



Introduction :
For a cultural history of video games

Jonathan Lessard, Martin Picard, Carl Therrien

In spite of preservation and accessibility issues, the history of video games has become a topic of interest for a growing community of scholars and museum curators around the world. In *Digital Play* (2003), Stephen Kline, Greig de Peuter and Nick Dyer-Witheford invited us to understand video games as a complex network of interactions between industrial structures, technological innovations and socio-cultural exchanges. In doing so, they also provided us with a useful tool to map out which areas have been explored more thoroughly, and which have been neglected.

Many historical accounts, from Kent's *Ultimate History* (2001) to Dillon's *Golden Age* (2011), document the key moments of the technological and industrial circuits. Built from hundreds of interviews with famous industry figures, and journalistic pieces that often echo the official marketing documents of major corporations, these accounts often feel like another voice in a choir of techno-industrial glorification. Video game historians working in academia have started to engage these two circuits more extensively: Greenwood's *The Video Game Explosion* (2008) and The Platform Studies series from MIT Press being just a few examples. The socio-cultural exchanges that occur through the medium of video games are also documented in these volumes. However, they are rarely used as a structuring factor in history books. Recently, more scholars are drawn to the principles of knowledge archaeology as laid out by Michel Foucault (1969). At its core, media archeology is an incentive to unearth and engage with the materiality of a phenomenon in a way that highlights its underlying tropes and ideologies. In doing so, the discipline is contributing to the expansion of our knowledge and critical appreciation of the cultural history of video games, and by extension of gaming activities.

This special *Kinephanos* issue on the cultural history of video games builds on the first edition of the Game History Annual Symposium, held in June 2014 in Montreal. We included two contributions from Keynote speakers invited for this occasion. Tristan Donovan revisits the context that led to his book *Replay* in order to underline the inherent limitations and constraints of such a project, and also to advise game historians on the challenges ahead. John Szczepaniak continues with similar considerations, focusing on the Japanese video game industry; he observes that it is now urgent to preserve artifacts on the verge of disappearing – most notably when it comes to early computer games – but also to collect accounts from developers before it is too late.

Regular contributions to this special issue benefited from a rigorous peer-review process: following their acceptance to present at the symposium, authors took into account the feedback received during the event as well as the evaluation from two expert reviewers in order to work on the final version of their paper.

In order to present the emergence of the French video game industry, Colin Sidre underlines the unsuspected significance of dedicated computer stores. Many hobbyists benefited from the possibility to meet and share a common interest in stores such as Illel, Sivéa and Ellix, which truly represented “contact surfaces” in the sense sociologist Fernand Braudel gave to this expression. Sidre builds on original documentary research (including dedicated game magazines, advertisements and interviews with store owners) in order to trace the mutations of many hobbyists and resellers into developers and publishers.

Jaakko Suominen, Markku Reunanen and Sami Remes propose an account of the retrogaming phenomenon based on a rigorous inspection of Finland’s specialized gaming press. They set out to defend a strong hypothesis: according to them, the discursive practice of magazines such as *Pelit*, *MikroBitti* or *Tietokonepelien vuosikirja* had a decisive influence on the development of retrogaming practices. They inspect the interactions between the journalistic community and the emergence of game nostalgia, emulation and preservation practices, and the contemporary monetization of the phenomenon. A thorough empirical

investigation allowed the authors to distinguish between three distinct phases in the evolution of retrogaming.

Alison Gazzard inspects a practice that still isn't thoroughly documented in video game history: the creation and sharing of game levels designed by game players, a rich and multifaceted phenomenon that emerged a long time before the release of the "ideal" object *LittleBigPlanet* (Media Molecule 2008). Unearthing the *Repton* series developed for the BBC Micro, Gazzard argues that the level editor has been part of video game culture from the 1980s onwards. She also demonstrates that player communities didn't need the internet in order to create and share their hobby/creations.

Devin Monnens and Martin Goldberg's paper sets out to deconstruct the common conception that *Spacewar!*, the famous game developed at MIT by a group of hackers, benefited from a rapid distribution and graced every computer in North America during the 1960s. The authors reconstruct a slower process of dissemination, determined by the material and social realities of research labs: accessibility of the hardware, personnel mobility, etc. This contribution brings forward many novel elements in the history of *Spacewar!*, and underlines the disparity of perception between agents of this history and historians. Far from a breakthrough moment in the major cultural phenomenon we now call "video games", contemporaries of the game were more inclined to see the game as a gadget – an exciting one, for sure – that lacked the value of the serious research conducted on the computers where it emerged.

Finally, Thomas H. Rousse related the fascinating history of the "afterlife" – to use Raiford Guins' recent book title – of the *Warrior* arcade cabinet, one of the first combat games using a vector display. Rousse relates with great detail the "business intrigue" surrounding the mythical game, and considers the numerous preservation challenges of such intricate technology.



Introduction : **Pour une histoire culturelle du jeu vidéo**

Jonathan Lessard, Martin Picard, Carl Therrien

Malgré les problèmes d'accessibilité et de préservation, l'histoire du jeu vidéo est devenue un intérêt de recherche pour une communauté grandissante de chercheur(e)s universitaires et de commissaires à travers le monde. Dans *Digital Play* (2003), Stephen Kline, Greig de Peuter et Nick Dyer-Witheford nous proposaient de comprendre le jeu vidéo comme un ensemble dynamique de structures industrielles, d'innovations technologiques et d'échanges socioculturels. Ce faisant, ils nous ont également donné un outil pour identifier les domaines qui sont explorés avec plus d'insistance et ceux qui ne sont pas abordés aussi fréquemment.

Plusieurs ouvrages sur l'histoire du jeu vidéo, depuis le *Ultimate History* de Kent (2001) jusqu'au *Golden Age* de Dillon (2011), documentent les moments clés des circuits technologique et industriel. Construit à partir de centaines d'entretiens avec les intervenants célèbres de l'industrie ou encore à partir des dépêches de journaux qui souvent se contentent de faire écho aux documents de mise en marché officiels des grandes compagnies, ces ouvrages semblent joindre leur voix à un concert de glorification techno-industrielle. Les historiens du jeu vidéo qui œuvrent dans le milieu universitaire ont abordé ces deux circuits plus en détail dans une série d'ouvrages récents, notamment dans *The Video Game Explosion* (Greenwood, 2008) et la série *Platform Studies* du MIT Press. Les échanges culturels qui définissent le média vidéoludique sont aussi documentés dans ces volumes. Cependant, ces éléments sont rarement intégrés de manière structurante dans les ouvrages historiques. Récemment encore, de plus en plus de chercheurs se réclament des principes de l'archéologie du savoir tels qu'énoncés par Michel Foucault (1969). La mouvance de l'archéologie des médias cherche à prendre contact avec la matérialité d'un phénomène culturel de façon à éclairer les idéologies et les postulats sous-jacents. Ce faisant, la discipline contribue au

développement de nos connaissances et de notre analyse critique de l'histoire culturelle du jeu vidéo.

Ce numéro spécial *Kinephanos* sur l'histoire culturelle du jeu vidéo fait suite à la première édition du symposium Histoire du Jeu, qui s'est déroulé à Montréal en juin 2014. Nous avons inclus les textes engagés de deux de nos conférenciers invités pour l'événement. Tristan Donovan revient sur le contexte de rédaction de son ouvrage *Replay* afin de bien souligner les contraintes liées à la mise en œuvre d'un tel projet historique, mais aussi les défis qui attendent tout historien du jeu vidéo. John Szczepaniak poursuit dans la même veine, mais en se concentrant sur l'histoire du jeu vidéo japonais; il remarque qu'il est désormais urgent de préserver le matériel sur le point de disparaître – surtout en ce qui concerne les premiers jeux sur ordinateur – mais aussi de recueillir les témoignages des développeurs avant qu'il ne soit trop tard.

Les articles réguliers ont bénéficié d'un processus d'évaluation par les pairs très rigoureux : après avoir été acceptés pour une présentation au symposium, les textes ont été bonifiés à partir des commentaires reçus lors de l'événement et des conseils de deux évaluateurs experts.

Pour rendre compte de l'émergence de l'industrie vidéoludique française, Colin Sidre relève l'importance méconnue des boutiques spécialisées. Véritables « surfaces de contact » telles que définies par le sociologue Fernand Braudel, des boutiques comme Illel, Sivéa ou Ellix ont permis à de nombreux « hobbyistes » de partager un intérêt commun. À partir d'une recherche documentaire inédite, comprenant des revues spécialisées, des publicités et des entretiens avec les tenanciers, Sidre présente la mutation éventuelle de plusieurs hobbyistes et revendeurs en développeurs et éditeurs.

Jaakko Suominen, Markku Reunanen et Sami Remes proposent de tracer l'évolution du *retrogaming* à partir d'une inspection rigoureuse de la presse spécialisée finlandaise. Ils mettent à l'épreuve une hypothèse forte, à savoir que la pratique discursive de magazines comme *Pelit*, *MikroBitti* ou encore *Tietokonepelien vuosikirja* a eu une influence déterminante sur le développement des pratiques de jeu rétrospectives. Ils relèvent les

interactions entre la communauté journalistique et l'émergence de la nostalgie vidéoludique, les pratiques d'émulation et de préservation, de même que la monétisation contemporaine du phénomène. L'étude empirique approfondie permet aux auteurs de distinguer entre trois phases distinctes dans l'évolution du *retrogaming*.

Alison Gazzard se penche sur une pratique peu étudiée dans l'histoire du jeu vidéo : la création et le partage de niveaux de jeu développés par des joueurs, un phénomène riche et protéiforme qui émerge bien avant la publication de l'objet « idéal » *LittleBigPlanet* (Media Molecule 2008). En « déterrante » la série *Repton* développée pour le BBC Micro, Gazzard défend qu'au contraire, l'éditeur de niveau accessible à l'utilisateur est un « topos » du jeu vidéo présent dès les années 1980. Elle démontre également que les communautés de joueur n'ont pas attendu l'Internet pour développer des pratiques de création et de partage liées à leur passe-temps.

L'article de Devin Monnens et Martin Goldberg soumettent à un examen minutieux l'idée reçue selon laquelle le jeu *Spacewar!*, développé au MIT par une communauté de hackers, aurait connu une diffusion rapide et se serait retrouvé quasi instantanément sur tout ce que l'Amérique du Nord comptait d'ordinateurs dans les années 1960. Ils reconstituent une dissémination plus lente, ancrée dans la réalité matérielle et humaine des laboratoires de recherche : accessibilité de machines appropriées, mobilité du personnel, etc. En plus de fournir une somme de précisions historiques inédites, ce travail souligne l'important écart de perception entre les acteurs de cette histoire et ceux qui l'écrivent en ce qui a trait à l'objet *Spacewar!*. Plutôt qu'une percée héroïque du grand phénomène culturel que nous appelons « jeu vidéo », les contemporains n'y voyaient qu'un gadget—excitant, certes—mais de peu de valeur en comparaison avec la recherche sérieuse au sein duquel il émergea.

Enfin, Thomas H. Rouse nous fait découvrir l'histoire fascinante de l'« après-vie » — pour reprendre le titre du récent ouvrage de Raiford Guins — de la borne d'arcade *Warrior*, l'un des premiers jeux de combat en images vectorielles. L'auteur nous explique dans les détails toute l'« intrigue commerciale » autour de ce jeu mythique, de même que les principaux enjeux de conservation d'une technologie complexe.



Rewriting History:

Keynote address to the 2014 Game History Annual Symposium, Montreal

Tristan Donovan

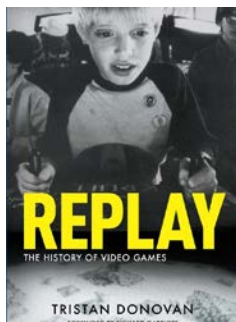
Abstract

In this keynote address, I provide an overview of the thinking and methodology that underpinned my 2010 book *Replay: The History of Video Games*. I start by explaining the flaws that I felt existed in previous video game histories and how that informed the key goals I had in mind when researching and writing the book. I then outline, with examples, the research methodology I used to try and examine trends in the medium's history. Finally, I conclude with several lessons for game historians that came out of researching and writing *Replay*.

Keywords

Video game, Game history, Methodology, Europe, *Replay: The History of Video Games*

I thought I would talk today about my book, *Replay: The History of Video Games* (Donovan, 2010). Specifically, the ideas and the research processes behind it.



Replay was my attempt at writing a comprehensive, global, narrative history of video games that traces the medium's evolution from inception to the present, which at that time meant early 2010. It is worth pointing out now that when I use the term 'video games' I mean it in the broadest possible sense. My definition includes console games, coin-operated games, computer games, mobile games, social games, and so on.

The path that led to me to write *Replay* was journalism. I am not an academic. I dropped history at school around the age of 16 and studied ecology at university, spending my time tramping around soggy moors measuring moss in the rain.

However, by what is, in hindsight, pure luck, I got side tracked and ended up becoming a journalist. Most of my career hasn't involved writing about games. I've spent the bulk of my career reporting for and editing publications covering politics, social work, schools, and other public services.

Writing about games was a freelance sideline that I dipped in and out of, doing the odd feature for *Edge*, *Eurogamer* or *Gamasutra* here, and game reviews for *Stuff* and *The Times* of London there. But then, in 2008, two things happened that prompted me to write *Replay*.

The first was that I lost confidence in my employer, a large British magazine publisher. They had always been slow to embrace the internet. The head of the company once called the internet "white noise". In 2011. So thinking that I didn't want to become a journalistic fossil, I decided I needed a side project.

As it happened, I had just read some of the game history books available at the time. I enjoyed them, but these books also left me disappointed at how they approached video game history. For weeks afterwards I kept thinking, 'I wish someone would write a history of video games that addressed the things that disappointed me'. Eventually I thought, 'Hang on, I'm a writer and I've written about games and I want to do a side project. Why don't I do it?'.

Now if someone had taken me aside then and told me that writing *Replay* would swallow up every spare waking moment of my life for the next two years to the point where I had the shakes for a while after finishing it because I had forgotten how to do normal things like sit down and watch TV - I might not have gone through with it. But no one did take me aside and by the time I realized what I had taken on, I had come too far to turn back.

So what were these things that bothered me about how game history was being presented enough to write the book? There were five things in particular.

The first and the most glaring issue for me as a Brit was the lack of attention given to Europe. These histories were almost exclusively histories of video games in the USA, so much so that it seemed like the world map according to games was almost blank. We had the USA and we had Japan or rather the Japanese games that crossed the Pacific and then two tiny dots: Moscow because of *Tetris* and then this tiny town called Ashby-de-la-Zouch in Leicestershire, England, the birthplace of the game developer Rare who got a brief mention for making the Super Nintendo game *Donkey Kong Country*.

It felt like the gaming history of my home country, hell my entire continent, had been erased and replaced by an assumption that everyone was playing *Super Mario Bros.* on their Nintendo in 1987. But we weren't. Instead in Europe, we were mostly playing European-made games on home computers. Yet with these video game histories it seemed as if the bulk of the gaming experiences that me and everyone else living within a two-hour flight from Paris didn't matter.

It's gaming history without the Commodore 64, the biggest selling home computer model of all time, and *Revenge of the Mutant Camels*, one of many camelid-themed shoot'em ups created by the cult British game designer Jeff Minter.



Credit: Christoph Federer

It's gaming history without the ZX Spectrum, the low-cost home computer that dominated the British market in the 1980s and was home to best sellers like *Jet Set Willy*, a Monty Python-infused platform game where you play a multi-millionaire miner who has to clean up the empty bottles from last night's party in his mansion while avoiding deadly toilets and other strange enemies.



Credit: Bill Bertram

And it wasn't just Europe's gaming experiences that were missing from these histories. Japan's domestic games market went ignored as were the video game histories of almost every nation in the rest of the world.

The gap between the computer-focused European and console-focused American gaming histories of the 1980s and early 1990s also highlights another issue I had with the histories I read: console generations. The history of games had somehow become the history of game consoles. It is understandable in some ways. It is a much, much easier story to tell. It's clean, linear and tidy. But neat and easy a structure as console generations are for a writer, it's a deeply flawed framework.

One of the problems with it is that console generations are largely a product of marketing. Console wars are great for all involved. The rivalry of manufacturers generates buzz, creates excitement, spurs sales. Sony, Nintendo and Microsoft all benefit from being participants in console wars. It's like the Cola Wars of the 1980s and 1990s where Pepsi and Coke slugged it out, encouraging consumers to pick a side in a corporate image war where the only real losers were the soda companies that aren't PepsiCo or Coca-Cola (Donovan, 2013).

Console generation wars are no different. The concept of console generations exists first and foremost to sell units of hardware. The problem is this can distort how we view game history because everything becomes seen through a console generation prism. It encourages us to overvalue the importance of some games because they gave one console manufacturer an edge over its rivals.



Donkey Kong Country on the Super Nintendo is a good example. It gets regular mentions in game histories because it sold loads and gave Nintendo the advantage over Sega for a while. But what did *Donkey Kong Country* really add to the medium of video games? What did it do to deserve to go down in history as an important game? I'm open to

suggestions, but I couldn't find anything beyond helping Nintendo shift boxes.

By viewing games as mere ammunition in the console wars we undervalue the games themselves. We overlook the obscure, but influential, and overplay the popular, but ultimately uninfluential. It is like film history, giving more attention to *Police Academy 3* than *Three Colors: Red*.

The console generation structure of video game history is also limited in that it ignores other gaming platforms. The PC is the ultimate example of this. PCs do not have generations. They are a hardware continuum that dates back to when IBM launched the first PC in 1981 and runs right through to the present day. Android and Apple smartphones are another example. Yes, these devices have generations, but so many in such a short space of time that it's almost meaningless to talk about games of different iPhone generations.

An overfocus on consoles also results in whole game genres being shut out of the historical narrative. Genres like text adventures. The legacy of these text-only games can still be felt today. Telltale Games' *The Walking Dead* and Double Fine's *Broken Age* are two obvious recent descendants of the text adventure, but the genre also helped spawn visual novels and massively multiplayer online role-playing games. But text adventures did not exist on



consoles so the console generations model makes us look at game history in a warped way and runs the risk of crucial developments being missed.

The console generation model also feeds into the third problem I had with video game history: the emphasis on technology over creativity. A lot of what I read before starting *Replay* seemed to frame games as almost a side effect of technology. Now I'm not denying for a moment that technology shapes games. It clearly does. Technology imposes limits and pushes and pulls game design in different ways, but this is true of all media. Film is molded by camera and screen technology. Music is shaped by instrument design and recording technology. But do we seriously believe that Jimi Hendrix is a side effect of Fender? Of course not.

Technology is just a tool and it's only when people do something creative with it that we get something exciting. So I wanted *Replay* to treat games as a subset of culture, not a subset of technology. It felt like more accurate a perspective to me and, frankly, people are so, so much more interesting than bits and bytes and circuit boards and USB sockets.

Another frustration was that these histories tended to treat games as if they existed in a bubble. It was as if the video game had transcended to the spirit plane and was now somehow a law unto itself, unaffected by the ups and downs of the world around it. Yeah, right. Geopolitics, economics, international trade, politics and social trends - they all affect games. The rise of South Korea as a force in video games and the creation of free-to-play games is a story of economic crashes, war, Korean-Japanese relations, poverty, credit card access and social attitudes to copyright law.

If gaming history does not consider the wider historical context, then it is almost certain we will misinterpret things. Without that context, we end up talking about how Atari's VCS game *E.T. the Extra-Terrestrial* caused the North American video game industry crash in the early 1980s because we assume that the only factors in play are those of the game industry's own making.



Credit: Atreyu

sure I'm watching when it is broadcast? What? I can watch that show as many times as I want? What? I can go and buy or rent a cassette that lets me watch my favorite movie ever? A movie I've only seen twice seven years ago because my local cinema hasn't shown it since it came out? What's more, the VCR was also something everyone in the family was going to enjoy too.

So what are you going to spend your money on? A VCR or another chase the red-square-with-green-dot games machine? It's an easy choice. That the VCR took off at the same time as the wheels fell off the games industry in the US is unlikely to be mere coincidence and is probably a bigger factor than one disappointing VCS game, no matter how high profile.

The final thing that bugged me about these game histories was the cheerleading. It was all, 'Games! Games are good! Games are great! Ra! Ra! Team Game! Yay!'. In these histories, games could do no wrong. There were critics, but they were presented like bogeymen. People like Dr Everett Koop, the US Surgeon General, who criticized games in 1982, or US Senator Joe Lieberman, whose campaign against violent games in the mid-'90s led to the creation of the video game age ratings system in the USA.



Credit: Robert J. La Verghetta

This bugged me because I think history should try to be objective. It is a goal history should strive for, even if it is unattainable. What's more, even the enemies of video games influence the history of the medium. Joe Lieberman's campaign changed the games industry in North America, no question. Dr Koop was vocalizing what a great many people felt about games in 1982. Surely the attitude of non-players towards games is as much part of the history of the video game as the stories about the game makers, game companies and players? Just because we might disagree personally does not detract from their role in the medium's history. So I wanted *Replay* to cover the awkward moments too, the moments where games got a kicking, the uncomfortable aspects of the gaming world, be that games as vile and offensive as *RapeLay* or the political crusades against violent games or the misogynistic abuse women get while playing online.

As you can probably tell by now, *Replay* was largely a reaction to what I felt was lacking elsewhere. But those issues with previous game history led me to come up with five goals for *Replay* - a kind of manifesto for what I wanted it to do with the book in terms of how it looked at the subject.

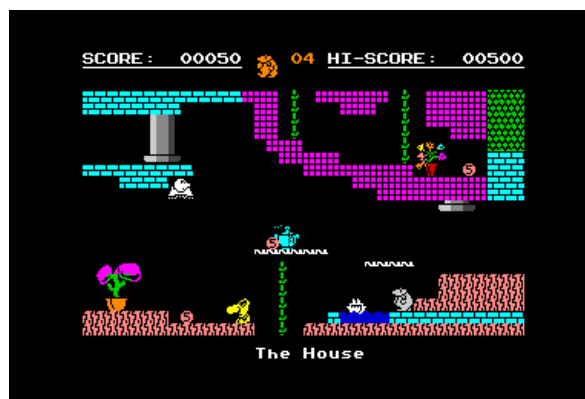
First, *Replay* would be a global history. It would pay attention to and recognize the differences in the video game histories of different countries. Second, it would focus on trends in game design, picking out how game genres evolved over time and the stylistic movements within them. Third, it would emphasize game design trends over business and technology in the narrative. Although not to the exclusion of business or technology because both are so interwoven into gaming history that it would nonsense to try and write them out of it. Fourth, it would seek to be as objective as possible and not assume games are infallible. Finally, *Replay* would look at games that were important or influential, not just those that sold well.

So how did I go about doing this? The research for *Replay* can be divided into three rough stages. In reality, it was a messier, less linear research experience than I'm going to describe here as these stages often overlapped, but these stages capture the essence of my approach.

First, I did a huge trawl through as many sources as I could lay my hands on. I played old games and read magazines, newspapers, newsletters, books and websites. I watched videos of gameplay on YouTube, read advertisements, company reports and old memos. I went through game manuals, walkthroughs and old video game catalogues. I also compiled spreadsheets where I tried to list every game made on every platform ever with details of that game's release year, publisher, developers, country of origin, genre, scenario and other notable things about it. From this I ended up with well over 1,000 pages of A4 in notes and a collection of spreadsheets listing tens of thousands of games.

