Games in captivity

Liberation, emulation, and abandonware

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For those of us who grew up in the 80s, playing games in arcades or on our computers and game consoles was a major part of our childhoods, and we often have the nostalgic desire to replay those beloved titles. Others not only want to play, but have dedicated their scholarly attention to the study and preservation of videogame history. Sometimes companies who own the copyright to these games are able to repackage them and make them available on the shelf; there are countless "Games in a Stick" mini-consoles and plenty of "Arcade Classic" compilations for the PC and modern consoles. Unfortunately, only the most popular and well-known classic games from the biggest companies are available. Sure you can play *Ms. Pac-Man*, but what if you're looking for Paul Norman's *Forbidden Forest* or Bill Hogue's *Miner 2049er*?

> There are historical, cultural, and scientific reasons to care about classic games and study them with the same devotion that old books and movies receive by venerated college professors

While many such games are impossible to find at stores, emulation enthusiasts have made them available for download from the web. Unfortunately, downloading games from an "Abandonware" site might mean breaking the law. Thankfully, people like Matt Matthews of *Liberated Games* are leading the effort to legitimize "ROM collecting" by contacting abandonware authors and copyright holders, asking them to release their games and source code under public licenses. This is an important effort with significant cultural and historical connections and major implications for future game research. This article will offer reasons why preserving older games is important, why having access to the source code is just as important as having the games themselves, and finally, why we need to do all of this legally instead of relying on abandonware sites.

Who cares about old games?

Many people may find it odd or even laughable that some people care about preserving old, "obsolete" videogames. Why should we care if future generations of gamers are able to play out-of-production games and experience working with antiquated computer systems? More specifically, aren't games simply a useless diversion anyway? While many people may agree that preserving *Casablanca* or Shakespeare's *Julius Caesar* is a culturally significant task, taking pains to ensure that future generations will have access to *Robotron* and *Zookeeper* may seem silly. Videogames have long been a "subclass" of entertainment; something that kids do rather than what they're "supposed to", namely, their homework or playing outside. Another problem is that too many gamers view game development as a strictly linear process, with the "best" games available on the shelf today and past games as inferior or primitive in comparison. All of these factors add up to the preju-

dice that someone dedicating herself to the serious study of videogames is wasting time and resources. However, there are historical, cultural, and scientific reasons to care about classic games and study them with the same devotion that old books and movies receive by venerated college professors.

Those of us involved with the burgeoning field of game studies don't hold the view that games are simply too frivolous to be worth taking seriously. For one thing, games are an important part of our cultural history. Students in 2050 will need to know about *Space Invaders* and *Pacman* if they hope to understand the America of the early 80s, just as anyone studying the 60s will need to know about rock and roll music. One should never refuse to take something seriously just because people find it enjoyable. Videogames have become a fundamental activity for a great number of people, and ignoring them is also ignoring an important chunk of our culture.

There are other good reasons to study videogames. Many games are "deep" and have a similar emotional impact on us that great movies and books do. While many, if not most games are "me-too" rehashes of familiar formulas and gimmicks, other games explore more exciting territory. Nick Montfort identifies some games of literary weight in a brief essay named Literary Games (http://nickm.com/writing/essays/literary_games.html), but one need not look hard to find games of cultural merit. Certainly anyone who has experienced Floyd's sacrifice in Infocom's *Planetfall* or April's confrontation with her stepfather in Fun Com's *The Longest Journey* is aware that games can affect us as strongly as other mediums of expression. The *Fall Out* series gave us a vivid portrayal of civilization after a nuclear disaster, and Janet Murray has even argued in her book *Hamlet on the Holodeck* that *Tetris* is a "perfect enactment of the overtasked lives of Americans in the 1990s". Matt Matthews, host of *Liberated Games*, argues that *Missile Command* is culturally significant. "When Missile Command came along," says Matthews, "the idea of the end of the world coming in a hail of nuclear missiles was on a lot of people's minds. To see that acted out on a screen, to be in a position to try to fend this off for apparently helpless cities, to know that no matter what you did, there was no end to it—the fact that you could not avoid this fate once the missiles were launched is a political message." The point is that games can teach us valuable lessons, albeit in a vastly different way than older, more respected media have done.

