move to this new, less restrictive license. Under the new license, any mods that used this source code were simply required either to include that source code in their file or offer to obtain it freely. Modders were still not allowed to receive monetary compensation, but all rules about distribution were revoked. It should be noted, though, that many total-conversion mods of the game use intellectual property from other sources by including characters, settings, or music from films or popular television shows. The appropriation of those materials could be legally problematic or might, as with mother mods, qualify as derivative works. The exact nature of these legal concerns is unclear and would require examination on a case-by-case basis. Still, a large legal hurdle simply does not exist here, and that alone is a major facilitator in the digital preservation of these items.

The legality of mods within *The Sims* is similar, but there are noticeable differences. In general, the same issues exist in terms of whether using intellectual property from other sources is considered socially acceptable. As the game's developers allow modders to receive financial compensation for their items, the use of such intellectual property becomes an even greater legal concern, as it is less likely to be considered fair use. However, the restrictions on how mods can be shared endemic to *Doom* do not apply to *The Sims*. This creates a modding culture that is, paradoxically, both more as well as less legally contentious. As the preservation of legally contentious artifacts can put the preserving institution in danger of legal action, it becomes less likely that such files will be saved by institutions preferring to err on the side of caution.

That mods and modders are now considered an acceptable part of the larger gaming culture cannot be argued. These communities have existed for decades and have only grown with time. Scholarly work on these scenes demonstrates that the communities are considered worthy of examination. If the work of these players is of scholarly interest, it stands to reason that the products of such communities should be considered an essential form of study to those interested in such practices. At this point, a number of technical, archival, and legal concerns impede the digital preservation of mods from growing in such a way that it can begin to deal with the exponential growth of the general modding community. It is promising that the practices of community-centered archiving have attempted to deal with this issue, and the work of archive-centered collecting models can only facilitate these attempts. Still, what is required is a systematic understanding of the issues endemic to this community and acceptance that the work is worthy of preservation. The preservation of video games, or lack thereof, has already demonstrated how works considered merely empty entertainment are overlooked and discarded by larger communities. Perhaps, this time, the cycle will not repeat itself, and the items can be saved before it is too late.

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