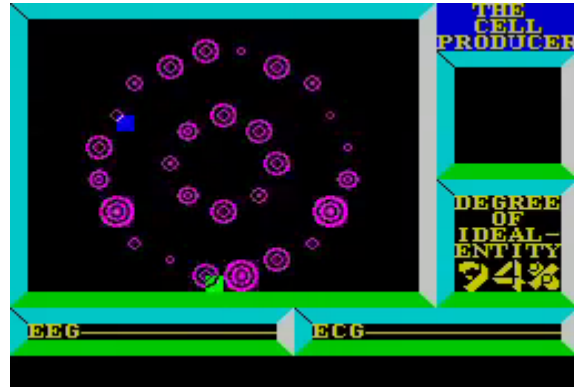
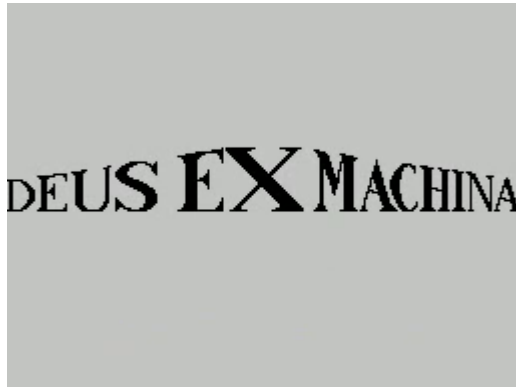
The next step was to try and use this raw information to spot links between games and events and people in the hope of identifying patterns in video game history. Essentially, I was trying to piece together an evolutionary tree or, more accurately, draw a very messy, complex mind map of how everything connected together.

From doing this, common features and paths in game design started to come into focus. For example, there was a sizeable lump of British games from the 1980s, and to some extent in the 1990s, that stood out as being, well, a bit odd. Games like *Head Over Heels*, a puzzle-focused game where you collect donuts and purses while avoiding Daleks that have the head of Prince Charles, or *Monty on the Run*, where you play a fugitive mole who is wanted for stealing coal from a trade unionist's secret mine and must avoid deadly teapots.



And weirdest of all *Deus Ex Machina*, a game based on Shakespeare's *As You Like It* where you play a mouse dropping that challenges a Brave New World-like dictatorship. *Deus Ex Machina* also came with an audio cassette that played a soundtrack featuring British TV

celebrities like Frankie Howerd and songs about being a sperm that dreams of fish and chips. I'm really not making this up.



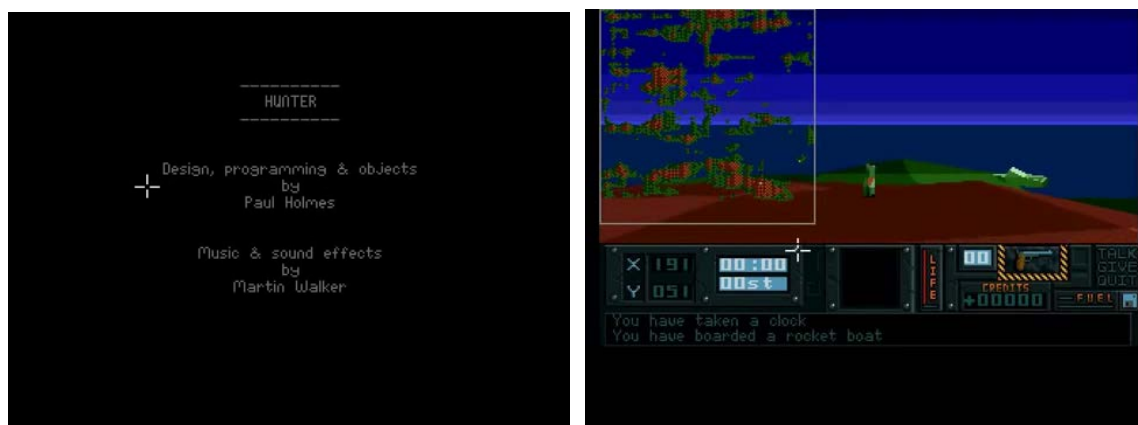
Now other countries have oddball games too, but there were several things that stood out about these strange British games. First, there were more of them than in other countries. Second, the strangeness seemed to be an aesthetic trend that could be seen in many different genres of games. Third, these games were usually based around some kind of almost everyman hero. So while American games tended to put you in the shoes of great warriors or brave action heroes, British gamers in the 1980s got to play the role of bin collectors, thieving moles, laser-spitting llamas or a mouse poop. But most crucially of all these games were mainstream. In other countries, strange off-the-wall games tended to be niche, but in 1980s Britain, they were very much part of the mainstream of gaming. Given this, it seemed reasonable to think that there was something different happening in the UK at that time compared to other places.



Another example is the rush of games aimed at girls in the mid-1990s, such as *Barbie Fashion Designer* and *Chop Suey*. Games aimed directly at girls existed before then, but were few and far between, yet in the middle of the 1990s there was a sudden spate of them. That suggested there was some kind of movement at the time, something going on that caused this trend.

But me drawing these links was all very well, but I also needed to ensure that the evidence was there to support my ideas about movements, trends and the other connections I thought I saw. So I sought to test these theories of game history to try and work out what was true and what was false. I took a civil court approach to this. For something to be - so to speak - proved, it had to pass a balance of probabilities test. In short, the evidence supporting it had to outweigh the evidence against it.

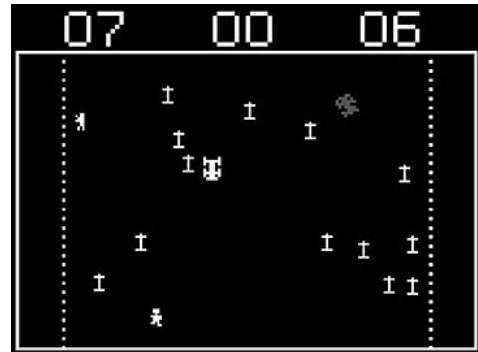
For example, from my research I knew that the space-trading game *Elite* was a direct influence on *Grand Theft Auto*. The developers of *Grand Theft Auto* had said so publicly several times and this was later reconfirmed when I interviewed a couple of them. But then there was this other game *Hunter*, an Atari ST and Amiga game released in 1991.



Hunter had a third-person perspective, different weapons to use, an open 3D world to explore and different vehicles to travel around in. You could play it by following the missions or just explore and mess around in its 3D world. In short, it offered the core elements of *Grand Theft Auto III*, but 10 years earlier. So my theory was that *Hunter* was an influence on *Grand Theft Auto* too. It seemed reasonable. *Grand Theft Auto III*'s creators, the Scotland-based DMA Design or Rockstar North as they are now known, were active in the industry around the time that *Hunter* came out. And while *Hunter* did not sell well, it got a good amount of coverage in UK game magazines, so it was reasonable to think that at least some of the people who went on to make *Grand Theft Auto III* would have come across *Hunter*. But I could find no evidence from my interviews or elsewhere that this largely overlooked game helped inspire *Grand Theft Auto III* and so that theory was dropped. Pioneering as it was, *Hunter* doesn't

matter. It was an aberration, a one-off. *Hunter* may have given people a glimpse of gaming's future, but it did little to create that future.

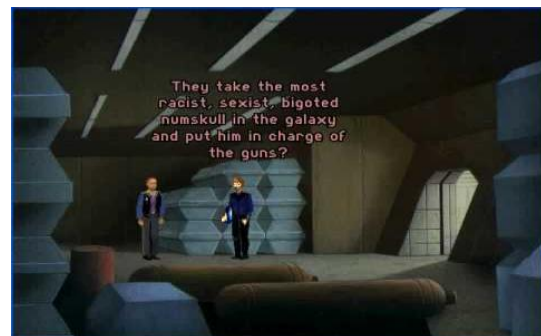
As well as looking out for games that seemed to be part of a trend or had influenced other games, I also looked for games that were of wider significance to the history of the medium. Games like *Death Race* and *Night Trap*. Released in 1976, *Death Race* is a coin-op video game where the goal was to score points by running over pedestrians. *Night Trap*, meanwhile, was one of the many mid-1990s games that were based around the video playback functions of CDs – full-motion video games as they were called back then. The game required



players to protect a group of women having a slumber party from vampires who plan to break in and steal their blood. To do this the player had to spy on the women via hidden cameras and planting traps for the vampires. Good taste wasn't a strong point for *Night Trap*. Neither of these games were influential in terms of game design, but both caused moral panics that

became defining moments in video game history. *Death Race* caused the first media panic about games and also helped show the industry that controversy sells more games. *Night Trap*, together with *Mortal Kombat*, so incensed US Senator Joe Lieberman that he started a congressional hearing into it and other violent games. As a result of those hearings, the games industry in the US started putting age ratings on games, which in turn had consequences for what games were made.

Another example of a game that had a wider significance for the industry is the 1996 point-and-click adventure game *The Orion Conspiracy*. If you judged it on game play alone it wouldn't be worth a mention, the game is a bog-standard point-and-click adventure. But it



is notable for being one of the very first games to include a positive and overt portrayal of homosexuality in its narrative and so broke new ground in video games.

So the final stage of my research for *Replay* was to try and back up my conclusions. The 140 or so interviews I did with game designers and others involved in game history was the primary I did this, but I also did another trawl through the reading material I had, as well as reading more sources that could answer specific questions. Some ideas failed, like the connection between *Hunter* and *Grand Theft Auto III* or my initial thought that all those weird British games were the product of drugs. To the disappointment of the journalist in me, it turned out that progressive rock and *Monty Python's Flying Circus* were – by and large – the inspirations behind those games. That's not a bad story, but I was rather hoping for some saucy tales of game designers on LSD creating whacked out games for school kids. Ah well. Another thing I did during this stage was to try and fact check the information that was contradictory or seemed too good to be true. Stories like the Atari VCS game *E.T.* being the cause rather than a symptom of the problems that caused the US game crash in early 1980s, which seemed less and less likely as I looked deeper into the causes of the industry's downturn.



This approach didn't always work out. Let me give you an example. There's a story about Taito's coin-op game *Space Invaders* that goes that it became so popular in Japan that it caused a coin shortage in the late 1970s. My gut instinct was this was nonsense - the story stank of spin. So I spent a fair bit of time trying to prove it wrong. But one of the earliest mentions of the coin shortage was in *New Scientist*, hardly an unrespectable publication (Cunningham, 1980). On top of that the Bank of Japan told me that they couldn't find a record of the shortage and so could not say if it was true or not. Eventually I ran out of time and I still hadn't found anything that seriously challenged the story of the *Space Invaders* coin shortage. So into the book it went. But it's not true. Since then, Paradis (2014) has finally busted that myth by getting solid evidence that it isn't true, including confirmation

from both the Bank of Japan and Square Enix - the current owners of Taito - that it never happened.

This is one of the issues with doing a large, all-inclusive, narrative history. There is so much ground to cover that if you ever hope to finish writing it there are points where you have to say, 'that's it, I cannot spend any more time looking into this topic because it will only form a sentence in a 100,000-word plus book'. As such you are - as is often the case with history - somewhat reliant that the people who came before got their facts right. Much of the time they do, but not always. That's the first lesson from writing *Replay*.

Another lesson is that primary sources and sales figures about historic video games are hard to find. The situation seems to have improved a lot since I started working on *Replay*, thanks to the efforts of various museums around the world, but tracking down good amounts of primary source material was and probably remains tough, not least because a lot of that material - assuming it ever existed - has been thrown away, dumped in skips as game companies shut their doors or decided to have a clear out. Sales and in-depth financial figures are even harder to get and that's annoying. People often talk about successful games, I've probably done it myself, but what exactly is a successful game? Is it one that sold lots of copies? If so, how many copies is a lot of copies? Is it one that made a profit? If so, how much profit is a successful profit? Doesn't that depend on what you spent making it? Maybe it is one that was popular with critics? If so, is every critic equal? Or could it be one that the developers were happy with? If so, was it successful from anyone else's point of view? Or is it a game with a lot of likes on Facebook? If so, how do we work out how many of those likes were bought and does such a passive, non-demanding action as liking something on Facebook really carry any weight? Having good sales and financial information would do a lot to help game historians pinpoint what is meant by the term success and get the historical context right.

A third lesson is that while *Replay* did look at the stories of players, there is a lot more history to uncover there. Not just in the sense of how communities of players form and influence things, but also in how players play. I was speaking with the developer Wargaming.net a few months back for the foreword of the Russian language edition of *Replay*. They told me how, based on the data they get from *World of Tanks*, they can see differences in the playing styles of people in different countries. So someone in Italy plays differently from someone in Russia, who in turns plays the game differently from someone in Canada. I think that's really interesting and these days game companies have huge databases that show very precisely how people play. That data has the potential to open up so many avenues for game history researchers to explore and - best of all – will provide very strong measurable evidence about shifts in playing patterns over time. The question is: will game companies open these commercially valuable databases to those researching game history?



Another lesson is that it is hard to see the wood for the present-day trees. In other words, you can't see video game history as it happens. The closer something is to now, the harder it is to see where it fits into the wider historical narrative. Take this opinion on the original *Donkey Kong* that the author Martin Amis gave in 1982: "I have a vision in which this machine is perched on top of the Empire State Building and is inexorably strafed into destruction. Donkey, your days are numbered. The knackers' yard awaits you." (Amis, 1982, p. 82)

As far as Amis was concerned, *Donkey Kong* was a worthless game, something that would soon be forgotten. Given what we know now about Nintendo and Mario, it's about as wrong as you can get, but no-one at that time could really have foreseen what *Donkey Kong* had started.

So identifying what recent games matter is very tricky. It's probably safe to say *Minecraft* matters in game history at this point, but what about *Papers, Please* or *Skylanders*? They appear to be significant, but it's too early to be sure. Maybe the most important game of our time is one we're ignoring or have dismissed. Maybe it is one that only few people are playing and we won't find out how important it was for another 10 years when the people playing it now enter the games industry and make games inspired by it. That was certainly true for *MUD*, the original online multiplayer role-playing game – its significance only really came to the fore in the late 1990s almost two decades after it was created.

My fifth 'lesson' is more a thought for the future. Since *Replay* came out, there has been an explosion in the number of new games. Smartphones, indie games and social games were only just taking off when I was writing *Replay*. This explosion in the volume of new games presents a serious challenge. It makes it harder to keep on top of what is being released and then work out what trends there are. The shift to digital sales of games is another challenge because games are no longer fixed works. They get constantly updated and some games get removed and vanish. That will likely be a problem that game historians will be facing when they come to write about the game history of today.

The final lesson from *Replay* is that time runs out. The man in the photo (on the right) is Jerry Lawson, the inventor of the Fairchild Channel F - the first cartridge and microprocessor-based game console. It was the template for pretty much every console that followed its release in 1976. I spent ages trying to track him down and eventually found a postal address for a Jerry Lawson in California that I thought was him, although it could well have been the home of some random person with the same name. So I sent him a letter in the post and waited. Nothing. Eight months passed. Still nothing. Maybe it was another Jerry Lawson, I thought. Then about two weeks before I finished writing *Replay*, an email pops into my inbox from Jerry.



Sorry, he says, I just found your letter, but I'm up for talking. Time was tight at this point. So with my deadline looming, I worked out where his comments would best fit into the near-finished book and did a shorter than normal interview. Jerry was great. Funny, insightful, interesting and full of great stories. I remember putting down the phone and thinking that if I get the chance to do a second edition of *Replay*, I should interview him again, properly.

Jerry died in April 2011, about a year after I talked to him. I never did that second interview. I missed my chance. And that's a reminder to everyone involved in researching and writing about game history. The thing is we are very lucky historians, us game historians. The vast majority of people who created and built this medium are still with us. The eyewitnesses, the movers, the shakers, the visionaries, the enemies of games, the people who made game history. Most of them are still alive.

But they won't be with us forever. Most historians have to piece together history from the fragments and trash left behind by previous generations. We game historians don't. We can pick up the phone or Skype or email or go visit these people and capture their stories.

These oral histories are really important. The questions historians will want to ask game designers about their older works are very different from the questions journalists will want to ask them about their current work. The purposes are different and the context is different too in that the designer will be talking to the press to help sell his or her game so we cannot rely on journalists to cover the ground that will be valuable when looking back at game history.

The game historians who will follow us all in 20, 30 years' time won't have the chance to speak to many of these people. And that's both a privilege and a pressure for everyone involved in recording and writing game history today. It's a pressure because it means there's something of a duty on us to make sure we don't let that opportunity to speak with the people who built the medium in its formative years slip through our fingers. But it's also a privilege because we're the game historians at the start, the ones who will capture the resources that later historians will use and the ones who will help set the course for how game history is

remembered and viewed in the future. Which is why I can't help but feel that being involved in video game history right now is something truly exciting to be a part of.

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Tristan Donovan is a British journalist and the author of Replay: The History of Video Games (2010), Fizz: How Soda Shook Up the World (2013) and Feral Cities: Adventures with Animals in the Urban Jungle (2015). He has also contributed chapters on video game history in Video Games Around the World (2015) and The Routledge Companion to British Media History (2014). Tristan's games journalism has appeared in Stuff, BBC News, Eurogamer, Gamasutra, Edge, The Times (of London) and The Guardian. He has also edited the following books: Generation Xbox: How Video Games Invaded Hollywood by Jamie Russell (2012) and Death Threats and Dogs: Life on the Social Work Frontline (2013).



History of Japanese Video Games

John Szczepaniak

Abstract

The history of Japanese video games is poorly documented outside of Japan. Writings in English often focus exclusively on console history, specifically with a preference for Nintendo. Despite the Japanese game culture being highly influential on games around the world (and *vice versa*), there is a scarcity of English-language interviews with Japanese developers. It's important to document this history now, since developers age and pass away, and the technology they built decays and ceases to function.

Keywords

Video game, history, Japan, computers, untold

There is a noticeable lack of English language interviews with Japanese video game developers. There is a lot of great interviews with American and European developers, and a lot of history books on the Western side of things; for example, Tristan Donovan's *REPLAY*, in addition to Steve Kent's *The Ultimate History of Video Games*. But for a Japanese focus, there is almost only Chris Kohler's book *Power Up: How Japanese Video Games Gave the World an Extra Life*, or a catalogue of a Famicom exhibition by the Tokyo Metropolitan Museum of Photography. There is also a few magazines, such as *GameFAN* or *Retro Gamer*, or websites, such as *Gamasutra* or other fan sites, which will sometimes run very short interviews.

To rebalance the situation, I flew to Japan and interviewed over 70 developers. I published a book, *The Untold History of Japanese Game Developers*, containing 36 interviews, with a further two volumes planned to make use of the remaining material.

When Japanese interviews do happen in magazines or on websites, they tend to be prosaic and safe. There's only so many times one can read someone asking Shigeru Miyamoto:

"So, tell me about giving Mario a cap because you can't draw hair."

"Well, I gave him a cap because I can't draw hair!"



Personally, I don't have any interest in anything Mario related, unless it's something I have never heard before. No one ever asks Miyamoto about Hudson Soft's unique adaptations for the PC-88 computer, as pictured left. This photo is from the Game Preservation Society in Japan, which has over 10,000 original games archived, in

storage, including things even Japanese collectors don't know about. I interviewed the producer on *Super Mario Bros. Special* for PC-88: Mr. Takashi Takebe.



Hudson no longer exists, as its staff have all moved on, but this gentleman was easy to get hold of in Hokkaido and very happy to talk. He also created *Famicom BASIC* and the original *Princess Tomato in the Salad Kingdom* game, among other things. Why have we never seen a roundtable talk with him and Mr. Miyamoto on the Hudson adaptations of Mario? The games are fascinating - Hudson's *Mario Bros.*, with the POW block, is legitimately better than Nintendo's original. *Super Mario Bros. Special* isn't as good as the original, but it's a weirdly hypnotic remix.

Both of these reasons - lack of interviews and safe content when they occur - are due to the language barrier. There's an enormous amount of interview material in Japan, in publications like *GameSide* magazine, or the *Game Maestro* books. For English interviews, however, we have to rely on journalists speaking Japanese, which is rare. Dave Halverson's *GameFAN* and *Play* magazines had a lot of groundbreaking Japanese interviews, some of the best, but Dave had at least two fluent Japanese speakers on staff.

Another option is game publishers doing the translations themselves in exchange for publicity - which is where my second point comes in. A new *Zelda* title comes out, or a remake of *Ocarina of Time*, so Nintendo's PR department rolls out one or two people from development, and if you're lucky as a journalist, they will translate a few questions into Japanese, and weeks later provide a few answers in English - edited and vetted to make sure nothing outlandish gets out. It is all very tightly controlled. You cannot blame them, since translation is expensive and PR's job is to generate publicity for product, not document history.

My books circumvented all this by providing on-hand interpreters and bypassing PR entirely, with questions focusing on the obscure, the esoteric, and the generally unknown. There were innumerable setbacks, but actually meeting the developers was easy. Many of these developers seldom have the chance to discuss their careers, and some had never been interviewed. I unearthed a lot of interesting stuff - for example, that Konami was prototyping a game console. They scrapped it, but that project eventually led to the *Suikoden* series. This information would never come out when going through official PR channels, and it is a significant part of gaming history.

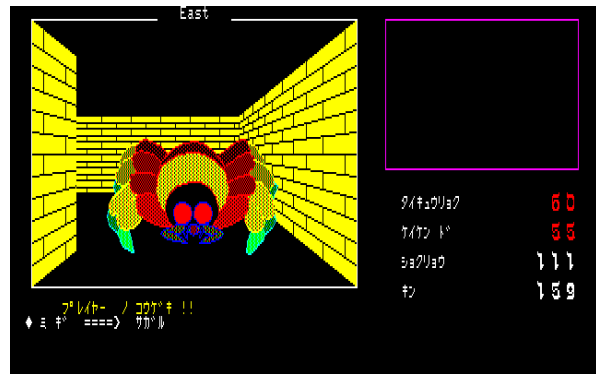
Japanese games have a genuine uniqueness to them, in much the same way American, British and French games all once had distinct qualities (though tend to be more homogenized today). Games may have started in America, but Japan very quickly saw the technology, assimilated it, made some adaptations, and began producing something divergent. *Wizardry* and *Ultima* started in the West and captivated a Japanese audience, who then went on to produce an eclectic array of strange RPGs for computers, before *Dragon Quest* and *Final Fantasy* cemented the genre tropes, which eventually evolved into RPGs such as *Suikoden*, mentioned earlier. This dark age of JRPGs, prior to *Dragon Quest*, is almost like a "Cambrian Explosion", with strange and exotic experiments.

For example, *Panorama Toh*, released in 1983, is one of the first games from the creator of *Legacy of the Wizard* on NES, Yoshio Kiya. It is a weird game. There is 3D first-person dungeons in ASCII, a hexagonal grid overworld, you fight tanks and lions and even visit a pornography store. It is also all programmed in BASIC. There were no rules, just fresh creativity.



I also interviewed Yoshio Kiya, and he described things no one has ever heard before regarding Japanese developer Falcom, notably that the French legends they based *Ys* and *Romancia* on, were taken from an illustrated art book the company had. He also revealed that the word "quintet" in the credits of *Legacy of the Wizard*, has nothing to do with the company Quintet, which split off from Falcom - rather it has to do with the 5 characters, the quintet, which you control in the game: mom, dad, son, daughter and the pet dog. *Wikipedia* at one point incorrectly cited the word quintet in the credits as signifying that the game had been created by the same-named developer. This is why we need to document facts from first hand sources. Kiya has never done an English interview, and almost never gives Japanese interviews.