The Colecovision. Pic via Wikipedia.

We could go on like this for quite a while if it were necessary. However, if we can agree that games are culturally significant, then we are likely to agree that they are worth serious study and effort to preserve them. Though some people would argue that studying any history or literature is a waste of time, I wouldn't expect a reader of *Free Software Magazine* to share such a dismal view. So, I'll move on to the more immediate issue at hand: namely, how we can access these older games, either for fun or study.

As anyone who has ever played a videogame knows, it is a very different experience reading about a game or seeing someone playing one than experiencing it for oneself. Videogaming, just like any gaming, is clearly a participatory medium that derives a great deal of its popularity from the special demands it makes on players. Unfortunately, playing older games can represent a significant technical challenge. While it's easy enough to buy a PlayStation 2 and plenty of games, finding a working Atari 2600 or an Apple II, much less games for such systems, is not. Some of us have dedicated ourselves to scouring flea markets and yard sales and preserving old games, systems, and accessories in well-kept private collections. While these collections may have cultural as well as monetary value, they are not likely to benefit many people besides the collectors who cherish them. Again, merely seeing a Colecovision in a museum is one thing and playing one is something else entirely.

Other people are not only motivated to collect classic games and hardware, but to ensure that other people are given the opportunity to experience them. One common means of achieving this end is separating the software from the hardware for which it is designed. The next step is to create an "emulator" program capable of synthesizing the original hardware. Such programs are plentiful and available for a variety of platforms. It is even quite common to find older system emulators for modern game consoles. A recent Slashdot posting (http://games.slashdot.org/

article.pl?sid=05/06/01/1215214\&tid=203\&tid=207\&tid=233) identified the plethora of emulation software already available for Sony's new handheld game console, the PSP, and Sega's Dreamcast is the platform of choice for a thriving community of emulation and homebrew enthusiasts.

Abandonware, emulation, and ROMs

A great many, if not most, of the games we enjoyed as children and young adults are freely available for download online. Sites like *Back to the Roots*, *Home of the Underdogs*, and *Abandonia* provide downloads to countless games for PCs and game consoles that are no longer being sold. Thousands (if not tens of thousands) of arcade games are available in a variety of ways (including DVD mail order) for use in the well-known MAME emulator, and a cottage industry has grown up to provide hardware. Devices like the Xgaming's X-Arcade allow modern gamers to experience the feel of classic hardware. Never before in history has it been so easy to accurately emulate so many classic games on a modern PC.

> Seeing a Colecovision in a museum is one thing, playing one something else entirely

Still, even though emulation has seen significant technological progress, it remains quite illegal. The problem is that in all but a few cases, the copyright, patent, and trademark holders of these classic games and systems have not granted their permission for these downloads and are not being compensated for them. Even though most sites that host abandonware are non-profit and committed to selflessly serving communities of classic game and system enthusiasts, their activities clearly constitute copyright infringement.

The attitude of most of these sites is that they will keep a game available for download as long as they do not receive a specific request from a copyright holder that they take them down. Not many copyright holders bother to do this, and others give their blessing. The majority are probably unaware of the whole enterprise. Some abandonware authors have retained their copyright and are more than willing to release their games and code under a public license (or even dedicate them to the public domain) when they learn of any interest whatsoever in their creations. Others may not realize what is going on until their games have been downloaded thousands or millions of times; then they may feel that they have lost a great potential for revenue.

That some old games still hold significant value ought to be obvious to anyone. This is certainly the case with games like *Frogger*, *Galaga*, *Super Mario Bros.*, and *Ms. Pacman*; these games have often been repackaged and made available in a variety of compilations for modern PC and consoles. However, why should anyone buy these often expensive compilations if they can get them for free? Nevertheless, unless we're willing to break the law, we need to pay the price for these versions, since they are either being sold by the copyright holders or someone who has licensed those rights from them. Illegal downloads of classic games may seem harmless, but any attempt we make to justify doing so ends up sounding like the shoplifters who claim they steal because the store charges outlandish prices. As supporters of free software, we acknowledge the right of programmers to release "non-free" software and earn a profit doing so, even if we celebrate those who privilege freedom.