Apart from *Panorama Toh*, there was also *Dungeon*, by Koei. I spoke with Henk Rogers, creator of *The Black Onyx*, about Koei and their game *Dungeon*, and he revealed that Koei backed out of a prior agreement to publish *The Black Onyx* in order to improve sales of their own game.



The politics are fascinating. Koei also made several erotic games, including the karma sutra-style *Night Life*, a sort of sex guide.



In addition, the company also made *Do Dutch Wives Dream of Electric Eels?* The game is a sort of sex RPG set in Kabuki-cho, with random battles against the police. I never interviewed Koei, but they are reluctant to discuss these titles and now try to disavow them. Again, this makes documenting and preserving history so

important. Companies must not be allowed to write their own history.

Japanese games continuously evolved, and Japanese games have special qualities, in terms of audio, visuals, overall aesthetics, historical influences, raw mechanics, narrative structure, originality, and so on. Japanese games are a diverse cultural export of Japan's. Whether you follow them or not, you are certainly aware of them, and if you play games, you have been touched by them. *Mega Man* is Japanese, and in-game, it even retains that distinctive anime aesthetic. Cliff Bleszinski of *Gears of War* grew up playing Japanese games on his NES. The history of Japanese games is intertwined with and influenced so much of what happened outside of Japan - and vice versa. It's a symbiotic two-way street of continual influence.

While it is a cliché to say, everything most of us know about Japanese games is only the tiniest tip of an expansive, almost impossible to imagine iceberg. The world of Japanese games, how it intersects with other Japanese mediums, the views and contexts of the time, is far more complex than we imagine.

For the majority outside of Japan, their introduction to Japanese games would have been through arcade games, such as *Pac-man*, or consoles: the NES, later on the SNES and Mega Drive/Genesis, perhaps the PC-Engine, aka TurboGrafx-16, and later the Sony PlayStation, and so on. Each having its own significant developments. But the really interesting part of Japanese gaming history is computers. Only a small percentage of people outside of Japan were lucky enough to play the Japanese computer games localized and ported by Sierra, such as *Sorcerian* or *Silpheed*. This raises an important point about historical and cultural context of Japanese games, since almost everything that happens in Japanese games can in some way be traced back to computers; or *Space Invaders* and arcade games, but that is an entirely different evolutionary topic.

The Famicom, or NES, gets too much credit, both in and out of Japan. It's very easy to be swept along with Nintendo's propaganda of it ending up in every Japanese household, and for saving the American games industry after the big video game crash. To fully understand the context, you need to know that the Famicom was released in 1983, and there were less than 10 games released that year. In fact the system didn't become interesting in terms of software released until 1985, or even 1986. For a long time Nintendo didn't even allow other companies to release games for it.

Space Invaders came out in 1978, and everyone should know how widespread its popularity was. But here's the thing, in 1979, in 1982, in 1985, the same story I heard from almost every game developer I spoke to, was that they played arcade games like *Space Invaders*, they liked games, they wanted to make or play some games at home, so they bought a computer. Often a PC-88, a hobbyist computer. A few actually had expensive imported Apple II computers. I interviewed over 70 developers, and at least 40 started with computers for their home gaming. Maybe only around 5 explicitly said the Famicom. Also, some game companies actually started off selling computers; dB-Soft, Falcom, and others, began business as a retailer of hardware.



Of course, as the 1980s rolled on, and as the Famicom ended up in so many homes, there was indeed a shift to consoles. To give one example: this photo above shows Tokihiro Naito on the left, the creator of the action-RPG *Hyllide*, an extremely important release in Japan, circa 1984. I know the NES port has an unpopular reputation outside of Japan, but you need to understand the context. It is one of the earliest action-RPGs ever developed, preceded only by *Courageous Perseus* and perhaps a few other action-RPGs, all on computers. It is also the earliest documented example of a recharging health bar, predating Falcom's *Ys* by a few years, and *Halo's* shields by decades. When I interviewed Naito he explained that the later Famicom conversion sold 1 million copies. When adding together all the computer versions, the total sales for those only just matched it at another 1 million. So that's 1 million sales divided between the PC-88, the PC-98, the PC-66, Sharp's X-1, Fujitsu's FM-7, the MSX1, and MSX2, and finally the MZ-2000.

When you consider this, it's easy to understand why there was such a shift from computers to consoles. Keeping in mind that with computers, no license agreements were needed, plus it was cheaper and easier to commercially publish games. As mentioned previously, there was a kind of Cambrian Explosion of thousands of computer games which eventually narrowed and

influenced the console market. It also means: what we experienced in the West, in the Americas and Europe, is only a very small fraction of the overall game culture in Japan. We only received a small fraction of Japan's console games, which in turn was an evolution of their computer scene. Or arcade titles - but that's a separate topic from original games played in the home.

As an unrelated aside, Naito's colleague from T&E Soft, Tetsuya Yamamoto, pictured right, was creator of the *Undeadline* series of shooters, and also developed a scrolling fighter for the SNES which was never released, called *Satellite Man*. He gave a detailed explanation and drew sketches, it sounded like a title which would have achieved good sales. This is another reason to speak with developers - there are unreleased games we don't even know about, and only they can tell us.

THE GAME ARTS EXAMPLE

The most concise examples of everything I have described is the history and pre-history of developer Game Arts. The company is best known for its *Lunar* and *Grandia* series of RPGs, and for its older titles like *Silpheed* and *Alisia Dragoon*. *Silpheed* was originally on PC-88, converted to DOS by Sierra, and then later remade for the Sega Mega CD. It was a visually impressive 2D shooting game. An amusing story about *Silpheed* and *Alisia Dragoon* - the composers for some of the music on the original computer version of *Silpheed* were called Mecano Associates. I was speaking with Masakuni Mitsuhashi, composer and sound engineer at Game Arts, who explained:

There were four composers on *Silpheed*. I did the opening, Kohei Ikeda did the first stage, and then there was Mecano Associates. They found us through a magazine listing for part-time jobs. We got loads of demo tapes. However, one tape was completely blank, no music, and it was their tape. The reason was an error in the recording. I was going to throw it out, but then I called them, just in case, and said, "This is a blank tape. What was the title of your music going to be?" And all of the cassettes at that time had C-60 on them, because it was a 60 minute tape, so they said, "Yeah, the title's C-60, says it on the tape." We thought that was a good joke.

So because that was funny, they gave them another chance to send their tape and it was selected. Those same composers later did the music for *Alisia Dragon*.

But I digress. Game Arts computer games are actually better known than computer games by other Japanese companies, since Sierra brought over *Thexder*, *Silpheed* and *Zeliard*. Other companies like Enix, Square, Koei, Falcom, and so on, produced a lot of computer games completely unknown outside of Japan.



Here's a photo of three staff from Game Arts, with a Sierra representative, at Yosemite National Park, when discussing bringing over *Thexder*. From the left: Tomoyuki Shimada, programmer on *Zeliard*, who passed away; Game Arts co-founder Takeshi Miyaji, who also

passed away; the Sierra representative, Tamara Hyatt; and another Game Arts co-founder, Kohei Ikeda.

When I spoke with Game Arts co-founder and *Thexder* creator Kohei Ikeda, he explained the company formed specifically to take advantage of the pending release of a new model of PC-88 computer. The intention was to find success producing three launch titles: *Cuby Panic*, *Thexder* and *Silpheed*. In the end *Silpheed* was delayed, but the company rode a wave of success with *Thexder*. This is where it gets interesting, because while *Thexder* is only known outside of Japan for the DOS release and remake in recent years, it was hugely successful in Japan, a best-seller in 1985 according to Ikeda. As he explained, it was in fact influenced by an inertia platform game for



the MSX called *Theseus*, which is partially where *Thexder* takes its name from. *Theseus* in turn was developed jointly by Akira Takiguchi and the aforementioned Masakuni Mitsuhashi, who went under the pseudonym Hiromi Ohba, and they were assisted by Kohei Ikeda, who later made *Thexder*. In turn, this trio, when making *Theseus*, state they were heavily influenced by Atari's *Major Havoc* arcade game, which was developed by Mark Cerny, who is currently involved with PlayStation work, and who was also the designer on *Kid Chameleon* and programmer on *Sonic the Hedgehog 2* for Mega Drive. Everything is connected to everything else.

Game Arts exemplifies the shift a lot of Japanese developers underwent, starting off purely on computers, and gradually moving to working exclusively with consoles. In fact, co-founder Kohei Ikeda left because of this console shift, preferring to work with computers.

Looking at Game Arts, it again reinforces the importance of documenting history. Because even when we discuss the company's newer, internationally sold games, seldom is it documented how extensively Game Arts outsources. For all four of the earlier *Lunar* games, the company sub-contracted Vanguard, whose responsibilities grew with each iteration. Vanguard also contributed to *Grandia*'s dungeon layouts. Interestingly, the CEO of Vanguard started out developing on the PC-88, influenced by *The Black Onyx*, and his first RPG had the awesome title, *AXIOM: Vessel of Pensance Bait Hides the Hook*. Vanguard also worked on rare Sega Saturn hardware. Unreleased, or released only in tiny quantities, it allowed users to browse and shop online, on Rakuten, a sort of Japanese equivalent to Amazon. Japanese game development is a web of unexpected connections.

Let's look at the AX series

None of this even touches upon the pre-history of Game Arts, which was formed from publishing giant ASCII, the same company co-founded by Kazuhiko Nishi, creator of the MSX. ASCII published magazines and software, and had an inside line on events in the computer world. So the reason why the fledgling staff of Game Arts knew about NEC's upcoming model of PC-88, was because most had worked for ASCII, producing titles for the AX series of computer games.



One of Game Arts' main co-founders, the late Mitsuhiro Matsuda, was part of the 2nd publishing division at ASCII and initiated the AX series. To appreciate the significance of the AX series, a sort-of forerunner to Game Arts itself, one needs to know about Japanese computer games circa 1982. There were no game reviews, as we would recognize them, and it was a lawless frontier of amazing games alongside, literally, overpriced garbage. As Mr. Ikeda puts it:

At this time there were many low quality games. Some were a borderline scam. There were even "games" with 20 lines of BASIC code and a 5,000 yen price tag! There were many terrible business practices. So Matsuda-san's goal in putting out this AX series was to produce a good quality game at a low price, and to push the industry to improve itself.

Imagine, a full priced game and all you got was an audio cassette and a sheet of photocopied instructions, and once at home it turned out be unplayable. If you look through old Japanese magazines, you'll find they can be 570 pages of type-in listings and circuit board schematics to build your own, printed in black and white, but there's no reviews which assign a score or value level to a game. The closest is actually the adverts, printed on glossy paper in color, with descriptions of the games.

Mitsuhiro Matsuda wanted to change this and raise the quality for Japanese computer games, hence the AX series for PC-6001: high quality, technically accomplished games, often more than one - plus demos - on a single cassette, with a proper instruction booklet, all presented in a sophisticated packaging that mimicked a book with hand painted cover. And cheaper than the competition. It quickly garnered a reputation for excellence.

There were only 10 releases in the AX series, but it brought about a change in Japanese computer games in those early days, with the rip-off software becoming less and consumers expecting more. It is this same spirit that Matsuda then brought to Game Arts, working alongside the same young people, often tech savvy students, who made the AX series. One of

them was Mitsuhashi, who explained: "If Matsuda-san had not been around, Game Arts would never have existed. I have no doubt about that."

The Taito Connection

The pre-history of the AX series is also interesting. Those students who worked on the AX series, a few of them were involved in a Taito deal no one knows about, which helped pay for all of their - at the time - very expensive computers. Hiroshi Suzuki, who was not part of the AX series, signed a contract with Taito around 1980, whereupon he and his university classmates were given use of a private work office, with loan computers, and were allowed to make games. Several of those students would later migrate to ASCII for the AX series. According to Suzuki, after showing these games to Taito they were paid generously, facilitating the buying of more expensive equipment. Taito did nothing with the games. They didn't request the source code. They didn't publish the games. They didn't offer anyone a job. They just gave the students money in exchange for showing them games. It is a strange footnote in the history of the company which made *Space Invaders*. But there's no one to ask about it - or what happened to those unreleased games. Taito does not exist, except as a subsection within Square-Enix. Neither does Hudson exist, since it was absorbed into Konami. Consider this: one of the world's leading game hardware manufacturers, a pioneer of the CD medium, and they do not exist anymore. This is why there needs to be discussions with developers from the old days - because the industry is so volatile and fragile, we are likely to lose the threads. Hudson staff were easy to track down, such as Mr. Takebe behind *Mario*, but Taito? I have no idea where to begin to ask about the finished, but unreleased Taito WoWoW console, or the deal they made with Hiroshi Suzuki.

Why we need to document this

We need to document these histories, and we do not have much time. Three figures from Game Arts have passed away: co-founders Mitsuhiro Matsuda and Takeshi Miyaji, plus *Zeliard*'s main programmer Tomoyuki Shimada. Their personal recollections and insights will never be known. Ikeda is one of the last direct links. Finding Japanese developers to speak with is not difficult. The misconception that it is difficult only comes from dealing with

company PR. Bypass that and the real people behind our games really want to talk, and that's when you get the gold.

It is not just the people, but the technology is disappearing too. Some say that already, right now, it is too late to salvage anything from those large floppy disks everyone used. Maybe you will find some data, but it is all on the way out. During interviews, I was amazed by stories of development floppy disks so moldy they had an opaque layer of white on them. This photo (on the right) shows a preservationist delicately removing mold from the development disks for the original *Thunder Force*, as used by TecnoSoft employees.



Documenting the memories of these creators, and the games themselves, is not just for historical posterity so there can be a paragraph in a book somewhere. There are games which were nearly lost, which set not only precedents, but are extremely fun to play, today, right now, more than 30 years after being made.

The horizontally scrolling *Flash Boy* for the DECO cassette has no information online. Released in 1981, it sets precedents for multi-directional scrolling, bosses, energy bars, score combos, and more. It is also still entertaining to play today. Like an enhanced version of Eugene Jarvis' *Defender*. It exists today only because preservationists tracked down the magnetic cassettes the data came on, repaired and restored them, and made an archive. For a few weeks in Akihabara, there was a working version for anyone to play.



The head of Japan's Game Preservation Society tells me that he estimates the total number of games released in Japan - excluding amateur *doujin* titles - from the start until around the modern Windows era, is over 70,000 games. But we are running out of time, both in terms of those who can give us first hand accounts, and the data itself.

We need to be finding, documenting, recording, and preserving these things now.

Black and white photos by Nico Datiche: <http://www.nicolasdatiche.com/>

John Szczepaniak has been a journalist for over 10 years and has interviewed over 200 people. He is also a novelist and copy editor. He has written for Retro Gamer, GamesTM, Official PlayStation Magazine, Game Developer Magazine, Gamasutra, The Escapist, GameFAN MkII, nRevolution, 360 Magazine, Play UK, X360, Go>Play, Next3, The Gamer's Quarter, Retro Survival, NTSC-uk, Tom's Hardware Guide, Insomnia, GameSetWatch, Shenmue Dojo, Pixel Nation, plus others. He frequently contributes to Hardcore Gaming 101, where he helped put together The Guide to Classic Graphic Adventures book, and was managing editor on the Sega Arcade Classics Volume 1 book. He also enjoyed a six month stint as Staff Writer on Retro Gamer and three years as sub-editor at Time Warner. He's licensed by the UK's Royal Yachting Association as a naval skipper, and holds a Marine Radio Operator's license. MENSA certified, speaks Japanese, programs indie games, and brews wine.



Du rôle des sociétés de distribution et des boutiques de micro-informatique dans la naissance de l'industrie vidéoludique française

Colin Sidre

Résumé

L'année 1983 est généralement considérée comme celle de la naissance de l'industrie vidéoludique française, autour de la micro-informatique. Elle sanctionne le passage d'une industrie d'importation, essentiellement depuis les États-Unis, à une industrie de création. Les distributeurs et surtout les boutiques de micro-informatique, en tant que premières structures implantées sur le territoire, sont au premier plan de ces transformations de l'industrie. Plusieurs établissements de l'époque deviennent des distributeurs-éditeurs, boutiques et grossistes avec une activité d'édition, comme Ellix, Video Telemat Report et Innelec. Ces structures posent les premières pierres de l'industrie naissante, en réunissant les premiers groupes de développeurs et en leur donnant accès aux circuits marchands.

Mots-clefs

Jeu vidéo, micro-informatique, distribution, industrie du jeu vidéo, France.

Malgré le développement des travaux de recherche sur le jeu vidéo en France ces dernières années, l'histoire du jeu vidéo en France et de la naissance de l'industrie vidéoludique en particulier restent mal connues. La meilleure synthèse rédigée à son sujet nous provient de Tristan Donovan, qui y dédie un chapitre de son ouvrage *Replay* (Donovan, 2010, p. 124-137). Les travaux universitaires sont de leur côté peu nombreux, s'arrêtant bien souvent à quelques mémoires (De Oliveira, 2008) ou articles (Mustar, 1988). Ces recherches, s'attardant souvent sur la croissance des structures d'édition et de développement de jeux vidéo, font bien souvent l'impasse sur les conditions de leur naissance.

Des travaux récents ont mis en lumière les difficultés de l'industrie vidéoludique française face à la concurrence internationale autour de la première génération de consoles, et l'importance de l'importation de machines étrangères dans la constitution du marché du jeu vidéo en France (Audureau, 2014, p. 123-134). Du milieu des années 1970 au début des années 1980, la France est avant tout un marché d'importation, structuré par les sociétés de distribution et de commercialisation de machines et de logiciels. La décennie 1980 voit néanmoins la naissance d'une industrie du logiciel de jeu, autour de sociétés d'édition prolifiques comme Loriciels, et dans le contexte de l'essor de l'industrie européenne, très largement orientée autour de la micro-informatique, formant un « système d'expérience » caractéristique de l'industrie européenne (Triclot, 2011, p. 98) – nous nous plaçons ici dans la perspective des travaux de Mathieu Triclot, qui distingue plusieurs régimes de jeu, le jeu d'université, le jeu d'arcade et le jeu domestique (Triclot, 2011), qui se caractérisent eux-mêmes par des logiques et des réseaux de distribution différents (Sidre, 2014). Quelles sont alors les conditions de la naissance de cette industrie, et comment s'amorce le passage d'une industrie d'importation à une industrie de création, au début des années 1980 ?

Avant de répondre à cette question, nous reviendrons, dans une première partie de ce travail, sur la manière dont se mettent en place les structures de distribution avant la date importante de 1983. Une seconde partie de cette réflexion sera dédiée à cette même année 1983, et à l'activité d'édition que développent à ce moment les magasins et les distributeurs. Enfin, dans un dernier temps, nous tâcherons d'évaluer les apports de ces structures de distribution à la nouvelle industrie française du jeu vidéo.

Sources

Les fonds d'archives concernant l'industrie du jeu vidéo en France sont très peu nombreux à avoir été conservés, et encore moins nombreux à être consultables librement par le chercheur. Notons l'existence d'un fonds d'importance que nous avons eu l'occasion d'utiliser dans le cadre de ce travail, composé des archives de Bertrand Brocard, gérant du magasin Micros et Robots à Chalon-sur-Saône et fondateur de la structure d'édition Cobra Soft en 1983 (De Oliveira, 2008). Pour compléter ces archives, nous avons essentiellement eu recours à la presse spécialisée (en particulier *L'ordinateur individuel*, *Tilt* et *Hebdogiciel*, de la création

de ces titres à la fin des années 1980) en s'attardant sur la documentation publicitaire qui s'y trouve (Noyer, 2001). Plusieurs entretiens avec les acteurs de la période ont été réalisés. Enfin, en nous appuyant sur les méthodologies enseignées en bibliographie matérielle et en histoire du livre (Sidre, 2014), nous avons travaillé à l'étude des *packagings* de jeux vidéo et des traces qui s'y trouvent. Notons à ce titre que très peu de *packagings* et de jeux de la période que nous étudions ici, le tournant de 1983, ont été conservés, que ce soit par les structures associatives¹ comme par les institutions étatiques.

I / Micro-ordinateurs et jeux vidéo en France : un état des lieux en 1983

A) Avant 1983, une industrie d'importation

Le marché du jeu vidéo en France se développe grossièrement en trois étapes sur lesquelles nous tâcherons ici de revenir.

Dans un premier temps, c'est l'arrivée des consoles de première génération sur le territoire au milieu des années 1970, à commencer par l'Odyssey de Magnavox, vers 1974-1975. Ces consoles de première génération développent leur présence tout au long des années 1970, et voient même l'apparition d'une première industrie de création française, avec notamment l'activité de la Société Occitane d'Électronique autour de Toulouse,² qui réalise plusieurs machines ; industrie qui ne poursuit toutefois pas sa croissance (Audureau, 2014).

Le marché du jeu vidéo ne commence réellement à décoller qu'avec l'arrivée en France des micro-ordinateurs grand public, l'Apple II en septembre 1977, puis le TRS-80 et le Commodore PET au printemps 1978,³ qui représentent en 1982 plus des trois quarts des 70 000 machines présentes sur le territoire (Brémond, 1982, p. 233). Outre le fait que ces machines donnent une première impulsion au marché de la micro-informatique en France, elles s'accompagnent d'une offre notable de logiciels de jeux importés par plusieurs magasins en France. Elles rencontrent un succès certain.

¹ Nous avons en particulier utilisé les collections de l'association parisienne MO5.COM.

² La Société Occitane d'Électronique, fondée en 1976 à Toulouse, développe plusieurs modèles de consoles de jeux vidéo de type *Pong* - les consoles Occitel notamment - tout en participant aux premiers projets de développement de l'informatique dans les établissements scolaires (Audureau, 2014). La Société Occitane d'Électronique arrête toutefois son activité en juin 1980. DISABEAU (Christophe), « L'informatique individuelle : un peu d'histoire », *L'ordinateur individuel* n°36, avril 1982, p. 157-161.

³ Les dates nous sont données par le dossier « 46 ordinateurs de 900 F à 25 000 F », dans *L'ordinateur individuel* n°3, décembre 1978, p. 36-52.

Mais c'est surtout à partir de 1980 que le marché prend son essor, avec l'arrivée des consoles de deuxième génération. Quatre en particulier dominant celui-ci : le Videopac,⁴ l'Atari 2600, l'Intellivision et la Colecovision,⁵ importées entre 1980 et 1983. La période voit les débuts de la réelle structuration du marché.

B) La naissance des réseaux de distribution

1° Micro-ordinateurs et débuts de la structuration du marché

Soulignons dans un premier temps la très grande diversité des pratiques de distribution et d'achat du produit vidéoludique et micro-informatique au cours des années 1970, et encore pendant une large partie des années 1980. Il faut noter en particulier l'importance de la pratique de l'import direct,⁶ où des consommateurs vont commander les produits qui les intéressent à l'étranger, voire auprès du producteur, parfois par intérêt économique, mais bien souvent pour pallier l'absence de réseaux de distribution efficaces et suffisants pour alimenter le marché local.

La structuration des réseaux de distribution du jeu vidéo commence à s'opérer avec le rôle des trois principaux constructeurs de micro-ordinateurs, Apple, Commodore et Tandy, qui, après avoir restructuré leurs réseaux de revente aux États-Unis à la fin des années 1970,⁷ réorganisent la distribution de leurs machines en Europe, mettant en place des logiques qui dépassent bien souvent les frontières – Tandy Europe s'organise ainsi depuis Lille. De son côté, Apple s'implante en 1982 en France, et retire la distribution de sa machine des mains de la société Sonotec,⁸ pour la confier au grossiste Seedrin⁹ – non sans affecter les éditeurs de logiciels affiliés à Sonotec, comme Saari.

⁴ Le Videopac correspond à l'Odyssey 2 importée par Philips.

⁵ Les quatre consoles étaient déjà identifiées comme dominant le marché en 1983 par Christian Gros et Rémy Pernelet, dans *Jeux vidéo*.

⁶ SAVONET (Bernard), « Acheter par correspondance aux États-Unis, une bonne affaire ? », *L'ordinateur individuel* n°20, septembre 1980, p. 48-51.

⁷ Brève sans titre, dans *L'ordinateur individuel* n°17, mai 1980, p. 117.

⁸ Sonotec est dans la pratique l'un des nombreux importateurs de l'Apple II en France à la fin des années 1980, même si le seul à notre connaissance à avoir été reconnu comme importateur officiel. Le fondateur de Saari, Alain Zimeray, s'avère être le fils de Georges Zimeray, président-directeur-général et principal actionnaire de Sonotec (Guetta, 1990). SAVONET (Bernard), SEYMOUR (Philippe), TREVILY (Hervé), « Apple II au banc d'essai », *L'ordinateur individuel* n°10, septembre 1979, p. 56-64.

⁹ Brève sans titre, dans *L'ordinateur individuel* n°36, avril 1982, p. 52.

2° Le rôle des consoles de jeux

C'est réellement avec les consoles de jeux que le marché et les réseaux de distribution s'organisent, au début des années 1980. Chaque constructeur ou distributeur d'une console, tantôt s'installe directement en France, comme Atari, tantôt confie sa distribution à un intermédiaire, comme Coleco qui choisit Ideal Loisirs. Il est intéressant de noter ici que les différentes consoles vendues suivent bien souvent des circuits différents au cours de leur commercialisation. Ainsi, Atari et Philips passent par les réseaux de magasins de hi-fi pour l'Atari 2600 et le Videopac. À l'inverse, Mattel et Coleco passent par les réseaux du jouet avant tout – ainsi, Ideal Loisirs est à l'origine l'importateur du Rubik's Cube en France,¹⁰ ainsi que de plusieurs jeux électroniques.

Notons enfin que la période voit la naissance des deux premiers grossistes français spécialistes en matière de jeux vidéo : ASCRE, dont l'activité se cantonne à la fin des années 1970 et tourne autour de l'Apple II et du PET, et Monaco Computing Corporation, premier distributeur de la Société Occitane d'Électronique,¹¹ et qui se diversifie par la suite, poursuivant son activité de 1979 à 1984.

C) Le développement des réseaux de revente

1° Un développement inégal sur le territoire

Soulignons dans un premier temps que les boutiques commercialisant du jeu vidéo en France sont rarement spécialisées en la matière, et sont bien plus souvent des boutiques de micro-informatique, voire des établissements se diversifiant, et venant de divers milieux (jouet, électronique, livre, etc.).

Le développement des boutiques de micro-informatique suit avant tout la géographie urbaine, se concentrant sur les zones démographiques denses. Par conséquent, hors des grandes villes, les boutiques et les services sont peu nombreux, expliquant l'importance d'activités comme l'import direct, mais également la vente par correspondance pratiquée par de très nombreux établissements. Un réseau de points de vente quelque peu équilibré est permis par le

¹⁰ Publicité « Rubik's Cube », *Jeux et Stratégie* n°6, décembre 1980-janvier 1981, p. 59.

¹¹ D'après une lettre envoyée par la société à *L'ordinateur individuel* n°11, octobre 1979, p. 15.

développement, dans les décennies précédant la naissance de l'industrie vidéoludique française, des grandes surfaces culturelles, à l'image de la FNAC¹² et de Nasa,¹³ qui proposent notamment des produits micro-informatiques, machines et logiciels.

Pour le reste, la grande majorité des boutiques des années 1970 et du début des années 1980 apparaît en région parisienne, principalement autour des cinquième, dixième et quinzième arrondissements. Nombre de ces établissements sont accolés à d'autres structures, tantôt des distributeurs et importateurs, tantôt des magasins traitant d'autres objets et développant des départements dédiés à la micro-informatique. À partir du début des années 1980, le rythme de création de nouvelles enseignes devient moins soutenu, mais nombre de magasins ouvrent un second point de vente, bien souvent sur une autre rive.¹⁴

2° Une grande diversité des boutiques

Plusieurs types d'établissements existent en même temps en région parisienne.

Soulignons dans un premier temps la spécificité des structures des quatrième, cinquième et sixième arrondissements : boutiques avant tout dédiées à des publics étudiants, surtout autour de l'université de Jussieu, ces établissements à l'origine orientés vers le jouet, le jeu de rôle et le *wargame*, pour certains des librairies, s'ouvrent à la micro-informatique. Ce profil de magasins reste très localisé géographiquement.¹⁵

Deux types de structures modèlent les réseaux de commercialisation de la micro-informatique à l'époque : ce que l'on appellera les boutiques spécialisées et les boutiques de référence. Les boutiques spécialisées, en s'orientant très principalement vers une production, souvent en direction d'un constructeur en particulier, apparaissent comme des lieux importants pour les

¹² Fondée en 1954, la chaîne de magasins FNAC distribue très tôt du jeu vidéo ; il faut néanmoins attendre la création des premiers rayons dédiés au logiciel par Claudius Erhardy pour que le médium vidéoludique commence à y être réellement mis en avant, vers 1980 (Gorges, 2011).

¹³ Nasa est une chaîne de magasins spécialisée en hi-fi et en informatique, qui se développe en France de l'ouverture d'un premier point de vente en 1983, à ses importantes difficultés financières à partir de 1986 - la chaîne regroupe alors cent quatorze points de vente franchisés, tout en faisant office de centrale d'achat pour d'autres revendeurs. « Nasa : des « erreurs de gestion » », *Hebdogiciel* n° 158, 24 octobre 1986, p. 11.

¹⁴ Ces observations ont été faites en dépouillant la presse spécialisée, principalement *L'ordinateur individuel* et *Tilt*, et en particulier les annuaires et les publicités s'y trouvant.

¹⁵ Ces établissements sont mis en avant par le périodique *Jeux et Stratégie* qui, s'intéressant au jeu sous toutes ses formes et en particulier au jeu de plateau et au jeu vidéo, insiste et met en avant les boutiques orientées vers le jeu de manière générale.

utilisateurs des machines concernées – ainsi, à Paris, Goal Computer¹⁶ avec les micro-ordinateurs Dragon, ou Électron¹⁷ et Micro-Vidéo¹⁸ qui font des consoles de deuxième génération leurs produits phares.

Les boutiques de référence sont quant à elles rarement spécialisées, mais apparaissent comme des établissements de référence aux yeux des utilisateurs de l'époque, de par notamment leur médiatisation dans la presse spécialisée, via les articles comme les contenus publicitaires : c'est ainsi le cas à Paris d'Illel, de Sivea, de La règle à calcul, mais également d'Ellix. Cette médiatisation est souvent très intéressante à étudier : le magasin va réellement acquérir une personnalité, via sa présentation dans la presse spécialisée,¹⁹ ou la mise en avant dans ses publicités de la figure même de ses gérants, comme dans le cas de Daniel Illel, gérant d'Illel.

D) Figure de l'utilisateur en 1983

Cet état des lieux serait incomplet sans une évocation de la manière dont se construit l'utilisateur de micro-ordinateur à l'époque. Plusieurs enquêtes réalisées par *L'ordinateur individuel*, premier périodique français dédié à la micro-informatique,²⁰ sur son lectorat, nous renseignent sur le profil-type de cet usager.²¹ L'utilisateur est ce que l'on appelle un « hobbyiste ». Il ne possède pas nécessairement une machine – point sur lequel nous reviendrons – et utilise un micro-ordinateur avant tout pour son plaisir ou pour de la gestion personnelle et de la domotique, rarement pour son travail : il est par ailleurs rarement informaticien de profession. L'autre particularité du hobbyiste est l'importance qu'il donne à

¹⁶ Le magasin Goal Computer, spécialisé en micro-informatique et ouvert en 1982 dans le dixième arrondissement de Paris par Franck Algard, se dote au cours de la première moitié des années 1980 d'une réelle structure de distribution dédiée au Dragon, Espace Micro. « Espace Micro : 48 h top chrono », *Tilt* n°25, octobre 1985, p. 12.

¹⁷ Située dans le dix-septième arrondissement de Paris, la boutique Électron, ouverte par Yvan Coriat, organise notamment avec Mattel le « premier open de tennis » à Paris sur console Intellivision, en octobre 1983. Publicité Electron/Mattel Electronics, *Tilt* n°7, septembre-octobre 1983, p. 23.

¹⁸ L'activité de la boutique Micro-Vidéo, située dans le dixième arrondissement de Paris, a été suffisamment importante pour que ses dirigeants, les frères Philippe et Godefroy Giudicelli, évoquent à *Tilt* leur projet de développer un système de franchise à partir du magasin - projet avorté à notre connaissance. ILOUS (Joëlle), « Pas de panique ! », *Tilt* n°7, septembre-octobre 1983, p. 16-61.

¹⁹ Ainsi, *Jeux et Stratégie* se réfère très souvent à Illel et La règle à calcul lors de tests de machines et de logiciels de jeux, pour la fourniture du matériel et les conseils et remarques des revendeurs.

²⁰ Le premier numéro de *L'ordinateur individuel* date d'octobre 1978.

²¹ Ainsi, une enquête au cours de l'été 1980, dont les résultats sont présentés dans *L'ordinateur individuel* n°20, septembre 1980.

l'activité de programmation, typique du micro-ordinateur : l'une des particularités de l'époque est qu'en effet, selon le magazine, « tout le monde programme ». ²² Plusieurs formes d'expression vidéoludique émanent par ailleurs de telles approches de la machine, comme l'importance donnée au listing, code à recopier sur son micro-ordinateur, et publié dans la presse ou dans des ouvrages spécialisés.

L'ordinateur individuel occupe un rôle important dans la promotion de l'activité de programmation. Dans un éditorial paru en 1979, Jean-Pierre Nizard, éditeur du magazine, décrit ainsi le jeu vidéo comme la porte d'entrée vers la micro-informatique ²³ – remarque d'autant plus pertinente que nombre de programmes de jeu des années 1970 reproduisent des formes connues des utilisateurs, jeux « classiques », jeux de cartes ou clones de jeux d'arcade. Surtout, Jean-Pierre Nizard fait de la programmation la réelle activité ludique sur micro-ordinateur. L'idée qu'il développe est que ce n'est qu'en programmant que le hobbyiste touchera à l'essence de la micro-informatique, et surtout s'amusera réellement : c'est ici l'acte de programmation qui devient l'acte réel de jeu, l'activité ludique par excellence sur micro-ordinateur. ²⁴

II / La naissance de l'industrie et l'émergence des distributeurs-éditeurs

A) L'industrie au tournant de 1983

L'une des premières transformations que connaît le marché en 1983 est le retour sur le devant de la scène des micro-ordinateurs, et la marginalisation progressive, mais pas instantanée pour autant, des consoles de jeu.

La période voit en effet la forte inflation du nombre de micro-ordinateurs présents sur le territoire, pour nombre d'entre eux de conception européenne, et notamment française. Si l'industrie micro-informatique française existait déjà au préalable, avec des constructeurs

²² La phrase est de Bertrand Brocard, dans un entretien effectué le 11 septembre 2012.

²³ NIZARD (Jean-Pierre), « Édito », *L'ordinateur individuel* n°9, juillet-août 1979, p. 5.

²⁴ Il est difficile de déterminer en quelle mesure l'éditorial paru dans *L'ordinateur individuel*, alors magazine de référence pour les hobbyistes, a réellement influencé ou non le comportement des utilisateurs, et leur perception de la micro-informatique. Néanmoins, plusieurs idées relayées par cet éditorial se retrouvent dans le discours des acteurs de l'industrie, au cours des années 1980, nous incitant à y voir un texte important.

comme la Société Occitane d'Électronique et Logabax,²⁵ plusieurs nouveaux constructeurs vont développer leur activité, comme Thomson, Exelvision ou encore Matra. À cette même époque, deux micro-ordinateurs en particulier, provenant d'Angleterre, vont peser dans la naissance de l'industrie créatrice française : le Spectrum, et surtout l'Oric, sur lequel nous reviendrons.

Mais si l'année 1983 est considérée comme celle de la naissance de l'industrie vidéoludique française, c'est avant tout pour l'apparition de nombreuses nouvelles structures qui vont contribuer à son organisation. C'est dans un premier temps l'apparition de la presse vidéoludique, avec *Tilt*, premier magazine français intégralement dédié au jeu vidéo, dès l'automne 1982.²⁶ C'est surtout l'émergence de nombreux éditeurs et développeurs français, au cours de l'année 1983 : Loriciels et Infogrames, qui vont contribuer à l'organisation de l'industrie tout au long des années 1980, mais également Édiciel, Cobra Soft, Froggy Software, Ère Informatique, etc. Enfin, la période voit la naissance de deux des quatre grandes structures de distribution qui vont organiser le marché au cours de la décennie : Innelec, principal grossiste en matière de jeux vidéo, autour de la personnalité de Denis Thebaud, et Micromania, alors exclusivement orienté vers la vente par correspondance.²⁷

B) Le revendeur comme « surface de contact »

1° La boutique et sa clientèle

Nous empruntons l'expression de « surface de contact » à Fernand Braudel, qui décrit ainsi l'activité des boutiques dans son ouvrage *Civilisation matérielle, économie et capitalisme*, sur la naissance du capitalisme à l'époque moderne (Braudel, 1979, p. 7). La comparaison entre les boutiques à la période étudiée par Braudel, et les revendeurs de micro-informatique dans les années 1980, nous semble pertinente sur plusieurs points.

²⁵ Logabax est un constructeur de micro-ordinateurs français des années 1970, qui participe notamment au plan « 10 000 micros » visant à l'équipement des établissements scolaires en micro-ordinateurs, et dont l'activité s'arrête en 1981. Brève sans nom, dans *L'ordinateur individuel* n°29, juillet-août 1981, p. 129.

²⁶ Le premier numéro date de septembre-octobre 1982.

²⁷ Les deux autres structures de distribution importantes dans les années 1980 sont Guillemot International Software, se diversifiant au cours des années 1980 dans la micro-informatique, et France Image Logiciel, qui se crée en 1985.

Dans un premier temps, la surface de contact décrite par Braudel est celle qui s'opère entre le public et l'industrie productrice. En relayant des produits, en comblant par ailleurs bien souvent un manque pour la clientèle, à l'époque moderne comme aujourd'hui, le revendeur est réellement ce contact entre le client venu acheter une machine, et la société qui la produit et la fait distribuer. Mais l'effet de surface de contact s'opère surtout entre les clients eux-mêmes, la boutique leur offrant un lieu de réunion, de rencontres, et par extension de synergies. Ce simple effet de rencontres participe de la naissance de l'industrie : c'est ainsi au sein du magasin Illel que le développeur Jean-Louis Le Breton, avant de fonder la structure d'édition Froggy Software, rencontre son premier éditeur, Ciel Bleu.²⁸ Par ailleurs, un membre du club Europe Oric nous avait dit, lors d'une discussion,²⁹ rencontrer régulièrement dans les locaux de l'importateur ASN Diffusion³⁰ d'autres utilisateurs d'Oric, avec lesquels étaient échangés des astuces, de programmation notamment, des programmes, des composants électroniques, etc.

Cette notion de surface de contact nous amène à nous interroger sur les raisons qui conduisent le public à fréquenter les boutiques. En effet, au-delà des services marchands qu'elles proposent, les boutiques sont avant tout des lieux où l'on trouve des machines, machines que ne possèdent pas nécessairement les utilisateurs et les hobbyistes. Les magasins sont ici des lieux de sociabilité et de partage d'une culture micro-informatique commune, au même titre que les clubs ou que d'autres lieux particuliers. Les hobbyistes y viennent pour utiliser les machines, pour jouer, pour programmer, mais également pour pirater, comme ils le feraient dans ces autres lieux de sociabilité – ainsi, le Centre mondial de l'informatique est renommé Centre mondial de piratage par *Hebdogiciel*, eu égard à l'usage détourné qu'en ont ceux qui le fréquentent.³¹

²⁸ Ciel Bleu est alors essentiellement un éditeur qui importe sur le territoire français des jeux éducatifs produits au Québec. Entretien avec Jean-Louis Le Breton, le 28 mars 2012. On se référera également au récit de l'histoire de Froggy Software sur le site de Jean-Louis Le Breton <www.jeanlouislebreton.com>.

²⁹ Rencontre avec les membres du Club Europe Oric, 15 juin 2013.

³⁰ ASN Diffusion est en 1983 l'un des premiers importateurs de l'Oric en France. La société obtient fin 1983 un contrat d'exclusivité avec Tangerine, constructeur de la machine, et prend alors le nom d'Oric France. Lorsque Tangerine dépose le bilan en 1985, ASN Diffusion ne parvient pas à racheter la société - celle-ci revient à un autre magasin parisien, Eureka Informatique, et sa structure de distribution SPID - et se tourne par conséquent vers la distribution d'autres machines, comme le MSX Goldstar (Sidre, 2014).

³¹ « Centre Mondial de Piratage », *Hebdogiciel* n°107, 1^{er} novembre 1985, p. 1-18.

2° La naissance des distributeurs-éditeurs

C'est à ce point que s'opère la naissance des distributeurs-éditeurs. Dans nombre de magasins est observée cette activité de fréquentation, mais aussi et surtout d'usage des machines par les hobbyistes. Dans le cadre d'une industrie naissante, où les interrogations et les découvertes sont nombreuses, les contacts sont alors fréquents entre les gérants et la clientèle – plus encore dans les espaces de référence, comme à Ellix où les vendeurs sont décrits par le langage publicitaire comme des « animateurs ».³² Observant en particulier l'activité de programmation des hobbyistes, les revendeurs vont bien souvent y voir un intérêt, financier ou autre, et proposer à ces mêmes hobbyistes d'être édités et commercialisés au sein du magasin où ils ont programmé leurs jeux.

Notons à ce titre que l'activité d'édition n'est pas une entière nouveauté pour les boutiques. Nombre de revendeurs ont ainsi déjà une activité de localisation, de programmes comme de machines, nécessitant la confection de *packagings*, comme lorsqu'Ellix commercialise l'Oric.³³ Les magasins sont donc parfois coutumiers des processus de conception et de transformation d'un jeu vidéo et de son support.

Le phénomène est surtout spectaculaire par l'ampleur qu'il prend autour de 1983, coïncidant avec le développement de la micro-informatique en France, et sa démocratisation de plus en plus importante. Des exemples plus anciens nous permettent de souligner que la naissance des distributeurs-éditeurs n'est pas un phénomène instantané. Ainsi, dès 1981, Sideg, boutique de micro-informatique du quinzième arrondissement de Paris, a une activité d'édition sur Apple II, Commodore PET et TRS-80. À partir de 1982, Procep, importateur des machines de Commodore, et Ellix, développent une activité d'édition autour du PET. L'inflation a réellement lieu en 1983, avec Innelec, R.U.N. Informatique, Cobra Soft – structure d'édition alors adjointe au magasin Micros et Robots –, Video Telemat Report et Vismo. D'autres structures ont peut-être également eu une activité d'édition plus ou moins importante, sans toutefois le manifester publiquement, par la publicité notamment.

³² Publicité Illel, *L'ordinateur individuel* n° 36, avril 1982, p. 107.

³³ Entretien avec Laurant Weill, 22 octobre 2012.

C) De la variété des distributeurs-éditeurs

1° Une activité plus ou moins importante

Pour plusieurs de ces distributeurs-éditeurs, l'activité d'édition reste très peu importante au cours des années 1980. Si l'exemple de R.U.N. Informatique s'avère particulièrement intéressant à étudier, la société ne publie ainsi que deux jeux en 1983 : *Le mur de Berlin*, clone de *Frogger* où le joueur doit traverser le mur de Berlin, et *Le ballon d'or*, jeu de football.³⁴ D'autres distributeurs-éditeurs ont une activité plus prolifique, mais n'en font pas la publicité, comme Sideg, qui communique uniquement dans ses catalogues sur son travail d'édition, et pas dans ses publicités.

À l'inverse, les structures mises en place peuvent s'avérer très importantes. Le cas le plus notable reste ici celui d'Innelec qui, en 1983, met en place un label entier dédié à l'activité d'édition, No Man's Land. L'activité d'édition ne s'arrête qu'en 1986, faisant d'Innelec le seul distributeur-éditeur à conserver sa double activité au-delà de 1984.³⁵

L'exemple le plus spectaculaire de distributeur-éditeur de la période reste celui de Video Telemat Report, boutique du XVIII^{ème} arrondissement de Paris. Le magasin, à l'origine spécialisé autour du micro-ordinateur Spectrum, commercialise dès 1983 plusieurs jeux de son gérant Jesus Fernandez ; la production s'ouvre peu à peu à d'autres auteurs. La majorité de ces programmes sont des clones de jeux déjà existants, parfois agrémentés d'un habillage : *Tamponneur* est ainsi un clone de *Pac-Man* où les personnages sont remplacés par des voitures – fantômes pour certaines – et où le labyrinthe devient un circuit de course.³⁶ Surtout, un adaptateur est développé par le magasin pour permettre la lecture des programmes réalisés. C'est une réelle machine dans la machine que développe Video Telemat Report, comme en témoignent par ailleurs les projets de périphériques et de logiciels divers lancés par le revendeur. La tentative ne connaît toutefois pas de suite, et faute d'interview des gérants du magasin, il est difficile de faire des hypothèses sur leurs motivations réelles. Le cas de Video Telemat Report reste à notre connaissance unique en France.

³⁴ Publicité R.U.N. Informatique, *Tilt* n°8, novembre-décembre 1983, p. 46.

³⁵ Notons à ce titre que la figure de l'éditeur-distributeur, éditeur organisant lui-même la distribution de ses produits voire commercialisant ceux d'autres sociétés, est beaucoup plus fréquente et pérenne, et connaît encore des avatars complexes aujourd'hui avec les plate-formes de ventes de jeux en ligne.

³⁶ Test *Tamponneur*, *Tilt* n°13, juin 1984, p. 38-39.

2° Des motivations diverses

Dans la plupart des cas, c'est avant tout l'opportunisme qui pousse les revendeurs à diversifier leur activité vers l'édition des hobbyistes : en observant leur clientèle programmer des jeux vidéo sur leurs machines, les boutiques y perçoivent une manne financière potentielle, et s'attachent à transformer leurs programmes en des produits commercialisables. À ce titre, le bénéfice ne se fait pas uniquement en termes financiers, mais également en termes d'image : un revendeur qui édite sa clientèle sera plus enclin à faire parler de lui, dans la presse comme par le bouche à oreilles.