What I think we'd all like to see is more classic games being re-released under a public license so that no one has to break the law. We'd like to have the copyright holders blessing to distribute their software. However, there are a few points worth stressing here. One is very important: the original author of a game may or may not be the holder of the copyright. As anyone familiar with publishing is aware, it's a common practice that authors are required to sign over their copyrights to publishers. Once this occurs, the publisher might decide to license or sell a copyright to another entity, who may sell it yet again, and so on. In the case of old videogames, this process might have occurred many times, and unlike the system in place for patents, there is no central listing anywhere of who owns a copyright (a point of contention for many critics of modern copyright). So even authors can be totally unaware of who actually holds the copyright to their games.

Furthermore, for all practical purposes, copyrights last forever and protected works will never fall into the public domain. These are problems with the copyright system that have been addressed quite effectively by Lawrence Lessig, author of *The Future of Ideas* and *Free Culture.* Our Congress has decided that keeping Mickey Mouse from

falling into the public domain is more important than the immense treasures that might befall the public (particularly our children) were they allowed to freely distribute and build upon them. I hope that my readers will forgive me for the acid in my tone here. As a scholar and state university professor, I am perhaps more vexed than most about the inequities in modern copyright law. However, suffice it to say that discovering and contacting the copyright owners of a specific game is far more difficult and expensive than many people realize.

In some cases, giant, faceless multinational corporations have somehow become the owner of copyrights to obscure titles and may simply sit on them forever. Perhaps they bought out a smaller company long ago or somehow acquired the copyrights as part of some merger. For these corporations, freely releasing such works, even if they appear to have zero monetary value, isn't on the agenda. For one thing, the corporations aren't free to do whatever would benefit the public; they must answer to their shareholders, who might see such generosity simply as cheating them out of assets. Perhaps at some point in the future a company might pay for a license to republish some of these old games; perhaps they still retain some value as trademarks and could be regurgitated in some form for a sequel. Just because you own some property that you never use doesn't mean that you will be willing for others to build a playground on it for the neighborhood children. Even though many of us would consider this a fine use for the property and feel repulsed by a Scrooge who wouldn't allow it, we should respect his rights by law. The benefits of such laws outweigh their detriments. After all, the alternative is communism.

However, the question that so many critics of copyright like Lessig and Richard Stallman have asked is whether or not such "property" metaphors are valid. Indeed, Stallman argues that the term "intellectual property" is deliberately misleading and may prevent us from seeing these issues clearly. Such word choices cloud our reason and skew the debate in much the same way that insisting upon calling black men "boys" or women "the weaker sex" would have on a debate about universal suffrage. What we will see is that the perspective created by the use of such loaded terms often places big business interests in direct conflict with the interests of the public. To see clearly, however, we must try our best to strip ourselves of such prejudices and strive for better objectivity. When it comes to emulation, however, objectivity is a lofty goal for either side. Where passions rule, reason is exiled.

Cloanto's "Amiga Forever". Pay at the door.

One particularly inflammatory issue here involves system ROMs. A good case to illustrate this is the Commodore Amiga computer. For those not in the know, the Amiga was the platform of choice for a great many computer games of the mid-80s to early 90s. There was also a healthy Amiga public domain development community. The AMINET archives still host an amazingly comprehensive library of publicly licensed programs and data for Amiga users. However, unless one actually owns a working Amiga, which went out of production in the 90s, running these programs requires emulation.

As we mentioned earlier, an "emulator" is a type of virtual machine that emulates a particular system. Recreating another computing environment can seriously tax a system, even if the emulated system is "low-tech" or "primitive". Such software was slow and clunky in the past even for very old systems like the Commodore 64, but today's powerhouse PCs are up to the task and can faithfully emulate even the fastest Amiga computers. Once installed, emulators allow users to access software, often in binary forms called "ROMs". To put it simply, emulators allow users to run programs on their computer or console intended for other systems. However, properly emulating most systems requires access to their operating system, also available as downloadable ROMs. Without these system ROMs, emulation can't take place.