Émerge toutefois assez vite une autre motivation aux distributeurs-éditeurs, ou tout du moins à une partie d'entre eux : permettre le développement d'une industrie de création française, ou tout du moins en français. C'est à ce dernier cas que peut être rattaché Innelec, dont le fondateur Denis Thebaud insiste sur les processus de traduction des programmes importés, et la nécessité de proposer aux clientèles des programmes en français³⁷ : le développement des activités de No Man's Land va aussi dans ce sens, lorsque ce même Denis Thebaud évoque avoir mis en place cette activité d'édition pour combler un manque sur le marché.³⁸ La démonstration est plus claire encore chez R.U.N. Informatique qui, en faisant la publicité de ses deux programmes, titre « Enfin ! Deux jeux français ! »³⁹

III / La naissance de l'industrie vidéoludique française

A) Un nouveau statut pour le jeu vidéo

1° De la « non-économie » à « l'économie »

Nous reprenons ici encore une expression de Fernand Braudel, employée lorsque celui-ci, évoquant le rôle des boutiques dans la naissance du capitalisme, mentionne la manière dont les objets qu'elles commercialisent passent d'un statut à l'autre (Braudel, 1979). Là encore, la comparaison avec l'industrie naissante du jeu vidéo et le rôle des distributeurs-éditeurs nous semble pertinente. Avant d'être édité, lorsqu'il est simplement écrit par un hobbyiste, le programme de jeu fait partie de la « non-économie », c'est à dire qu'il est produit et surtout échangé hors des circuits marchands, il ne contribue pas à ceux-ci : il en va ainsi quand le

³⁷ Nous renvoyons ici aux introductions des catalogues d'Innelec au cours des années 1980.

³⁸ Entretien avec Denis Thebaud, 22 mai 2012.

³⁹ Publicité R.U.N. Informatique, *Tilt* n°8, novembre-décembre 1983, p. 46.

programme de jeu est échangé dans le groupe de pairs, suivant des mécanismes parfois proches du troc, ou diffusés à plus grande échelle sous forme de listings ou via les réseaux pirates. Lors de l'étape d'édition par le distributeur-éditeur, le jeu vidéo rentre dans l'économie au sens de Fernand Braudel, il rentre dans les réseaux marchands, pour être commercialisé dans le cadre du magasin, voire – consécration ultime – dans d'autres magasins, Ellix, par exemple, commercialisant ses programmes à La règle à calcul.⁴⁰

Mais le distributeur-éditeur fait un peu plus que permettre au jeu vidéo de rentrer dans le cadre de l'économie. En tant que structure de revente, le distributeur-éditeur fait la publicité des programmes qu'il édite, que ce soit dans son langage publicitaire comme pour Innelec, ou dans l'espace même du magasin comme pour Cobra Soft et Micro et Robots.⁴¹ Olivier Bomsel, dans son étude des protocoles éditoriaux, souligne ainsi l'importance de la monstration dans le processus de publication – la publication étant elle-même une monstration, le fait de rendre public quelque chose, de le montrer (Bomsel, 2013). Le distributeur-éditeur est alors la structure qui va montrer, publier les jeux qui y sont commercialisés.

C'est à ce moment que le jeu vidéo change de statut, en passant de la non-économie à l'économie, en passant du domaine du privé, celui où le hobbyiste l'échange avec son groupe de pairs, voire utilise le programme sur sa machine uniquement, à l'espace public, à l'espace où le programme est exposé, mis en avant, commercialisé, diffusé au sein de réseaux marchands qui sanctionnent, par leur seule action de commerce, ce nouveau statut du produit vidéoludique.

2° Les premières étapes de la naissance de l'auteur

Le programme vidéoludique n'est pas le seul à tirer profit de cette étape de monstration.

Avant de pousser plus en avant notre réflexion, rappelons que dans les années 1970-1980, le développement vidéoludique est encore principalement un travail individuel, impliquant tout au plus quelques personnes. Le développement d'un programme revient bien souvent à un

⁴⁰ Entretien avec Laurant Weill, 22 octobre 2012.

⁴¹ Entretien avec Bertrand Brocard, 18 mai 2012.

individu, dont la fonction peut dépasser le code pour toucher à la conception des musiques, des graphismes, de la boîte du jeu, etc.

L'auteur est encore rarement identifié au cours des années 1970-1980, que ce soit sur les jeux eux-mêmes comme dans sa mise en scène médiatique. Les quelques exceptions, comme le cas de Scott Adams, développeur de jeux d'aventure prenant place dans l'univers de Marvel sur Apple II, ont souvent tendance à confirmer la règle. Une partie des distributeurs-éditeurs innove en la matière, s'attachant à faire mention au développeur d'un programme. Ainsi, la boutique Ellix emploie cette curieuse formule sur la jaquette de *Pengoric* en 1983, « Ellix et l'auteur vous présentent *Pengoric* ».

Le cas le plus remarquable est ici encore celui de R.U.N. Informatique qui, dans ses publicités, présente nommément l'auteur de ses programmes, Hervé Le Marchand ou Le Marchant – les deux orthographes ont été trouvées –, élève de l'École Centrale.⁴² Le même Hervé Le Marchand écrit, un mois avant la première publicité de R.U.N. Informatique, une lettre à *Tilt* où il se présente comme « auteur de jeu vidéo ».⁴³ Ce cas d'identification comme auteur de jeu vidéo reste unique à notre connaissance dans la production française, et la création vidéoludique reste assez peu associée à une personne en particulier au cours des années 1980, mais l'exemple de R.U.N. Informatique n'en reste pas moins intéressant à observer.

B) Des micro-scènes locales aux premiers grands éditeurs

1° Scènes locales, scènes nationales

L'importance des différents distributeurs-éditeurs dépend pour beaucoup de leur zone d'attractivité, en tant qu'éditeurs certes, mais avant tout en tant que revendeurs, puisque c'est sous cette forme que les hobbyistes vont les découvrir en premier. Les structures à l'activité d'édition la plus notable sont ainsi tantôt des « boutiques de référence », comme Ellix et Sideg, tantôt des distributeurs dont l'influence est nationale, comme Procep et surtout Innelec. Le cas d'Innelec est d'autant plus pertinent à observer que le distributeur exerçait à l'origine une activité de vente par correspondance, bien que restée très courte. Ces établissements

⁴² Publicité R.U.N. Informatique, *Tilt* n°8, novembre-décembre 1983, p. 46.

⁴³ Lettre d'Hervé le Marchand à *Tilt* n°7, septembre-octobre 1983, p. 114.

fondent leur réputation avant tout sur les publicités qu'ils publient dans la presse spécialisée, et ici encore l'exemple d'Innelec est celui qui se distingue le plus. À l'image de plusieurs autres distributeurs-éditeurs, mais de manière plus importante encore, la société glisse ainsi dans ses publicités des encarts annonçant être à la recherche de développeurs souhaitant être édités, lui donnant ainsi une vocation nationale.⁴⁴

À contre-courant, Micros et Robots-Cobra Soft renvoie à un cas singulier d'édition régionale. Le revendeur, basé à Chalon-sur-Saône en Bourgogne, est l'un des seuls établissements du département, et draine bien vite une clientèle qui va de Dijon à Lyon, soit une très large partie de la région.⁴⁵ On y retrouve les mêmes processus d'édition et de mise en avant des jeux édités au sein du magasin qu'ailleurs, à la différence toutefois qu'en tant que seule boutique d'importance de la région, Micros et Robots suscite un bouche-à-oreille qui y entraîne de nombreux développeurs potentiels. Le mécanisme est ici simple : des hobbyistes de la région sont édités par la structure, leurs jeux sont mis en avant dans le magasin, ils invitent leurs amis à venir les voir mis en avant, lesquels amis proposent leurs propres jeux et parlent de la structure autour d'eux, et ainsi de suite. En l'état, nous ne savons pas si d'autres scènes régionales ont pu se développer ailleurs en France, et des recherches plus poussées sur la question seraient nécessaires.⁴⁶

2° Le cas d'Ellix

Le cas d'Ellix est particulièrement intéressant à étudier, apparaissant comme le phénomène le plus notable et le plus fondateur de la période.

Ellix est un magasin de micro-informatique situé près de la Gare de Lyon à Paris, dont Laurant Weill est l'un des co-gérants.⁴⁷ Dès 1982, le magasin place les machines de Commodore au cœur de sa stratégie et entame une activité d'édition autour de celles-ci.⁴⁸ En janvier 1983, Ellix devient le premier importateur de l'Oric sur le territoire. Bien vite rejoint

⁴⁴ Publicité No Man's Land, *Tilt* n°9, janvier-février 1984, p. 105.

⁴⁵ Entretien avec Bertrand Brocard, 18 mai 2012.

⁴⁶ Nous employons ici le terme de scène régionale dans un sens uniquement géographique : des études en histoire de l'art seraient nécessaires pour déterminer si cette expression peut avoir valeur dans une perspective esthétique, et dans le sens où une certaine école du jeu vidéo aurait pu se développer à Chalon.

⁴⁷ Nous n'avons pu retrouver l'identité de l'autre co-gérant.

⁴⁸ Publicité Ellix, *L'ordinateur individuel* n°36, avril 1982, p. 107.

par le magasin JCS Composants⁴⁹ et le distributeur ASN Diffusion, la boutique arrive néanmoins à s'affirmer comme un espace de référence, et spécialisé principalement en Oric, dans la première moitié de 1983 : elle intensifie son activité d'édition, profitant ici d'un effet d'exclusivité en la matière et autour de la machine. À l'été 1983 toutefois, alors que l'activité d'édition d'Ellix ne cesse de prendre de l'importance, ASN Diffusion obtient le marché exclusif du micro-ordinateur.

Autour d'Ellix, de très nombreux hobbyistes intéressés par l'Oric se rencontrent, échangent, et surtout programment. Une réelle communauté de développeurs se forme à l'époque, d'autant plus notable par son importance que l'on en retrouvera les membres dans l'industrie vidéoludique française, au cours des années 1980 et 1990. C'est ainsi le cas de Carlo Perconti, qui développera *Jeep* et *Hubert* pour Loricels ; c'est également le cas des frères Hervé et Éric Caen, futurs fondateurs de la société d'édition Titus en 1985.⁵⁰

À l'automne 1983, face à l'intensification de l'activité d'édition, Laurant Weill décide de quitter Ellix pour fonder une structure d'édition à part entière, où il est suivi par nombre de ces développeurs, ainsi que d'autres comme Pierre Faure : Loricels. L'événement est ici très important pour la naissance de l'industrie vidéoludique française, et ce, pas seulement parce que Loricels est l'un des principaux éditeurs de jeux vidéo en France au cours des années 1980. En effet, témoignant avec recul de sa décision, Laurant Weill évoque la nécessité qui s'était affirmée à l'époque de séparer les deux activités, de séparer ce qui était de plus en plus perçu comme deux métiers à part entière.⁵¹ En une expression, Laurant Weill synthétise ici l'une des principales transformations de l'industrie française au cours des années 1980, la façon dont les activités d'édition et de distribution se sont peu à peu séparées, ont vu leurs structures se détacher l'une de l'autre, allant de pair avec l'apprentissage d'un nouveau métier, celui d'éditeur.

⁴⁹ JCS Composants est l'une des premières boutiques parisiennes à commercialiser des micro-ordinateurs, dès 1978 : le magasin, situé dans le huitième puis le quinzième arrondissement, importe notamment sur le territoire une version de l'Apple II, le CAB 65, dès la fin des années 1970, ainsi que le Nascom 2 à partir de 1980 et l'Oric 1 en 1983.

⁵⁰ Entretien avec Laurant Weill, 22 octobre 2012.

⁵¹ « Exporter ou mourir ! », *Hebdogiciel* n°59, 30 novembre 1984, p. 8.

Conclusion

Mis en regard avec l'histoire du jeu vidéo en France, le phénomène des distributeurs-éditeurs apparaît comme un épi-phénomène, comme un événement éphémère. Néanmoins, les structures qui se développent à l'époque portent en elles la majorité des problématiques qui vont se poser à l'industrie au cours des années 1980 (place de l'auteur, rapport aux producteurs et aux importateurs), et surtout préparent la structuration de cette même industrie, en contribuant à l'apprentissage du métier d'éditeur, à la formation et à la reconnaissance des auteurs, au développement de groupes de développeurs.

Le phénomène ne doit pas être surestimé pour autant. Il est nécessaire de prendre en compte la multiplicité des modèles qui apparaissent à l'époque. C'est ainsi à la marge des réseaux de distribution que se met en place la structure d'Infogrames, avec Loricels l'autre éditeur important des années 1980. De même, nous avons choisi dans le cadre de cet article de nous concentrer sur la production éditée et commercialisée, la production faisant partie de « l'économie ». En marge de celle-ci, de nombreux jeux, de nombreuses œuvres restent pour beaucoup méconnues, en attente d'autres travaux et d'autres recherches, d'autres pierres apportées à l'histoire du jeu vidéo en France.

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From Importers to Designers and Publishers: How Distributors and Computer Stores Helped Shape the French Video Game Industry

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Abstract

The birth of the French video game industry, focused on microcomputers, is generally considered to have taken place in 1983, when France shifted from an import industry – importing mainly from the United States – to a creative industry. Distributors and particularly microcomputer retailers, as the first companies established in France, played a prominent role in these transformations of the industry. Most of the establishments of the time became distributor-publishers, retailers, and wholesalers who also published, like Ellix, Video Telemat Report and Innelec. These structures laid the foundations of the new industry, while assembling the first groups of developers, and giving them access to the market system.

Keywords

Video game, microcomputing, distribution, video game industry, France.

Though research on video games in France has developed in recent years, we still know little about the history of the video game in France, and about the birth of the video game industry in particular. Currently, the best study on the subject is a chapter by Tristan Donovan in his essay entitled *Replay* (Donovan, 2010, p. 124-137). Academic work has been sparse, and often limited to a few master's dissertations (De Oliveira, 2008) or papers (Mustar, 1988). These studies generally focus on the rise of video game publishing and development companies, often choosing to overlook the conditions in which they originated.

Recent work has shed light both on the difficulties of the French video game industry faced with international competition around the first generation of consoles, and on the important role played by foreign machine imports in the development of the video game market (Audureau, 2014, p. 123-134). From the mid-1970s to early 1980s, France was chiefly an import market structured by machine and software distribution and marketing companies. However, the 1980s witnessed the birth of a game software industry, around prolific publishing companies like Loricels, and in the context of the rise of the European industry, largely focused on microcomputers, thus forming a “system of experience” typical of the European industry – the expression is borrowed from Mathieu Triclot, who identifies several game regimes, i.e., the university game, the arcade game, and the home game (Triclot, 2011 p. 98), each of which is characterized by its own logic and distribution network (Sidre, 2014). What then are the conditions in which the industry originated, and how did the shift from import to creative industry occur in the early 1980s?

Before answering this question, we will first review the manner in which distribution companies developed before 1983, which marked a turning point for the industry. The second part of this paper will focus on 1983, and on the publishing activity developed at the time by stores and distributors. Finally, I will seek to evaluate how these distribution companies contributed to the nascent French video game industry.

Sources

Few archive collections related to the French video game industry have been preserved, and fewer still are freely accessible to researchers. Worth noting is the existence of one significant collection I have had the opportunity to use in the course of this research, that is, the archives of Bertrand Brocard, manager of the Micros et Robots store in Chalon-sur-Saône, and founder in 1983 of the Cobra Soft publishing company (De Oliveira, 2008). To complete these archives, I have used for the most part trade publications (particularly *L'ordinateur individuel*, *Tilt*, and *Hebdogiciel*), with a focus on the promotional material found inside (Noyer, 2001). Several interviews were also conducted with key players of the time. Finally, using methodologies taught in material bibliography and the history of the book (Sidre, 2014), I have studied video game packages, and the traces they contain. It must however be noted that very few packages and games from the time period studied here, i.e.,

the turning point of 1983, have been preserved, be it by the various associations¹ or by state institutions.

I / Microcomputers and video games in France: the state of things in 1983

A) Before 1983, an import industry

The French video game market developed roughly in three stages that will be reviewed here. To begin with, there was the arrival of first-generation consoles in France in the mid-1970s, starting with Magnavox's Odyssey around 1974-1975. The presence of these consoles increased throughout the 1970s, even leading to the appearance of an early French creative industry. An example of this is the Société Occitane d'Électronique around Toulouse, which created several machines.² This industry did not, however, develop further (Audureau, 2014).

The video game market truly began to get off the ground with the arrival of the mass-produced microcomputer, i.e., the Apple II in September of 1977, along with the TRS-80 and the Commodore PET, in the spring of 1978,³ which, by 1982, constituted three-quarters of the 70,000 machines existing in France (Brémond, 1982, p. 233). Not only did these machines give an initial boost to the microcomputer market in France, they also came with a significant array of game software that was imported by several stores. They proved to be very popular.

However, it was not until 1980, and the arrival of second-generation consoles that the market began to thrive. Four consoles in particular established their dominance: the Videopac,⁴ the Atari 2600, the Intellivision and the Colecovision,⁵ imported between 1980 and 1983. It was during this period that the market truly took shape.

¹ I used, in particular, the collections of MO5.COM, an association located in Paris.

² The Société Occitane d'Électronique, founded in 1976 in Toulouse, developed several models of *Pong*-type video game consoles - notably the Occitel consoles -, and also took part in the first projects to develop computer sciences in schools (Audureau, 2014). However, the company ceased its operations in June of 1980. DISABEAU (Christophe), « L'informatique individuelle : un peu d'histoire », *L'ordinateur individuel* n°36, April 1982, p. 157-161.

³ These dates are found in "46 ordinateurs de 900 F à 25 000 F" ("46 Computers from 900 to 25,000 francs"), a feature published in *L'ordinateur individuel* n°3, December 1978, p. 36-52.

⁴ The Videopac was the equivalent of the Odyssey 2 imported by Philips.

⁵ In 1983, the four consoles were already said to dominate the market, according to Christian Gros and Rémy Pernelet, in *Jeux vidéo*.

B) The rise of distribution networks

1° Microcomputers and early market structuring

Let me begin by emphasizing the fact that during the 1970s and a good part of the 1980s, practices of video game and microcomputer product distribution and purchase were highly diverse. It is worth noting, in particular, that direct imports were common.⁶ Consumers ordered the products that interested them from other countries, and even from the manufacturer itself, sometimes to save money, but quite often because there were no distribution networks that were both efficient and sufficient to supply the local market.

Video game distribution networks began to take shape when the three main microcomputer manufacturers, Apple, Commodore and Tandy, having restructured their resale networks in the United States in the late 1970s,⁷ went on to reorganize the distribution of their machines in Europe, often setting up processes that reached beyond borders – Tandy Europe, for example, operated out of Lille. Apple, for its part, was established in France in 1982, and withdrew the distribution of its machine from Sonotec,⁸ to entrust it to the wholesaler Seedrin⁹ – thus affecting the software publishers affiliated with Sonotec, such as Saari.

2° The role of game consoles

It is with the arrival of game consoles that the market and distribution networks truly took shape in the early 1980s. Each manufacturer or distributor of a console either established itself in France, like Atari, or entrusted its distribution to a middleman – Coleco, for example, chose Ideal Loisirs. It is interesting to note that the consoles quite often followed different channels during their commercialization process. Thus, Atari and Philips used electronics store networks for the Atari 2600 and the Videopac. In contrast, Mattel and Coleco mainly used toy store networks – Ideal Loisirs originally imported the Rubik's Cube into France,¹⁰ as well as many electronic games.

⁶ SAVONET (Bernard), « Acheter par correspondance aux États-Unis, une bonne affaire ? », *L'ordinateur individuel* n°20, September 1980, p. 48-51.

⁷ Untitled short news item, in *L'ordinateur individuel* n°17, May 1980, p. 117.

⁸ In practice, Sonotec was one of many Apple II importers in France at the end of the 1980s, even if, to my knowledge, it is the only company that was recognized as an official importer. The founder of Saari, Alain Zimeray, is actually the son of Georges Zimeray, Sonotec's CEO and leading shareholder (Guetta, 1990). SAVONET (Bernard), SEYMOUR (Philippe), TREVILLY (Hervé), « Apple II au banc d'essai », *L'ordinateur individuel* n°10, September 1979, p. 56-64.

⁹ Untitled short news item, in *L'ordinateur individuel* n°36, April 1982, p. 52.

¹⁰ "Rubik's Cube" advertisement, *Jeux et Stratégie* n°6, December 1980-January 1981, p. 59.

Lastly, it should be noted that the two first French wholesalers specializing in video games appeared during this period: ASCRE, whose activity in connection with the Apple II and the PET was limited to the late 1970s, and the Monaco Computing Corporation, the original distributor for the Société Occitane d'Électronique,¹¹ which later diversified, remaining in operation from 1979 to 1984.

C) The development of resale networks

1° An unequal development throughout the country

It should first be emphasized that stores selling video games in France were rarely specialized in the field, and were most often microcomputer stores, or establishments in various fields that diversified (toys, electronics, books, etc.).

The development of microcomputer stores was mainly patterned on urban geography, with a focus on densely populated areas. Consequently, outside of large city centres, stores and services were few; hence the significance of direct imports, but also of the mail order retailing activities practiced by many establishments. A fairly evenly distributed network of sales outlets was made possible by the appearance, in the decades preceding the birth of the French video game industry, of cultural superstores, such as FNAC¹² and Nasa¹³, that sold microcomputer products, machines and software, among other things.

On the whole, the vast majority of stores in the late 1970s and early 1980s were opened in the Paris area, mainly around the fifth, tenth and fifteenth boroughs. Many of these establishments were connected with other structures, such as distributors and importers, or stores selling other objects that set up microcomputer departments. In the early 1980s, new

¹¹ Based on a letter sent by the company to *L'ordinateur individuel* n°11, October 1979, p. 15.

¹² Founded in 1954, the FNAC store chain began very early on to distribute video games. However, it was not until Claudius Erhardy created the first departments devoted to software, around 1980, that video games truly began to be showcased (Gorges, 2011).

¹³ Nasa is a chain of hi-fi and computer stores that developed in France starting in 1983 with its first sales outlet, until it ran into serious financial difficulties in 1986 - at which time the chain had one hundred and fourteen franchised sales outlets, and acted as a central buying service for other retailers. « Nasa : des "erreurs de gestion" », *Hebdogiciel* n°158, 24 October 1986, p. 11.

stores were created at a slower rate, but many existing stores opened a second sales outlet, often on the other side of the Seine.¹⁴

2° A wide variety of stores

Several types of establishments coexisted in the Paris area. Those located in the fourth, fifth and sixth boroughs were of a specific nature: catering primarily to students, especially around Jussieu University, these were stores that originally focused on toys, role playing games, war games, and in some cases, books, and later branched out into microcomputers. This type of store remained highly localized.¹⁵

Two types of establishments shaped the microcomputer marketing networks at the time: they will be named specialized stores and reference stores. Specialized stores focused mainly on one particular product, often in connection with a specific manufacturer, and were of significance to the users of the machines in question – for example, in Paris, Goal Computer¹⁶ for Dragon microcomputers, or Électron¹⁷ and Micro-Vidéo,¹⁸ which made second-generation consoles their leading product.

Reference stores, on the other hand, were rarely specialized but appear to have been places of reference in the eyes of users at the time, as would suggest their media coverage in trade publications, in both the articles and promotional material: in Paris, this was the case for Illel, Sivea, La règle à calcul, but also for Ellix. Studying this media coverage is often very interesting: the stores truly acquired a personality, thanks to the way they were presented in

¹⁴ These observations are made based on a thorough review of the trade press, primarily *L'ordinateur individuel* and *Tilt*, and more particularly the directories and advertising they contain.