What happened with the Amiga emulation community is a chilling tale. For years Amiga enthusiasts worked to make the Amiga's public domain and commercial software library available online. The community freely shared their resources and bandwidth; there was almost an evangelical imperative to share the Amiga and its games with anyone who might want them. Plenty of people contributed their time and money to building and enriching this community.

Copyright infringement was rampant, but no one involved was making any special effort to "cash in" on the building interest in the abandoned computer and its software.

Enter Cloanto, a company that saw the public's interest in the Amiga as a lucrative opportunity for private gain. In what some might deem a sinister manuever, Cloanto secured an exclusive license to the Amiga operating system ROMs and sent cease and desist orders to anyone daring to host these critical ROMs on the internet. Cloanto was offering them for sale along with its commercial, proprietary emulation program. Cloanto made no special effort to curtail the infringement of Amiga software for which it did not own the rights, even though it is likely that anyone who bought their ROMs was engaged in such activity.

This pattern of waiting for an emulation community to form around an antiquated system, then cashing in on that community's generosity and hard work is one we are likely to see again and again. Indeed, last year there was a stir in the Commodore 64 community when a company named Tulip announced that it would soon be performing the same routine. Tulip created an "official" C-64 portal and tried to use its legal leverage as owners of the trademarks to shutdown its "competition", namely, the hundreds of enthusiasts who had been offering their time, energy, and bandwidth to the community for free. The operation did not prove profitable, and Tulip ended up selling the rights to the Commodore brand name to yet another company. The threat still lingers.

If a law is flawed and works to society's deprivation, should we feel fine about breaking it?

What is at stake here? What's ultimately at stake is access to these culturally important computer and game systems and their libraries of programs. Legally, the copyright, trademark, and patent owners have the right to exclude others from taking advantage of their "property". The more important question from the humanist's perspective is whether such pragmatic business considerations trump cultural or social concerns. Legal or not, should we deprive future generations access to culturally significant videogames for the sake of a *potential* profit for some unknown corporation?

This question is particularly tricky given the internet and the nature of software. If I decided to setup a printing press and start publishing novels that were out of print yet still protected by copyright, my activities would be highly visible. Word would get back to the copyright owners, and I'd likely be sued. Just making a living selling these novels would adequately demonstrate that the works were still commercially viable and that I was "stealing" from the copyright owner by taking advantage of them. Even giving them away for free would not make me immune to prosecution. After all, if there is enough demand to stimulate free publication, mustn't there necessarily be commercial demand as well? If a hundred people accept a book for free, perhaps one or two might also pay for it. Some would try to apply this same example to sharing ROMs online; if a thousand people would download a ROM for free, might not some of them also pay for it?

This argument seems silly upon serious reflection, yet it is this same kind of thinking that underlies our copyright laws and makes generosity and sharing vices rather than the highest virtues. Anyone with sufficient intelligence and concern for his fellow citizens is aware of how badly we need to reform our copyright laws. However, let us not dwell too long on these issues here, since they are explored so much more fully in so many other works. The works of Siva Vaidhyanathan, Richard Stallman and Lawrence Lessig make an exceedingly compelling case for such reform and deserve a place on every good citizen's reading queue.

Liberated games

Abandonware enthusiasts have frequently argued that in the case of old games, we ought to disobey the law. After all, copyright law is no longer serving its purpose and has been warped to serve only the interests of multinational corporations instead of authors or the public. If a law is flawed and works to society's deprivation, shouldn't we feel fine about breaking it? Others contend that while "pirating" a new game is wrong, copying and distributing "abandoned" games is ethically justified. In fact, the term "abandonware" is itself a loaded term; the idea underlying it is that a commercial entity has abandoned the product and thus we ought to feel justified in taking and using it ourselves. After all, if someone leaves a kitten to starve to death on the side of the highway, we would feel quite justified in taking the kitten home and caring for it properly. Shouldn't the same be true of software? Furthermore, even if the original owner

showed up later at our door demanding the cat back, would anyone condemn us for telling that person where to go? The strategy behind the term "abandonware" is this idea: if the software has been "abandoned", then the owner no longer has any rights over it. It's free for the taking.

Matt Matthews, creator of *Liberated Games,* takes issue with the practices of abandonware sites that offer copyrighted works without the explicit permission of their owners regardless of whether the works are commercially viable or not. Matthews' argument is that since these sites are breaking the law by offering copyrighted works for public download without first acquiring the permission of the copyright owners, we ought to avoid using them. This position might seem untenable for someone running a website called *Liberated Games,* another loaded term with obvious rhetorical implications, yet Matthews argument makes sense when given more context.

> No other medium of human expression offers the kind of "peeking under the hood" that source code provides

Matthews wants to encourage the owners of copyrighted "abandonware" to explicitly release their works into the public domain or under a public license. Furthermore, he wants to see them contribute the source code along with their binaries. Matthews will not host a ROM or other download if he cannot verify that the copyright owners have explicitly made it legal to do so.

Abandonware enthusiasts might simply dismiss Matthews as a sort of "Dudley Do-Right" character so concerned about following the letter of the law that he is blind to its inequities. Matthews' argument, however, is that offering works without acquiring permission is unfair to the owners of the copyrights and brings the whole abandonware scene into disrepute. Not all of us who want to emulate old games on our computers want to be associated with "outlaws". Matthews goal is to make games available for download that are "in the clear" and unambiguously free and legal for download.

Abandonware sites like to defend their activities by claiming that the games they offer have no commercial value because they are not in production and unavailable for purchase. Matthews compares the situation to Disney's feature

Screenshot of Liberated Games

films. Disney's practice is to withdraw a movie for a few years, let the market pressure build up, then re-release it for a limited time. Matthews argues that it would be wrong to assume that just because these movies are temporarily unavailable we should feel justified in copying and distributing them without authorization. "It is not my position or anyone else's to decide whether there is commercial value there or not," says Matthews. "It's the copyright owner's position to decide that." Disney intentionally limits the availability of its movies to maintain the value of its copyrights. According to Matthews, we have to respect Disney's decision and not take it upon ourselves to break the law no matter how badly we want our children to see *Bambi*.

Matthews' goal is not to police abandonware sites or chastise people who use them. Instead, Matthews wants to draw our attention to the copyright holders who have chosen to release their works to the public. Clearly, these people are doing us a great service, and we ought to encourage this behaviour. If we limit our abandonware collections to strictly those works we can acquire legally, we may help persuade other copyright holders to release their works. How could a copyright holder of an old videogame benefit from releasing that work to the public? There are several very real potential benefits. Firstly, there may be a buzz about the released game on message boards and retrogaming sites. This might renew interest in the game and provide a sort of free advertisement for a developer or brand. This seems to be the motivation behind Rockstar's decision to release *Grand Theft*

Auto, or Id's many contributions. Sierra released (temporarily and with restrictions) its game *Betrayal in Krondor* to drum up enthusiasm for its sequel, *Betrayal in Antara.* Another motivation might be simply to ensure one's spot in gaming history by making one's work as widely available as possible. A good game that is free to distribute is likely to survive longer than one that can only be traded illegally.

Another reason for contacting the copyright holders is that we might also acquire source code. Matthews argues that it's not enough for copyright holders to release the binaries of their games. They should also release the source code. "It's my opinion that if you're going to give away the game for free, I don't see how it is any more of a loss to give away the source code—and I see all kinds of benefits to that." One of these advantages if that third parties might use the source code to port games to other platforms, such as the *Doom* and *Quake* ports for the Dreamcast. "I don't think there's any question that a programmer developing for embedded hardware, where space and RAM are small, could learn from code for the Atari 2600." Especially in cases where the author is also the copyright holder, we have opportunities to find and release valuable source code.