¹⁵ These establishments were showcased by *Jeux et Stratégie* magazine, which, as it focused on all forms of games, and particularly on board games and video games, promoted the stores specializing in games in general.

¹⁶ Goal Computer, a microcomputer store opened in 1982 in Paris's tenth borough by Franck Algard, developed during the first half of the 1980s its own distribution company devoted to the Dragon, Espace Micro. « Espace Micro : 48 h top chrono », *Tilt* n°25, October 1985, p. 12.

¹⁷ Located in Paris's seventeenth borough, Électron, opened by Yvan Coriat, organized with Mattel the "first tennis open" in Paris on the Intellivision console, in October of 1983. Electron/Mattel Electronics advertisement, *Tilt* n°7, September-October 1983, p. 23.

¹⁸ Located in Paris's tenth borough, Micro-Vidéo's considerable success encouraged the owners, the brothers Philippe and Godefroy Giudicelli, to mention their plans to develop a franchise system to *Tilt* - a project that fell through as far as I know. ILOUS (Joëlle), « Pas de panique ! », *Tilt* n°7, September-October 1983, p. 16-61.

the trade press,¹⁹ or to advertising that showcased the store managers, as in the case of Daniel Illel, manager of Illel.

D) The typical user in 1983

An overview such as this would be incomplete without a consideration of how the typical microcomputer user was fashioned at the time. Several readership surveys conducted by *L'ordinateur individuel*, the first French magazine devoted to microcomputers,²⁰ provide a portrait of the typical user.²¹ The user was what is called a “hobbyist”. He did not necessarily own a machine – a point I will return to later –, and used a microcomputer chiefly for pleasure or personal management and home automation, rarely for work: he was actually rarely a computer scientist by trade. The other distinctive feature of the hobbyist was the importance he attributed to programming, a typical activity on the microcomputer: indeed, one of the characteristics of the time was that “everybody programmed”.²² Several forms of video gaming expression were the result of such an approach to the machine, like the importance given to the listing, i.e., a code printed in the press or in specialized books that could be recopied on one’s microcomputer.

L'ordinateur individuel played an important role in promoting the activity of programming. In a 1979 editorial, Jean-Pierre Nizard, the magazine’s publisher, described videogames as the gateway to microcomputing²³ – a comment that is all the more relevant given the number of 1970s game programs that copied forms familiar to the users, i.e., “classic” games, card games or clones of arcade games. More importantly, Jean-Pierre Nizard viewed programming as the true gaming activity on microcomputers. His idea was that it was only through programming that hobbyists could attain the essence of microcomputing, and above all, truly have fun: here, the act of programming becomes the game, the quintessential ludic activity on a microcomputer.²⁴

¹⁹ Thus, *Jeux et Stratégie* very often turned to Illel and La règle à calcul when carrying out machine and game software tests, to obtain equipment as well as the retailers’ advice and comments.

²⁰ The first issue of *L'ordinateur individuel* was published in October of 1978.

²¹ For example, a survey in the summer of 1980, the results of which were presented in *L'ordinateur individuel* n° 20, September 1980.

²² Words spoken by Bertrand Brocard during an interview conducted on September 11, 2012.

²³ NIZARD (Jean-Pierre), « Édito », *L'ordinateur individuel* n° 9, July-August 1979, p. 5.

²⁴ It is difficult to determine to what extent the editorial published in *L'ordinateur individuel*, which at the time was a leading magazine for hobbyists, actually did influence user behaviour and

II / The birth of the industry and the rise of the distributor-publisher

A) The industry at the 1983 turning point

One of the first transformations to occur in 1983 was the microcomputers' return to centre stage, and its progressive though not instantaneous overshadowing of game consoles.

The year indeed witnessed a sharp increase in the number of microcomputers sold in the country, many of which were of European, and often French, design. Though a French microcomputer industry did exist before this time, with manufacturers like the Société Occitane d'Électronique and Logabax,²⁵ many new manufacturers appeared, like Thomson, Exelvision or Matra. At the same time, two microcomputers in particular, of British make, played an important role in the birth of the French creative industry: the Spectrum, and especially the Oric, which will be discussed further below.

However, the fact 1983 is considered the year the French videogame industry was born is due mainly to the many events that helped shape it. First, there was the appearance of videogame magazines, with *Tilt*, the first French magazine wholly devoted to videogames, in the fall of 1982.²⁶ More importantly still, there was the emergence of several French publishers and developers over the course of the year: Loricieux and Infogrames, which would help shape the industry throughout the 1980s, but also Édiciel, Cobra Soft, Froggy Software, Ère Informatique, etc. Finally, two of the four important distributors that would shape the market throughout the decade appeared at this time: Innelec, the main videogame wholesaler, built around the personality of Denis Thebaud, and Micromania, which, at the time, focused exclusively on mail order retailing.²⁷

perceptions of microcomputing. Nevertheless, the fact that many ideas expressed in the editorial were also conveyed by industry players during the 1980s leads me to view the text as seminal.

²⁵ Logabax was a French microcomputer manufacturer in the 1970s, which notably joined the "10,000 micros" project, aiming to provide school with microcomputers. The company closed in 1981. Untitled short news item, in *L'ordinateur individuel* n°29, July-August 1981, p. 129.

²⁶ The first issue was dated September-October of 1982.

²⁷ The two other leading distribution companies of the 1980s were Guillemot International Software, which began dealing in microcomputers during the 1980s, and France Image Logiciel, which was created in 1985.

B) The retailer as “contact surface”

1° The store and its clientele

The expression “contact surface” is used by Fernand Braudel to characterize the role played by stores in *Civilization and Capitalism, 15th-18th Century*, on the rise of capitalism in modern times (Braudel, 1992, p. 21). The comparison between stores in the era examined by Braudel and microcomputer retailers in the 1980s appears relevant for several reasons.

To begin with, the contact surface described by Braudel occurs between the public and the manufacturing industry. By passing products on, thereby often filling a gap for the clientele, in modern times as well as today, the retailer is truly the contact between the client who has come to buy the machine, and the company that manufactures and distributes it. However, in this case, the contact surface effect was mainly produced by the clients themselves, as the store offered them a place to meet and assemble, ultimately creating synergies. This simple fact of having a place to meet was instrumental in the birth of the industry: it was, for example, at Illel that the developer Jean-Louis Le Breton, before founding the Froggy Software publishing company, met his first publisher, Ciel Bleu.²⁸ Furthermore, a member of the Europe Oric club told me during a discussion²⁹ that at the offices of the importer ASN Diffusion,³⁰ he regularly met other Oric users, with whom he exchanged tips, particularly about programming, as well as programs and electronic components, etc.

The notion of contact surface brings us to the reasons that brought the public to these stores. Indeed, beyond the commercial services they offered, the stores were primarily places where machines were found, machines the users and hobbyists did not necessarily own. In this case, the stores were places to socialize and share a common microcomputer culture, much like clubs and other similar meeting places. Hobbyists came to use the machines, to play, to program, but also to hack, as they would in any other such place of social contact – thus, the

²⁸ At the time, Ciel Bleu was essentially a publisher that imported educational games made in Quebec. Interview with Jean-Louis Le Breton, March 28, 2012. See also Jean-Louis Le Breton’s website for the history of Froggy Software: <www.jeanlouislebreton.com>.

²⁹ A meeting with the members of the Europe Oric Club, June 15, 2013.

³⁰ ASN Diffusion was in 1983 one of the first importers of the Oric in France. In late 1983, the company was granted exclusive rights by Tangerine, the machine’s manufacturer, and changed its name to Oric France. When Tangerine filed for bankruptcy in 1985, ASN Diffusion did not succeed in buying the company - it was obtained by another Parisian store, Eureka Informatique, and its distribution company SPID -, and consequently turned to the distribution of other machines, such as the MSX Goldstar (Sidre, 2014).

Centre mondial de l'informatique (World Computing Centre) was nicknamed the Centre mondial de piratage (World Hacking Centre) by *Hebdogiciel*, given the unintended activities of those who frequented it.³¹

2° The rise of distributor-publishers

This was when distributor-publishers began to appear. In many stores, hobbyists would indeed gather, especially in order to use the machines. In the context of a nascent industry, where questions and discoveries were common, contact between the managers and clients was frequent – and all the more so in places of reference, like Ellix, whose ads described its salespeople as “hosts”.³² Retailers often considered the programming activity with interest, whether financial or other, and offered to publish and market the games hobbyists programmed in their store.

It should be noted that this publishing activity was not something entirely new for the stores. Many retailers already had experience in localization, whether of programs or machines, which required the production of packaging, as when Ellix marketed the Oric.³³ Stores were therefore occasionally familiar with the processes involved in designing and transforming a video game and its medium.

The phenomenon was especially striking in 1983 because of its extent, which coincided with the development of microcomputing in France, and its increasing accessibility to the general public. Earlier examples show that the rise of distributor-publishers was not something that happened all at once. As early as 1981, Sideg, a microcomputer store in Paris's fifteenth borough, published for the Apple II, the Commodore PET and the TRS-80. Starting in 1982, Procep, a Commodore machine importer, and Ellix developed publishing activities around the PET. But it is in 1983 that things really took off, with Innelec, R.U.N Informatique, Cobra Soft – a publishing company then tied to Micros et Robots –, Video Telemat Report and Vismo. Other companies had more or less significant publishing activities, without however making these public, in particular through advertising.

³¹ « Centre Mondial de Piratage », *Hebdogiciel* n°107, November 1, 1985, p. 1-18.

³² Illel advertisement, *L'ordinateur individuel* n°36, April 1982, p. 107.

³³ Interview with Laurant Weill, October 22, 2012.

C) The variety of distributor-publishers

1° An activity of varying significance

For several of these distributor-publishers, publishing activities remained limited throughout the 1980s. Though the case of R.U.N. Informatique proves particularly interesting to study, the company actually only published two games in 1983: *Le mur de Berlin*, a clone of *Frogger* in which the player must get across the Berlin Wall, and *Le ballon d'or*, a soccer game.³⁴ Other distributor-publishers were more prolific, but did not advertise it – Sideg, for example, publicized the games it published in its catalogues, but not in its advertising.

In contrast, some companies proved to be very active publishers, the most notable case being that of Innelec. In 1983, the company created an entire label, No Man's Land, devoted to publishing. Innelec continued to publish until 1986, making it the only distributor-publisher to pursue both activities after 1984.³⁵

The most striking example of a distributor-publisher of the time remains that of Video Telemat Report, a store in Paris's eighteenth borough. Originally specializing in the Spectrum microcomputer, the store began in 1983 to market several games by its manager Jesus Fernandez, and progressively welcomed other authors. The majority of these programs were clones of previously existing games, sometimes dressed-up differently: *Tamponneur*, for example, is a clone of *Pac-Man* in which the characters are replaced by cars – some of them ghosts –, and the labyrinth becomes a racing circuit.³⁶ More importantly, an adapter was developed in the store to enable the computers to run the new programs. Video Telemat Report developed an actual machine within the machine, as can be further witnessed through the retailer's various peripheral and software projects. This attempt was not pursued further however, and without interviews with the store managers, it is difficult to hypothesize about their actual motives. The case of Video Telemat Report remains to my knowledge unique in France.

³⁴ R.U.N. Informatique advertisement, *Tilt* n°8, November-December 1983, p. 46.

³⁵ It is worth noting in this respect that the figure of the distributor-publisher, i.e., a publisher who manages his own product distribution, or even markets products from other companies, is much more frequent and long-lived, existing to this day in complex manifestations through online game retailing platforms.

³⁶ *Tamponneur* test, *Tilt* n°13, June 1984, p. 38-39.

2° Varying motives

In most cases, retailers' motives for diversifying their activities to include hobbyist publishing were primarily opportunistic: seeing their clients program video games on their machines, the stores foresaw a potential financial windfall, and began to transform the programs into marketable products. To these financial benefits was added a positive impact on the store's image: a retailer who published his clients was more apt to be talked about, in the press as well as by word of mouth.

However, another motive quickly emerged for distributor-publishers, or at least for some of them: to enable the development of a creative industry in France, or at very least in French. Innelec may be seen as an example of this last case, as its founder Denis Thebaud insisted on the translation processes of imported programs, and on the necessity of offering clients programs in French.³⁷ No Man's Land's activities can also be viewed in this light, with the same Denis Thebaud stating that he began publishing to fill a void in the market.³⁸ R.U.N Informatique demonstrated this even more clearly in an advertisement for its two programs titled "Finally! Two games in French!"³⁹

III / The birth of the French video game industry

A) A new status for the video game

1° From the "non-economy" to "the economy"

The "non-economy" is another term borrowed from Fernand Braudel, who, when explaining the stores' role in the birth of capitalism, uses it to characterize the way objects that were marketed went from one status to the other (Braudel, 1992). Once again, a comparison with the nascent video game industry and the role of distributor-publishers seems relevant. Before its publication, when it was still only written by a hobbyist, the game program was part of the "non-economy", meaning that it was produced and exchanged outside of commercial channels, therefore not contributing to said channels. Such was the case when the game program was exchanged among peers, following a sometimes barter-like system, or disseminated on a larger scale in the form of listings, or via piracy networks. When published by a distributor-publisher, the video game entered the economy as defined by Fernand

³⁷ See the introductions of the 1980s Innelec catalogues.

³⁸ Interview with Denis Thebaud, May 22, 2012.

³⁹ R.U.N. Informatique advertisement, *Tilt* n°8, November-December 1983, p. 46.

Braudel, that is, it entered the commercial networks, and was marketed by the store, or – the ultimate achievement – by other stores. Ellix, for example, marketed its programs at La règle à calcul.⁴⁰

However, the distributor-publisher did a bit more than allow the game to enter the economy. As a retailer, the distributor-publisher advertised the programs it published, either in its promotional material, like Innelec, or within the store, like Cobra Soft and Micro et Robots.⁴¹ Olivier Bomsel, in his study on publishing protocols, highlights the importance of the act of displaying in the publication process – the publication itself is a display, the act of making something public, of exhibiting it (Bomsel, 2013). It was thus the distributor-publisher that would display, publish the marketed games.

It was then that the video game took on a new status, moving from the non-economy to the economy, from the private domain, where the hobbyist exchanged it with his peers, or simply used it on his own machine, to public space, the space where it would be exhibited, showcased, marketed, distributed within the commercial networks that would confirm, through this marketing process, the new status of the video game product.

2° The first stages of the rise of the author

The video game program was not the only thing that benefited from this act of displaying. First of all, it is important to remember that, during the 1970s and 1980s, video game development was still chiefly an individual affair, involving at most a few people. The development of a program was often the work of a single individual, whose role could stretch beyond the code, to include other aspects of design, such as music, graphics, packaging, etc. The author was still rarely identified during the 1970s and 1980s, whether on the games themselves or in the media staging. The few exceptions, such as the case of Scott Adams, who developed adventure games in the Marvel universe on Apple II, generally confirmed the rule. Certain distributor-publishers broke new ground in the field, by mentioning the developer of a program. Ellix, for example, used an odd phrase on the cover of *Pengoric* in 1983: “Ellix and the author present *Pengoric*.”

⁴⁰ Interview with Laurant Weill, October 22, 2012.

⁴¹ Interview with Bertrand Brocard, May 18, 2012.

The most remarkable case here is again that of R.U.N Informatique that explicitly named the author of its programs, Hervé Le Marchand or Le Marchant – both spellings were used –, student at École Centrale, in its advertising.⁴² The same Hervé le Marchand wrote, a month before R.U.N. Informatique’s first advertisement, a letter to *Tilt* in which he presented himself as a “video game author”.⁴³ There are, to my knowledge, no other cases in which an individual identified himself as a video game author during the 1980s in the French production, and video game design was rarely associated with a specific person at the time, but the case of R.U.N. Informatique remains interesting to note.

B) From local micro-scenes to the first major publishers

1° Local scenes, national scenes

The importance of the various distributor-publishers largely depended on their range of appeal, as publishers of course, but primarily as retailers, because it was in this form that hobbyists first discovered them. Companies having the most noteworthy publishing activity were thus either “reference stores”, like Ellix and Sideg, or distributors whose reach was national, like Procep and especially Innelec. The case of Innelec is all the more relevant to study because the distributor originally offered mail order retailing, albeit for a very short time. These companies established their reputation primarily through the ads they published in the trade press, and here, once again, it was Innelec that most stood out. Like several other distributor-publishers, but more consistently than the others, the company included inserts in its advertising announcing that it was seeking developers who wished to be published, and thus gave itself a national focus.⁴⁴

In contrast, Micros et Robots-Cobra Soft was a unique case of regional publishing. The retailer, based in the city of Chalon-sur-Saône in Burgundy, was one of the only establishments in the area, and quickly attracted a clientele that spanned a very significant portion of the region, from Dijon to Lyon.⁴⁵ Here, we find the same processes with regards to publishing and showcasing the published games within the store as elsewhere, the difference

⁴² R.U.N. Informatique advertisement, *Tilt* n°8, November-December 1983, p. 46.

⁴³ Letter written by Hervé le Marchand to *Tilt* n°7, September-October 1983, p. 114.

⁴⁴ No Man’s Land advertisement, *Tilt* n°9, January-February 1984, p. 105.

⁴⁵ Interview with Bertrand Brocard, May 18, 2012.

being that as the only store of consequence in the region, Micros et Robots attracted many potential developers through word of mouth. The mechanism was simple: local hobbyists were published by the company, their games were showcased in the store, they invited their friends to see the display, said friends proposed their own games and told others about the company, and so on. At this stage, it is not known whether other such regional scenes developed elsewhere in France; more research on the subject would be required.⁴⁶

2° The case of Ellix

The case of Ellix is particularly interesting to study, as it seems the most noteworthy and founding phenomenon of the time.

Ellix was a microcomputer store located near Gare de Lyon in Paris, of which Laurant Weill was a co-manager.⁴⁷ In 1982, the store focused its strategy on Commodore machines, and launched publishing activities around them.⁴⁸ In January of 1983, Ellix became the first to import the Oric in France, followed shortly after by JCS Composants,⁴⁹ and the distributor ASN Diffusion. Ellix nevertheless managed to become a place of reference, specialized mainly in the Oric, in the first half of 1983: the store intensified its publishing activity, thus taking advantage of its aura of exclusivity in the field, and around the machine. However, in the summer of 1983, while Ellix's publishing activity was ever increasing, ASN Diffusion was granted exclusive rights to the Oric.

Around Ellix, large numbers of hobbyists interested in the Oric met, exchanged, and above all, programmed. A true community of developers appeared at the time, the importance of which is all the more notable since its members went on to work in the French video game industry during the 1980s and 1990s. This was the case for Carlo Perconti, who would later

⁴⁶ I am using the term "regional scene" in a strictly geographic sense - studies in art history would be necessary to determine whether the expression could have value from an aesthetic perspective - , and in the sense that a certain video game school could have developed in Chalon.

⁴⁷ I was unable to find out who the other co-manager was.

⁴⁸ Ellix advertisement, *L'ordinateur individuel* n°36, April 1982, p. 107.

⁴⁹ JCS Composants was one of the first Parisian stores to market microcomputers in 1978: located in the eighth and later in the fifteenth boroughs, the store imported into France a version of the Apple II, the CAB 64, in the late 1970s, as well as the Nascom 2, starting in 1980, and the Oric 1 in 1983.

develop *Jeep* and *Hubert* for Loriciels; this was also the case for the brothers Hervé and Éric Caen, who would found the Titus publishing company in 1985.⁵⁰

In the fall of 1983, given the sharp increase in publishing activity, Laurant Weill decided to leave Ellix to create a full-fledged publishing company, where he was followed by many of these developers, as well as others like Pierre Faure: Loriciels. This was a very important event for the nascent French video game industry, and not only because Loriciels was one of the main French video game publishers in the 1980s. Indeed, recalling with hindsight his decision, Laurant Weill spoke of the necessity that emerged at the time to separate the two activities, that is, to separate what were increasingly perceived as two distinct trades.⁵¹ With these words, Laurant Weill summed up one of the main transformations of the French industry during the 1980s, that is, how publishing and distributing gradually became two distinct activities, and separate companies were established, while a new trade was learned, that of publisher.

Conclusion

When measured against the history of video games in France, the distributor-publisher phenomenon seems no more than an epiphenomenon, a short-lived event. Nevertheless, the companies that were developed at the time were confronted with the majority of the issues that the industry would deal with during the 1980s (place of the author, dealings with manufacturers and importers), and more importantly, they helped shape the industry, because thanks to them, individuals learned the publisher's trade, authors were trained and recognized, and groups of developers were formed.

The phenomenon's importance must not however be overestimated. We must consider the various models that appeared at the time. For example, Infogrames, the other important publisher in the 1980s along with Loriciels, was established on the sidelines of distribution networks. Furthermore, this paper focused on the published and commercialized production, the one that was part of "the economy". In addition to this, many games, many creations

⁵⁰ Interview with Laurant Weill, October 22, 2012.

⁵¹ « Exporter ou mourir ! », *Hebdogiciel* n°59, November 30, 1984, p. 8.

remain in the shadows, waiting to be uncovered by further research, further building blocks added to the history of video games in France.

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Return in Play:

**The Emergence of Retrogaming in Finnish Computer Hobbyist and Game
Magazines from the 1980s to the 2000s**

Jaakko Suominen, Markku Reunanen, Sami Remes

Abstract

This article deals with the emergence of the retrogaming phenomenon in Finland starting from the 1980s. On the one hand, retrogaming can be considered as the practice of playing and collecting aging hardware and games, and on the other hand, it refers to a wider cultural phenomenon comprising, for example, commercial products, artistic activities, research, museums and online discussions. Using major Finnish computer hobbyist and game magazines as our primary source material, we trace the origins of game-related nostalgia, historicization, and retro hobbyism. We argue that the last thirty years can be divided into three periods: initial game nostalgia and historicization, the emergence of retrogaming, and the mainstream commodification of retro. The influential role of prominent journalists in the historicization of video games and general spreading of retro awareness is evident in the developments, as well as the perceived generation gaps between older and younger hobbyists. Based on the findings, retro and nostalgia appear as moving targets, when machines, games and characters go through a life cycle from their prime time to oblivion and, eventually, comeback and canonization into shared cultural icons.

Keywords

Retro, nostalgia, video games, computer games, local histories of computing

1. Introduction

How did the playing of video games evolve from a new media cultural form into something that also looks into the past? Over the past two decades, we have seen a shift where various practices of digital gaming nostalgia and retrogaming have emerged. During the last decade, retrogaming has been recognized as one general tendency of digital gaming among other trends, such as online, mobile, and casual gaming (Newman 2004; Whalen & Taylor 2008; Heinonen & Reunanen 2009. For the popular cultural retro phenomenon in general, see Guffey 2006; Reynolds 2011).

Retrogaming refers, on the one hand, to the practice of playing and collecting original (“classic”) video and computer games of the 1970s, 1980s, and early 1990s, or using, for instance, emulators for playing them. On the other hand, retrogaming can be defined as a more general cultural form; it consists not only of gaming as practices or the artifacts primarily used for it (games and game devices) but, in a wider perspective, of other activities, such as the production of a broad range of consumer products, textiles, accessories, game related music videos, literature as well as various artistic, museum and academic practices, and the online circulation of game-oriented information and discussion (Suominen 2008). Hence, retrogaming does not only entail players’ or consumers’ point of view, but it is also a question of the following aspects: aesthetic expression, experiential arts and research, institutional game preservation, discourse of taste, and a cultural industry driven by game companies, and byproduct manufacturers. It includes special circles, such as the relatively marginal enthusiast subculture of hardcore retro gamers, but also various forms of more casual and occasional “flirt” with old video games, like consumer products in easily accessible non-original packages and forms, which are not necessarily nostalgic, but merely fashionable and curious retro (Suominen 2012).