A question I recently posed on academic-gamers.org (http://www.academic-gamers.org/discuss.shtml?storypath=/main/blacklily814.html\&flav=daisy) asked game scholars whether they would benefit from having access to source code. Admittedly, not all game scholars are programmers or have more than a superficial understanding of what goes on under the hood of the games they study. While I would draw the line at saying that studying the code will *necessarily* lead to a better understanding of a game, I can clearly see how it could lead to insights otherwise unattainable. As Laurie Taylor points out, "Coding constraints—which in the past often necessitated odd coding structures and the repetition of certain portions of code—can aid in the study of game design itself; for instance in the repetition of certain spaces, gaming tropes, in the structure of gaming music, and so on". No less a computer scientist than Donald Knuth has explored the source code for the legendary *Adventure*, using his CWEB programming language to help readers appreciate its brilliance. I can imagine a future where students not only study the games themselves, but also the code, and thereby gain an even better appreciation for the programmer's ingenuity and insight. After all, studying a game without its source code is comparable to studying music without any knowledge of theory or painting with no inkling of technique. Even these examples do not quite get the point across, because no other medium of human expression offers the kind of "peeking under the hood" that source code provides.

Games in captivity

In this article, I've discussed several problems faced by classic gaming players, preservationists, historians, and scholars. From a technological perspective, emulating and thus allowing future generations to experience classic games is not a problem as long as we disregard the significance of playing a game on its original hardware. By far the biggest problem is the legality of emulation and abandonware. Although the restrictions imposed on society by what have become tyrannical copyright laws are experienced and often resented by scholars who study books or films, they are particularly unbearable for game scholars. Unlike the world of books and movies, there are no videogames in the public domain apart from those specifically released as such. Any book or film published before the Great Depression is free for the taking, but even the oldest known videogames fall under the protection of copyright law—unless those who hold copyright have specifically disavowed these rights.

Furthermore, although there are many commercial and non-commercial games that have been released for free public distribution, there is still a dearth of source code. This is unfortunate when we think about how often game programmers have been the pioneers of the entire software and hardware industry. Programming history is full of examples of how an innovative technique intended for a game had consequences for the industry. The history of Unix is a prime example. The innovations that led to this vastly influential operating system were a result of Ken Thompson and Dennis Ritchie's efforts to play his game *Space Travel* on a PDP-7. Bell Labs' own History of Unix website describes the significance of this early effort to play a game intended for one platform on another: "Their effort included a floating-point arithmetic package, the pointwise specification of the graphics characters for the display, and a de-bugging subsystem that continuously displayed the contents of typed-in locations in the corner of the screen". Would we have

Unix or Linux today if it weren't for *Space Travel*? We certainly don't have to spend time arguing about the importance that games had for multimedia. It wasn't so long ago in IBM-PC history when monitors were monochrome and sound was limited to a tiny speaker (or "buzzer") inside the PC. Finally, Tim Berners-Lee has acknowledged the influence of the old game *Adventure* for his development of the world wide web (see Berners-Lee's Information Management: A Proposal (http://www.w3.org/History/1989/proposal.html) for more information). A history of programming that failed to consider the significance of gaming is simply unthinkable.

I would like to see more classic games and their source code legally available for public access and distribution. This will only happen if more of us take Matthews' lead in eschewing illegal methods of accessing them. Instead downloading ROMs illegally, we ought to be joining the effort to contact the copyright holders and liberating these games. Perhaps we can form a consortium dedicated to securing or buying up these "worthless" copyrights and promptly releasing them along with their source code under a general public license. What better way can we honor the developers of our favorite games than by asking them for permission to share and celebrate their works far and wide, at our own expense?

I have merely touched here on issues that could easily be discussed in book length. My hope is that the article may prove of some use to you in forming or considering your own views on this subject and that you will share your thoughts with me in the comments section of Free Software Magazine's website (http://www.freesoftwaremagazine.com).

Copyright information

About the author

Matt Barton is an English professor at St. Cloud State University in Minnesota. He is an advocate of free software, wikis, and the Creative Commons. He also studies and writes about videogames.