One – obviously not the only – explanatory framework for retrogaming arises from the (academic) debates on the term nostalgia. Jaakko Suominen has previously argued that retrogaming is a practice that gives forms to gaming related nostalgia. Gaming nostalgia can be defined as an explicated, more or less reflective yearning for older game products, as well as a yearning for earlier experienced gaming situations (Suominen 2008. See also Suominen & Ala-Luopa 2012; Garda 2013). Nostalgic experiences are typically combinations of private

and shared emotions (cf. Whalen & Taylor 2008, 2). Sociologist Fred Davis (1979) makes a distinction between private and collective forms of nostalgia. The separation can be applied to games, too: iconic symbols, such as the Super Mario game figure, can bring similar nostalgic feelings to millions of people even though playing Mario and its recollection have, in many cases, private, individual, and unique features. In this case, a shared cultural object acts as the trigger for nostalgic experiences, even though the primary target for the nostalgia can be something else than an actual game.

Steven Reynolds defines in his book *Retromania* four characteristics of retro: it is always about a relatively immediate past, “stuff” that happened in your living memory; it involves an element of exact recall; it usually relates to popular culture; it does not typically sentimentalize the past, but seeks amusement and charm from it with irony and eclecticism (Reynolds 2011, xxx–xxxi. See also Guffey 2006, 9–28). The characteristics can be equally applied to retrogaming, which might consist of some sentimentalism, but is mostly about the fascination and charm of relatively recent artifacts and phenomena of different game cultures, circulated as original devices, games and their remakes, replicas, byproducts, websites, and YouTube videos. Elisabeth E. Guffey (2006, 10) argues that retro is connected to technological obsolescence, and lists retro gaming as an example of an entire subculture which is “devoted to outmoded technological apparatuses”. Furthermore, retro does not always require a first-hand personal relationship with an object, as nostalgia can also be inherited or adopted (on inherited cross-generational nostalgia, see Davis 1979, 61–62).

But how and when exactly did these retro game and nostalgia related practices and discourses emerge, and how have they evolved since? Has there been a major turn at the beginning of the third millennium? For example, Finnish historian Petri Saarikoski (2001, 234) has argued that gaming nostalgia began after the first news about the “death of” the Commodore 64, and other 8-bit computers, such as the Sinclair Spectrum, Spectravideo 328, and Amstrad CPC in the late 1980s. Indeed, speculation on the purported deaths of home computers and gaming devices was very typical for magazines. Our aim in this paper is to find more evidence on those early forms of gaming nostalgia.

We argue that video game and computer hobbyist magazines have played a major role, not only in introducing new forms of gaming and cultural practices (Kirkpatrick, forthcoming), but also in defining the forms of retrogaming, yearning for old items, and, in general, the ways as to how to handle and represent the history of video games (see also Suominen 2011). Hence, this paper traces the emergence of gaming nostalgia and retrogaming discourses by using, in particular, major Finnish computer hobbyist and game magazines, and yearbooks as the primary sources: most notably *MikroBitti* (1984–) (abbreviated here *MB*), *Printti* (1984–1987), *C-lehti* [Commodore Magazine] (1987–1991) (*C*), *Tietokonepelien vuosikirja* [Yearbook of Computer games] (1987–1991) (*TPVK*), and *Pelit* [Games] (1992–) magazines. We have systematically read every available printed issue of the publications, and collected a database of 480 stories and extracts related to retrogaming or game historical awareness in general. *MikroBitti* and *Pelit* have been published monthly, *C-lehti* six times a year, *Printti* twice a month, and *Tietokonepelien vuosikirja* once or twice a year.

The wide circulation of computer hobbyist and game magazines, including subscriptions, has been one defining characteristic of the Finnish game culture. For instance, *MikroBitti*'s circulation in 1985 was 44,780, and peaked in 2006 with 102,970 copies. In 1992 the *Pelit* magazine sold over 15,400 copies, 1996 over 30,000 copies, and 2002 40,000 copies. (Suominen 2011, 4; Saarikoski 2012, 23. To compare to the British situation, see Kirkpatrick, forthcoming, 3.) Other characteristic features have been the relative absence of arcade and console gaming, and the dominance of the Commodore 64 in the 1980s. In 1986–1987 the C-64 had an estimated 66–75 % market share among home computers in Finland, but there is no exact data on the total amount of individual machines sold. According to computer magazines, there were about 150,000 C-64s in the late 1980s. (Saarikoski 2004, 103–105; Saarikoski & Suominen 2009.) All of the above-mentioned factors have significantly shaped the local retrogaming phenomenon.

We seek answers to the following questions: In what kind of forms have retrogaming and gaming nostalgia been represented in these magazines? What has been the role of particular authors in the historicization processes of digital game cultures? Have there been differences in how to nostalgize games and how to define games as retro (on differences in nostalgia, see e.g. Davis 1979; Boym 2001)? Our preliminary assumption is that there are at least three

different phases or layers in the emergence of retrogaming: 1) articulation of game nostalgia, 2) recognizing and naming of the retrogaming phenomenon, and 3) its eventual commodification.

The paper consists of three main sections: the first discusses the nostalgization and historicization of video gaming in Finland in the late 1980s and the early 1990s. The next section focuses on the early retrogaming wave in 1997–1999. The third main section before the conclusion deals with the question of retrogaming becoming a cross-over phenomenon in the 2000s.

2. Nostalgization and Historicization of Video Gaming

“Commodore 64 was my first micro computer. Purchasing it has shaped my life more than any other decision I have made. However, I have had to leave Commodore computers behind and start a new life. Therefore, this is my last Commodore Inner Circle column.” (*MB* 1988/04, 42–43.)

Those were the words of Risto Siilasmaa, a contributor to the Finnish computer hobbyist magazine *MikroBitti* in April 1988, when he ended his career as a columnist. In the column, Siilasmaa recollected his first experiences with computers, and the collaboration with *MikroBitti* since 1985. Later on, Siilasmaa became the founder and CEO of the F-Secure (former Data Fellows) company, and even the chairman of Nokia's Board of Directors (from 2012 onwards). His writing from 1988 is an early example of computer and videogame related nostalgia that started to emerge in the late 1980s.

In most cases, nostalgia was not explicitly – or at least widely – articulated before the 1990s, but there are first hints of it in the Finnish computer magazines. At first, nostalgic undertones were usually directed towards early arcade games, even though Finnish gamers did not have a significant amount of experiences with them, as the Finnish digital game culture had mostly formed around home computers, such as the Commodore 64, and their games. Journalists and contributors of magazines were able to use clichés, such as “good old days” or “the golden age”, when mentioning games, such as *Pac-Man*, *Space Invaders* and *Asteroids*, and their own childhood memories of playing those games at, for example, the Linnanmäki amusement

park in Helsinki five to ten years earlier (see e.g. *MB* 1993/03, 89; *MB* 1989/11, 10–12; *C* 1988/01, 52–53). In this sense, Finnish journalists were loosely connected to the international discourse where the pre-crash period of video games (ca. 1970–1984) was regarded as a sort of “Golden Era” or “Golden Age” of videogaming (Kent 2001, 123–177; Payne 2008, 52; Eddy 2012; see also Wolf 2012).

Journalists often referred to those games with the word “classic”, which was also the term used for describing a new game that the reviewers considered exceptionally good and revolutionary. A “classic” game was not necessarily old, but somehow ageless and, even though there is a slight difference between claiming a particular game to be a classic and talking about “classic games” or “game classics”, using the term was a way to lift a game onto a pedestal and give special recognition to it (e.g. *Printti* 1985/02, 8: “Zork – A Classic of Its Time”). Frans Mäyrä (2008, 55) has defined game classics as titles which “can be considered representative, influential and popular during their period/or later” (see also Swalwell, forthcoming). Later on, a “classic game” has been used as a synonym for retro games, simply referring to old videogames which one still wants to play (Suominen 2013, 28).

According to Petri Saarikoski (2004, 247–253), defining some digital games as classics was an example of how game reviewers adopted practices from cinema and literature critics. Likewise, they could rhetorically ask the readers questions in the lines of “who still remembers” certain old games (e.g. *C* 1989/01, 6–7 [“We have waited for Elite on the Amiga for a couple of years [...] but who remembers how to play Elite?”]; *MB* 1994/03, 94; *MB* 1994/08, 33–34), which was a way of strengthening the feeling of belonging to a specific community sharing similar experiences and gaming histories, and also distancing themselves from younger gamer generations and certain contemporary game cultures. This double distinction was a key element in the process where an experience became nostalgic (cf. Whalen & Taylor 2008, 6). Historically oriented articles taught younger generations that there had been digital gaming already before. For older generations, such articles served as triggers and tools for reworking their collective and personal reminiscence. Furthermore, the articles generally deepened readers’ gaming literacy. (e.g. *Printti* 1987/issues 13–17; *TPVK* 1988, 25; *TPVK* 1989/02, 33–37; *TPVK* 1990/02, 21–25; *C* 1988/01, 52–53: [“I first saw a

racing game years ago in my youth. [...] By feeding it Marks [Finnish currency] you could turn the wheel and press the gas pedal. There were simple white columns on the screen depicting the street.”]; *C* 1989/05, 29–31; *Pelit* 1995/09, 61.)

“Classic” was a term that also game companies adopted for marketing the re-releases, remakes, and conversions of their earlier products. One of the earliest examples of this sort of usage and its coverage in the Finnish computer hobbyist press took place in November 1988 when Niko Nirvi reviewed *Arcade Classics*, a compilation of four arcade games, *Space Invaders*, *Asteroids*, *Gravity Wars* and *Snakes*, which were converted to the Commodore 64. The reviewers of such compilations typically complained that the compilations comprised one or two hits, accompanied with several bulk products – not all the re-releases were hits or classics at all. Old games were compared to the latest developments of the field, too:

“Current games are more developed than what one might believe. [...] *Arcade Classics* gives an opportunity to peek into that lost time. It contains four really old games [...]. Every game of *Arcade Classics* has nostalgic appeal and, to my surprise, also some kind of joy of play. The only true minus is that *Gravity Wars* and *Snakes* do not give much joy to a lone gamer. Worth the buy, if the prehistory of games is dim for you.” (*MB* 11/1988, 74.)

Complaints about the quality of the collections have often been repeated in game reviews and books (e.g. *MB* 1993/12, 62–63; *MB* 1994/09, 34). Writers might accuse publishers, not only of the selection of games, but also of the poor quality of the technical implementation. At their worst, such conversions are not faithful replicas or emulations, but merely referential simulations and pastiches of originals. (Herz 1997, 74; Payne 2008.) From a technical point of view, the mismatch between arcade and consumer hardware made exact conversions often difficult or even impossible (cf. Montfort & Bogost 2009, 65–79; S.T.A.R. 2012; Heikkinen & Reunanen 2013).

It seems that older games, such as *Pac-Man*, were mostly published as revisions, updated versions with better graphics or new features; authenticity was not a main concern, but merely a way to underline the familiarity and playability (e.g. *Printti* 1985/03, 10; *MB*

1988/08, 16–17; *MB* 1988/12, 81–82: [“Many who have just sold their C-64 have taken the rumors about an emulator as a gift from the gods, as there are thousands of titles that will never be published for the Amiga”]; *MB* 1990/01, 49; *MB* 1993/09, 64; *MB* 1996/11, 89). One distinctive feature of a “game classic” is its ability to act as an influential platform for, on the one hand, faithful remakes, and on the other hand, more or less successful copies, often called “games clones” (cf. Suominen 2013, 28).

The emergence and popularization of 16-bit computers, mainly the Commodore Amiga and Atari ST, in the second half of the 1980s, brought up the question regarding what to do with old computers and their substantial software catalogues. The Finnish computer hobbyist press closely observed the development of software and hardware emulators for these computers. Even though one decade later emulators had an important role in the retrogaming scene, in the late 1980s and the early 1990s they were merely considered as an interesting, but not usually a particularly well-functioning means of improving the narrow software selection of the 16 bit-computers. A need for such emulators was articulated without nostalgic undertones. It was rather a matter of practicality, more commonly realized in the context of printers: new printers had to emulate the functions of some existing, popular ones to ensure the compatibility of the products. (*MB* 1988/02, 20–21; *MB* 1988/04, 16–17; *MB* 1988/04, 7; *MB* 1992/02, 24–26; *C* 1991/06, 28–29.) Likewise, modems typically emulated the Hayes command set. However, as soon as they became technically feasible, computer emulators were considered one way to transfer games from a platform to another, providing possibilities for nostalgic experiences. One of the earliest references to emulators and nostalgia can be found in *Pelit* (1993/08, 65) in the Letters to the Editor column.

At the end of the 1980s – the early 1990s at the latest – game journalism started to construct a historical awareness of digital games. Lengthy articles on the history of individual games, game series, or genres started to appear in game magazines (see e.g. *Printti*’s article series of videogame history in issues 14–18 in 1987), as well as in the *Yearbook of Computer Games*. The history of digital gaming was chiefly represented as a logical progress, and most stories did not feature recollections of individuals’ gaming memories (cf. Therrien 2012). There were some exceptions, however. For example in 1990, Jori Olkkonen, a game musician and

an assistant editor, proclaimed the Commodore 64 as a legend. He encouraged readers to return to the old:

“The Commodore 64 is the very computer that most people have bought as their first microcomputer. During the years, a huge amount of games has been created for it, the total can be counted in tens of thousands. Before the invasion of the 16-bit computers the Sixtyfour was the best gaming machine. Dig up that old machine of yours and enjoy really nice games!” (*TPVK* 1990/02, 24–25.)

Thus, in the early 1990s there appeared some signs of pioneering journalists starting to compare new games to old ones and, at times, favoring the old. In their opinion, older games had original ideas and high playability, although their graphics and sound were poor compared to new games. (*MB* 7/1992, 30; *Pelit* 1995/09, 61; Saarikoski 2004, 254–255. Cf. *Pelit* 1992/05, 61.) Obviously, this kind of opinions, shared not only by the journalists but a substantial number of players, showed that there was a market, for example, for redistributing games as “classic game compilations”, and other commodities (Whalen & Taylor 2008, 7).

The nostalgization by journalists, consisting in many cases of humoristic and self-ironic phrases, reflected the notion that there was a new, younger gamer generation growing. The next generation had not personally experienced old games or devices, such as home computers and consoles, whose advancements were also typically presented as different generations. Another way to look at the nostalgization is to consider how it underpinned the status of the pioneers, who were in a position where they could largely define both the discourse, and the history of the gaming culture.

More signs of nostalgization, focusing on not only old arcade or video games, but also 8-bit computer games, appeared repeatedly in the mid-1990s. The discussion was in part connected to a few re-releases and compilations, but mostly to the circulation of freeware and shareware remakes of old games on bulletin board systems (BBS) and the Internet. The *MikroBitti* and *Pelit* magazines started to review these games, and distribute them through their own BBSs among other digital games. For a beginner game developer, it was in many cases easier to start with remaking or improving an old game classic than with a unique fresh idea. We can

thus argue that creating remakes was not primarily a question of nostalgia, or particularly historically aware practice, but a way to learn game development, and probably also get wider circulation for one's amateur experiments and productions. Enthusiast programmers were like art students practicing their skills by copying old masterpieces with a reverse engineering mindset. Such development started already during the previous decade, and, for example, the Finnish game developer pioneer Stavros Fasoulas, who became famous a few years later, published his VIC-20 version of *Pac-Man* as a program listing in the first issue of the *MikroBitti* hobbyist magazine 1/1984 (*MB* 1/1984, 70). Game reviewers typically contextualized the hobbyist works and remakes by referring to their paragons, which was a common style in game reviews in general (Suominen 2011).

Hobbyist developers commonly neglected copyright issues that would not have been in their favour in any case. Questions about intellectual properties – not only concerning game ideas but game copying – were brought up in almost every later article introducing the use of emulators for gaming (e.g. *MB* 1998/11, 114–116: “Heaven of old coin-op games opens to them who navigates to the pages hallowed to the free MAME emulator [...] There is only two obstacles in the fast track to happiness: copyright law and Bill Gates.”). One reason for that was magazines' relatively low tolerance towards software piracy, heavily debated in articles as well as in letters to the editor (Saarikoski 2004, 319–337).

Generally speaking, it seems that in the mid-1990s, the first video game generations had reached a suitable age for nostalgia. Enough time had passed from the early use of game classics, and there had been a rupture between old and new, which is typically needed for the emergence of nostalgia. The popularization of the Internet had a major role in the emergence of digital game nostalgia. The Internet acted as a catalyst, bringing together a critical mass of digital game nostalgists and providing a flexible space for the cultivation of digital game history culture and heritage. Several scholars have emphasized the role of Internet as the dominant memory machine enabling various forms of recollection related to a number of different media and technologies (Heinonen & Reunanen 2009; Suominen 2013. On the Internet as a memory machine in general, see e.g. Straw 2007; van Dijck 2007).

Similar developments were underway in other countries, too. For example, in the UK *Edge* had introduced its “Retroview” column in 1994, and the *Zzap!64* magazine had its “Retrospective View” in the “Zzapback” column at least as early as 1987, although its idea was not nostalgization, but to evaluate whether the games reviewed had maintained their value. *Edge*, however, fastened on nostalgia already from the first column describing *Stunt Car Racer*. (*Edge* issue 11, August 1998, 79; *Zzap!64* issue 29, September 1987, 110.) In the big picture, during the 1990s, or even before, retro had become a known concept in the popular culture – typically in fashion and popular music (e.g. *HS* 27.1.1990; *HS* 28.1.1995; *IS* 2.1.1995). Pop and rock music had already seen various revivalist subcultures before that, but in the 1990s the latest, retro became a cross-over phenomenon (Reynolds 2011).

3. The First Wave of Retrogaming

“A retro gamer (meaning a person who appreciates good old times when games were real games and every idea worth playing) does not have to dig up his old microcomputer remains when missing those real games of the 8-bit era. [...] There is a vast selection of games resembling the real deal, ranging from rough pixel graphics and beep sounds to beautiful modern re-creations, even improved ones. Are you old enough, did you once have a permission to drop coins into arcade games, are there glimpses of happy moments with Pac-Man, Defender, Pong, Space Invaders, Galaxian or Centipede in the remotest corner of your memory? [...] Would you like to dive into the past? Refresh old experiences, or check what was played during the last decade? The MBnet online environment offers you a round!” (*MB* 1997/03, 76–77)

So far, the earliest reference to “retrogaming” in the Finnish computer and video game magazines we have found on *MikroBitti* 3/1997. In his text, Jukka O. Kauppinen explained the meaning of a “retro gamer” – the need for an explanation demonstrates that the term was not generally used before that in Finland. The use of the term spread after the first mentions in a year (*MB* 1997/09, 91; *MB* 1998/03, 81; *MB* 1998/04, 25; *MB* 1998/05, 19; *MB* 1998/05, 83; *MB* 1998/05, 100–101; *MB* 1998/06–07, 100; *MB* 1998/11, 114–116). The *Pelit* magazine, adopted it after *MikroBitti* (e.g. *Pelit* 1997/05, 20–24; *Pelit* 1998/08, 55; *Pelit*

1998/09, 70; *Pelit* 1998/11, 77), together with game reviewers in newspapers (*IS* 10.12.1998).

We have not been able to trace Kauppinen's or other writers' actual influences for the use of the term, but most likely Finnish journalists followed the international discourse of the time. In an email interview, Kauppinen told that he had basically read every game related English magazine he got into his hands in Finland, mentioning the following: *Computer & Video Games*, *Computer Games*, *Computer Gaming World*, *The One*, *Amiga Action*, *ACE*, *Amiga Format*, and *PC Format* (Kauppinen 29.4.2014). As we noted above, some foreign magazines had already introduced retro-related terminology years before. Kauppinen suspects that he adopted the term from British game magazines, because at that point they began to increasingly nostalgize, in particular, Sinclair Spectrum games, and grown up Spectrum, Commodore 64 and Amstrad CPC users started to create remakes of the 1980s 8-bit games (Kauppinen 29.4.2014).

J. C. Herz (1997, 63) wrote in her famous book on videogame history, *Joystick Nation*, about a shift from "wildly popular to wildly retro", which had been a process that started in the USA "early in the Reagan administration and [...] achieved critical mass" during the time of her book's publication in 1997. Even though the history of the video and computer game culture in Finland is different to the USA, it appears that the critical mass of players interested in retro was achieved also in Finland during the same period, as reflected by the game magazines. Herz underlines one own's personal emotional experiences and deep engagement as reasons for what she calls "video game retromania" (Herz 1997, 65, 79. Cf. Reynolds 2011, who considers retrogaming as one aspect of the general retro phenomenon).

The Internet became an essential platform for retro game related communities who organized online game archives, "museums", collections, conventions, publications and so forth. Petri Saarikoski (2001, 234) claims that basically there was no total rupture, for example, between the old and new uses for the Commodore 64 computers, because in the demoscene community, the Commodore 64 had constantly maintained its position as a sort of cult machine (cf. Reunanen 2010, 81–83). However, the Commodore 64 had vanished from the mainstream, and we may well argue that not everybody shared the notion of the cult status:

either they had not been among the Commodore users (too young or used something else), or, although they had been Commodore 64 users, they wanted to move on and distance themselves from it (cf. Lindsay 2003).

Perhaps the continuing existence of the C-64 in certain hobbyist circles was a reason why the retrogaming boom in the late 1990s was, at least internationally, focused on arcade and console video games. There were special sites for the Commodore and other home computers and their software as well, but they received more attention a few years later (see e.g. the *Commodore Ring*, established in 1996, <https://web.archive.org/web/20000302092125/http://www.ncf.carleton.ca/~ag090/cbmring.htm>). One influential factor was the increasing popularity of retro game music, so-called SID music (in the case of the C-64) or chipmusic, produced with original hardware or using hardware and software emulators and extensions for, for example, PC computers (see also Saarikoski 2004, 256–257; Dittbrenner 2007; Carlsson 2010; Polymeropoulou 2014). Another factor that separates computer and video games of the 1980s and early 1990s is branding: home computers did not have as iconic mascots as Nintendo with their Mario, or Sega with their Sonic. Such recognizable characters provide a fertile ground for nostalgization as can be seen, for example, in countless byproducts and fan art. Within computer game cultures, it was rather the early computers themselves that became the strongest cultural icons.

Years 1997 and 1998 meant a turning point, but not just because the Finnish launch of the retrogame/retrogamer term. It appears that during that time the focus turned to increasingly original or genuine gaming experience instead of the simulation, cloning and copying of old game ideas – even though all of them still continued to exist. Technologically, the turn was linked to the popularization of the Internet, as well as the introduction of new, more efficient computers that enabled better software emulation of old devices. *CCS64*, developed for the PC compatibles by Per Håkan Sundell in 1995, is one of the earliest examples of how emulation was gradually becoming a viable solution for running old home computer software (<http://www.ccs64.com/>).

Likewise, Finnish magazines introduced emulators in the context of nostalgization and retrogaming, which differed from the earlier articles on emulation (*MB* 1997/01, 80–84; *MB* 1997/04, 106–107). They also described, shortly after their launch, projects such as *MAME* (Multiple Arcade Machine Emulator), which was portrayed in *MikroBitti* as a sweet opener of the coin-op heaven, as well as an “apparent source of retro-orgies” (*MB* 1998/11, 114–116). On *MAME*, see also *Pelit* 1997/05, 20–22; *Pelit* 1998/11, 77), and visited the then-recently opened Computer Game Museum in Berlin (*MB* 1998/05, 103).

In addition, *MikroBitti* introduced its “12 years ago” column, which republished old game reviews. The first reintroduced game was *Ghostbusters* (1984). (*MB* 1997/02, 86.) Likewise, the *Pelit* magazine established its “5 years ago” column; such articles were a sign of a new era for both game historicization and journalism (*Pelit* 1997/03, 13). Most likely, the introduction of the columns was connected to the rivalry between the journals. Their role models can be found in similar foreign columns, as well as the “50 years ago” or “100 years ago” format common in regular newspapers.

Journalists continued to use terms, such as “classics” and “legends”, and they still toned their articles with more or less self-ironical or diminutive statements including words and phrases in the lines of “Cretaceous period of gaming/computing” (*MB* 1997/01, 80–84; *MB* 1997/04, 106–107), “evergreens” (*MB* 1998/04, 88), “prehistory” (*Pelit* 1995/02, 59; *Pelit* 1997/05, 20–22), “moss-bearded” (*Pelit* 1995/08, 24–25; *MB* 1998/05, 100–101; *MB* 1998/06–07, 100), “old geezer”, “micro veterans” (*Pelit* 1995/06), and “resurrected” (*Pelit* 1997/05, 65; *MB* 1993/12, 62–63; *MB* 1999/08, 104; *MB* 1999/09, 109). Humor was, in general, a way of increasing the effectiveness of game journalism; in the big picture, ironical self-awareness has been recognized as one common feature of retro (e.g. Guffey 2006, 163).

In addition, all of the above-mentioned terms serve as examples of a history discourse which constructed the idea of a gamer community with some kind of generation gap inside it. It is also easy to note how the recollections were largely gendered: practically every game journalist was male, and they used wording that referred to purportedly manly qualities of game nostalgia. The reminiscing community consisted of mainly men, although there were female players and magazine readers (cf. Jenkins 1998; Nordli 2001; Saarikoski 2004, 167–

186; Saarikoski 2012). Likewise, according to a recent Finnish survey, it still seems that collecting games and devices is a male-dominant hobby (Naskali & Silvast 2014, 62).

Previous history oriented studies have, at least implicitly, emphasized the importance of the *MAME* project, as well as hobbyist community based practices in game preservation, archiving, curating and replaying. Matthew Thomas Payne (2008, 56–57) even argues that *MAME* versions (related projects and communities) “lead to a kind of Classic Ludological Reformation, giving previously atomistic consumers the technological means to become community participants in developing their own emergent historical narrative and collective identity” (see also Whalen & Taylor 2008, 7–8). James Newman (2012, 26–31) is more critical in his tone, and argues that the systematic preservation of game related digital cultural heritage cannot be left to enthusiasts alone. Saarikoski (2001, 235–237) underlines the importance of cross-linked websites, forming so-called rings (e.g. the *Commodore Ring*) focused on nostalgia and retrogaming. It appears that some scholars practically reinvent nostalgia: if the Golden Era of video gaming took place before 1984, then perhaps the late 1990s were the Golden Era of retrogaming. Nowadays, retrogaming, in its commercialized and commodified ready-made form is, ironically put, not what it used to be (Signoret 1975; Davis 1979, 117). The related nostalgia is not restorative but merely reflective – or it is only of the armchair kind: “nostalgia without lived experience or collective historical memory” (Boym 2001, 38 citing Appadurai 1996, 78. On restorative and reflective forms of game nostalgia, see Garda 2013). Eventually, retrogaming started coming out of its player community closet and turning into more fashionable retro, less about gaming. The transformation took place largely at the beginning of the third millennium.

All in all, the first substantial retrogaming boom of the late 1990s was a hobbyist driven phenomenon, even though some game publishers tried to benefit of it, for example, by re-releasing and remaking their games. Commercial interest followed quite quickly behind the enthusiasts’ emerging interest, and the introduction of retrogaming related phenomena. The remaking of games was still popular amongst game hobbyists, although some of them started to focus on emulation. We may perceive emerging institutionalization of game-related cultural heritage practices, as emulator projects, museums, and collections received some attention. The academic world and memory institutions, such as public museums, libraries

and archives did not yet notice digital games (with a few exceptions), but on the other hand, hobbyist communities somewhat mimicked memory institutional discourses and practices, for example, when calling web sites as “museums” or “archives”. In Finland, the *Finnish Game Automata Society* (Suomen Peliautomaattihistoriallinen Seura, SPEL) was founded in Spring 1998, and *Pelikonepeijoonit* – The Arctic Computer & Console Museum, based on the collections of three private collectors, started in 1999 (Heinonen & Reunanen 2009). Already before the founding of such organizations, there had been individual collectors.

Based on these observations, we argue that the concept “retrogaming” became commonplace within the game hobbyist culture during 1998–1999 the latest, because of the influence of game magazines and websites. After that, it took a couple of years more before it diffused to the mainstream.

4. From Subculture to Crossover

During the last ten years retrogaming has transformed from a subcultural and marginal phenomenon to a crossover mainstream subject. The process can be perceived through the institutionalization and commodification, that have raised some controversies and debates amongst hobbyists and professionals. Steven Poole, a British journalist, and the author of the *Trigger Happy* book, claimed in November 2002 that “retrogaming” made him sick due to several reasons:

“First, the actual word ‘retrogaming’. What’s that about? I can read a novel by Joseph Conrad published 100 years ago, or a Len Deighton thriller from the 1980s, and I won’t be accused of ‘retroreading’. I’m not ‘retrolistening’ if I stick on some Bach or Frank Sinatra or Van Halen. [...] And in social terms, the tragedy of retrogaming having become a ‘scene’ is that it has attracted the attention of that most annoying of lifeforms, the Shoreditch Twat, the kind of idiotically trendy denizen of the fringes of the City of London who will wear an Atari T-shirt for its ‘cool’ value but knows nothing about gaming beyond FIFA and Lara Croft.” (Poole 2002.)

Poole criticized the inability to separate classic games from trash. The notion referred to a situation where retrogaming did not necessary refer to a person’s return to their own earlier

experience. Retrogaming started to become a fashion, which was seen in many forms of popular culture, including 8-bit graphics and game-inspired music videos, clothes and accessories (Suominen 2008). Retro games were commodified and re-packaged by game companies into new forms that widened, but at the same time continued the tradition of game collections, when they incorporated pieces of the past that could largely be considered as bulk. In this respect, companies also redefined the past by selecting releases that were of questionable importance in their original context.

Stephen Brown (2001, 6–9) has distinguished three major categories of retro manifestations. He calls them *Repro*, *Repro Nova*, and *Repro de Luxe*. *Repro* refers to the copying of a product closely as it was, even though its meanings might have changed. *Repro Nova* is a product combining old and new, typically enhancing old with new technologies or styling new with old. *Repro de Luxe* is sort of second order product, neo-nostalgia: it recycles a product which has been nostalgic to begin with. For example, an emulated or converted game, or the re-release of an old game review is an example of *Repro*. In contrast, a totally transformed version of an old game, like *Tomb Raider Anniversary* (reviewed in *MB* 2007/08, 91), or a newly annotated, republished game review are *Repro Nova*. So far, we have not seen that many examples of *Repro de Luxe* products in this context, even though, for example, licensed games might have had nostalgic meanings to those who were already familiar with the original product.

Aside the mainstream retro, which tended to focus on *Repro Nova*, there were other, marginal user groups that focused on collecting original devices and games, circulating information and creating emulators. *MikroBitti*, for example, regularly published introductions and reviews of fan-made sequels and remakes of classic games, which appeared to become a trend in 2003–2006 (*MB* 2003/06-07, 122; *MB* 2004/03, 113; *MB* 2005/06, 112; *MB* 2005/07, 113; *MB* 2005/10, 116; *MB* 2006/01, 114; *MB* 2006/02, 114). Journalists usually referred to the original games with the term “classic” without using the word retro.

Finnish computer and game magazines reported about marginal, as well as more commercialized and mainstream forms of retrogaming. It seems that “retro” started to refer to a general trend while “classic” referred to individual games. In the context of retro,

journalists reported about new commodities, such as game t-shirts (*MB* 2001/04, 99), a handheld Commodore 64 emulator (*MB* 2003/04, 25), as well as about easy to use plug-and-play retro game products:

“Fall off your chair, retroman. Atari Classics 10-in-1 joystick provides 10 nostalgic games from the 1980s, and does not require anything else than batteries and a television to work. Why would you need a console when a sole controller is enough? A company called TV Games has come up with the idea of packing classic Atari 2600 games into something that looks like a traditional VCS joystick. [...] Real legends and some less known stuff have been selected for the stick. [...] We heartily recommend this, mostly to the older gamer generation. It is pointless to offer this to the Playstation generation, except as a joke.” (*MB* 2004/04, 100. See also *Pelit* 2003/09, 85.)

They noted the role of Nintendo Wii’s *Virtual Console* in the circulation of old games, and also referred to other consoles’ similar platforms (*MB* 2004/03, 128; *MB* 2004/04, 100; *MB* 2007/01, 98–101; *MB* 2007/05, 103–105). The Wii with its Virtual Console was called the “all time retro game machine” (*Pelit* 2007/01, 31. See also *Pelit* 2007/02, 70). Scholars, too, have recognized JAKKS Pacific’s plug and play devices’ and the *Virtual Console*’s significance in the popularization of retrogaming (Whalen & Taylor 2008, 1–3; Payne 2008, 58–65). Jones and Thiruvathukal (2012, 108) emphasize that the “retro revolution” in the Wii’s case was a “carefully constructed experience” when they discuss how particular old games were selected, re-produced and commercialized.

We argue that later generation game journalists have grown into the reminiscence culture, and adopted the early established ways of representing digital game histories. Recollection had, however, gotten new forms when new consoles, as well as PC computers, became platforms of gaming nostalgia. Not only the 1970s’ and 1980s’ games were missed, but also the 1990s’ ones, and journalists gave hints on how readers should adjust their PC for getting also MS-DOS games to run (e.g. *MB* 2004/04, 86–89; *MB* 2005/11, 84–86).

In other countries some special retro game magazines started to be published, such as *Retro Gamer* in the UK in 2004, and *Retro* in Germany in 2006, but in Finland the market was apparently not big enough, even though online retro magazines such as *Pelikapseli* (Game Capsule) were published for some time (*MB* 2000/11, 113). Instead, Finnish magazines started to follow international examples by publishing retro game columns (*Pelit* magazine, 2003 onwards, also its new rival *Pelaaja* [Gamer], 2002 onwards), supplements (*Pelit* 2010/07; *Pelit* 2010/12), as well as lengthy game history articles. Recollecting became increasingly historically aware and interpretative. For example, *MikroBitti* renewed its “12 years ago” column in 2001, when the magazine started republishing old game reviews, where a journalist (not the original author) assessed the meaning of the game from a contemporary perspective, and typically included some personal recollections of his/her first experiences with the game. The column continued until Autumn 2006, when a reform of the magazine took place, and game content was significantly cut. The last game introduced in the “12 years ago” series was *Superhero League of Hoboken* (1994) (*MB* 2006/09, 91).

In the 2010s, national historicization of digital games has increased in magazines and books, but the Internet has an even bigger role in it than earlier. Blogs, video blogs, discussion forums and online magazines, such as *Dome.fi* and *V2.fi*, have taken the leading role in retro game journalism in Finland, partially due to the structural changes in printed magazines and audience behavior. However, the new *Skrolli* magazine (2013–) focusing on computer hobbyist culture, is targeted to a more marginal group of computer enthusiasts, and has frequently published computer and game historical articles. *Skrolli* has also articulated its nostalgic attitude towards game and computer cultures with the printed format of the publication, although it also comes as a PDF version and has a website.

5. Conclusion: Metamorphoses of Retrogaming and Magazines

Nostalgization, historicization and retro have been articulated in magazines in a number of ways: in commercial and freeware game reviews, product presentations, website introductions, news sections, special history or retro oriented articles, and authors’ personal columns. Especially columns and full-blown game reviews have also contained personal recollections by journalists.

Leading game journalists have had a major role in constructing historical awareness, supported by articles from other frequent contributors. Jukka O. Kauppinen, Niko Nirvi, Jyrki J. J. Kasvi, Jukka Tapanimäki, and Tapio Berschewsky have been among the key figures in Finland. It seems that members of the first game journalist generation have raised both younger readers and journalists to become members of the digital game heritage community. Together the journalists have built a sense of community with the help of history, even though, at the same time, they might have strived to separate themselves from the younger gamer generations. Positively thinking, the awareness spread by the magazines has most likely had a positive long-term effect on the ongoing game preservation efforts.

The assumption we made at the beginning of the paper proved to be valid. It is possible to distinguish three different phases or waves in relation to gaming nostalgia and retro. The mid-1990s were a turning point when the concept of retrogaming was introduced in Finnish game media, and various forms of sharing and circulating information on old videogames emerged, largely due to the popularization of the Internet. However, already before that there existed a rich culture of nostalgizing and recollection of game ephemera.

During the last 15 years the idea of retrogaming has been commercialized, and it has become a common topic in magazines that dedicate special features to it. There are no major differences between magazines in this respect, although they have stressed different things in their publication policies: the ways of nostalgization, historicization and introducing retrogaming have been mostly similar. However, it is possible to observe the partial tension which has emerged between the concepts “retro game” and “classic game”. A retro game can be almost anything old and exciting that is approached with a more or less ironical attitude, whereas a classic is a timeless quality product. This tension should be studied more closely in the future.

Quite obviously, the target of retro-oriented game nostalgia has shifted over time. Even though the early digital games from the 1970s and 1980s are still part of it, there is a constant flux towards newer products becoming retro. In addition, it is possible to follow the life cycles of individual iconic objects of computer and game cultures, such as the Commodore 64 – how it became popular, how its death was expected, how it was forgotten, neglected,

missed, and then remembered again. In other words: how they act as an anchor in nostalgizing, and a reference point for reminiscence.

We have shown that computer hobbyist and game magazines constitute a functional and rich set of source material that provides for historical analyses on the development of retrogaming. The magazines both reflect and build conceptualizations and practices related to retrogaming, and the historicization and nostalgization of digital games.

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Remembering Repton: An alternative history of co-creativity in 1980s Britain

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Abstract

This article explores some of the histories of player creativity in the 1980s through the inclusion of early level editors in games. Drawing on Huhtamo's (2011) media archaeological framework of tracing "alternative histories" the article will trace the histories of level editors in games created for the BBC Micro through the case studies of *Repton 3* (Superior Software 1986) and *Repton Infinity* (Superior Software 1987). Whereas current writing about fan practices and user-generated content by players focuses on the online possibilities of creating and sharing, this paper recognises these practices inherent in offline spaces. Using archival documents from magazine articles and reviews, the concept of player as producer and the role of user-generated content will be re-examined as a way of exploring another facet of this history.

Keywords

Co-creativity, level editor, microcomputing, BBC Micro, 1980s, platform

Introduction

"In the field of game studies and within the consumer market we rarely (or are only beginning to) attend to videogames [...] in terms of their aging, deterioration, obsolescence, ruinous remains, or even history..." (Guins 2014, p.5)

In the opening pages of Raiford Guins' book *Game After* (2014) the author notes how there are histories of games within game studies but these have been unintentional anecdotes and

not always written as the sole purpose of the text. The vast amount of games created across continents and across various platforms means that more dominant histories of game development continue to survive and be retold raising the questions of how histories can often be forgotten through the creation of new disciplines and the ways in which we start to define terms within a field. The introduction of ‘new technologies’ and therefore new ways of theorising these developments also means that older, associated technologies and their cultural and social positioning often get lost within retellings of game histories. Focusing on particular eras in game history across continents can lead to the labelling of genres of games being created alongside hardware or software developments. For example in the 1980s, the American perspective is often situated in pre and post crash console game sales and development (cf. Wolf 2012, Montfort and Bogost 2009), whereas the British, European and Australian scenes are ones recognised for home microcomputing developments and independent game programming (Gazzard 2014, Lean 2008, Swalwell 2012, Suominen 2011).

These overarching narratives can lead to generalisations about game software creation and use, with the more successful games and platforms of delivery taking precedence in discourses of these times. It is for this reason that this article will outline what can be seen as an alternative history of game creation in the 1980s, one focused on both the game developer and the game player, as level editing functionalities started to become packaged with game content. Whereas producer-consumer relationships have already been highlighted within discussions of microcomputing these have often been linked to the development of software from scratch or by users typing in program listings in magazines (cf. Swalwell 2012, Lean 2008). Instead the term ‘alternative history’ is used here in reference to the growing work of media archaeology (cf. Parikka 2012, Huhtamo 2011). For Huhtamo (2011), “media archaeology means a critical practice that excavates media-cultural evidence for clues about neglected, misrepresented, and/or suppressed aspects of both media’s past(s) and their present and tries to bring these into conversation with each other.” By tracing histories of level editing in games during the 1980s in Britain, this article seeks to draw out some of these “neglected” and “suppressed” aspects of game creation through an examination of the game series *Repton* that was developed on and for the BBC Microcomputer (and subsequent Acorn platforms) from 1985 to 1990.

1980s Britain is chosen as a time and place here due to its emerging microcomputing culture and subsequent software industry that developed in relation to this, particularly in the area of game development. Similarly, the *Repton* series has been chosen as a case study for a variety of reasons; not only is *Repton* rarely referenced in the books and articles currently discussing gaming's past, but the game was developed on a computing platform (the BBC Micro) that is again often not fully discussed in relation to British computer game histories. It is by situating *Repton* in light of other games with level editors in the 1980s that we are able to trace what Huhtamo would term to be the "topos" of media content, "a stereotypical formula evoked over and over again in different guises and for varying purposes" (Huhtamo 2011, p. 28). Here we can start to see the level editor as a form of "topos", packaged and presented as a way for users to adapt and create their own game levels based on the assets provided alongside the playable game. Although situated as a creative practice associated with the 1990s (cf. Manovich 1998), the ability to edit game levels was also deliberately built into other games within the 1980s on a variety of platforms. As such the level editor allowed for another type of creative practice, as linked to discussions about "user generated content" that differed to the skillsets required in programming games in various languages.

Instead of typing in lines of code, the level editor allowed for a more WYSIWYG (what you see is what you get) method of game creation now so often discussed in light of new media content creation. Using the "topos" of level editing, we can see how *Repton* fits within cycles of media traditions focused around user and developer content creation, and the sharing of digital media content between users. In doing so, we are also able to see how tracing particular game franchises as linked to individual microcomputing platforms, allows us to uncover other parts of game history often lost as changes in hardware saw the amount of press coverage surrounding these game titles wane as other, more contemporary machines came to market. What is interesting in the case study of *Repton* is that the level editing and game creation possibilities became its unique selling point as further iterations of the game were released despite the downwards trend in sales for the BBC Micro that it was released for.

Revisiting Play.Create.Share

“New products are often promoted by being packaged into formulas that are meant to strike the observer as novel, although they have been put together from ingredients retrieved from cultural archives.” (Huhtamo 2011, p. 28)

As has previously been written, our nostalgia for gaming’s past often draws on references to particular game titles or platforms, which remain dominant in subsequent discourses (cf. Gazzard 2013). Fan sites found online can amplify this, as although they help to archive and retain products related to gaming history (Swalwell and Stuckey 2014), they can also continue to highlight certain perspectives of cultural histories of games around the world. Similarly, general books on game history, such as Donovan’s (2010) *Replay: The History of Video Games*, or *Grand Thieves and Tomb Raiders* (Anderson and Levene 2012) whilst both recognising British game histories, cannot capture every game or platform. However, what these books can do is provide an overview of an area to form the basis of a further exploration by others.

According to Donovan, “*Lode Runner*, a platform game with a level-creation tool...pioneered the idea of allowing players to create game content – a concept that would be taken further by games such as *Quake* and *LittleBigPlanet*.” (Donovan 2010, p.142). In his history of the software industry Martin Campbell-Kelly (2004, p.277) recognises the rise in home computers during the 1980s as not only products to equip the home office or educational institution but also as a means to play games. It was during this time that Brøderbund emerged as one of the key players developing games software in the US. Founded by Douglas Carlston in 1980, Brøderbund was also responsible for the game *Lode Runner*. Released in 1983 *Lode Runner* is a platform style game that involves dodging enemies and collecting rewards and is also often cited as one of the first games to include a level editor (c.f. Donovan 2010, p.142). The player character is able to climb ladders, go along wires and create holes in the brickwork to temporarily trap the enemies in order to succeed. The simplicity of the design can see the game being likened to other arcade style platform games of this time, yet the options screen on loading up the game portrays a different story. Here the menu system not only presents the user with a ‘Game Generator’ option the game generator menu itself allows the user to edit, test, and move the content. Whilst editing the game the

user is then able to construct new walls, poles to climb on and re-position enemies and rewards by repositioning the objects onscreen. On completion, levels can be saved and shared on the many microcomputing platforms it was available for including the Apple II, VIC-20, ZX Spectrum, BBC Micro and Commodore 64. In fact this was emphasized in a review of the BBC Micro version of the game in the November 1985 issue of *The Micro User* magazine that comments, “should [the levels] be insufficient you can use the game’s in-built screen editor to create your own. These can be saved to tape and re-loaded at a later date.” (Revis 1985).

Similarly, other games released during this decade included level editing capabilities. *Impact!* (1988), a simple game based on *Breakout* in which the player has to hit the ball across the screen to destroy the coloured blocks, afforded players the ability to change the levels, insert different rewards, re-structure and generally re-purpose the game. This functionality is titled the ‘designer’ on the game’s menu screen, and gave the player the ability to devise their own levels by changing the positioning of laser reflectors, indestructible blocks and bonus blocks, thus extending the possibilities of the gameworld and creating the potential for more level designs that players could encounter. Both *Lode Runner* and *Impact!* allowed for the player to become the designer of content, and establish a sense of creativity within the gamespace.

Despite these instances of level creation, academic literature making claims about creative media (game) production rather than consumption, are often traced back to Sue Morris’ (2003) DiGRA paper, ‘WADS, Bots and MODs: Multiplayer Games as Co-Creative Media’. Whilst Morris’ paper clearly outlines its focus on the first-person shooter genre and the resultant modification possibilities of such games as linked to developing online communities in the early-1990s, further discussions of what Morris defines as ‘co-creative’ media continue to use these game examples as a starting point to later discussions of player as both producer and consumer of content (cf. Wirman 2009, Newman 2008, Dovey and Kennedy 2006). Although rarely referenced in academic literature on level creation, other attempts have previously been made to recognise how histories of level editing can be traced back to games before *Doom*. James Newman (2008, p.163), in particular, notes how this “lineage may, in fact be traced back further still to games such as Electronic Arts’ Pinball Construction Set (1983), Adventure Construction Set (1985), Racing Destruction Set (1985) or Sensible

Software's 1987 title *Shoot Em Up Construction Kit*". These kits are not seen as games by Newman but instead "resources with which to make games". In this instance the construction kit is seen as separate component to the games available, not necessarily allowing for a seamless synergy between playing the game and creating game content linked to already designed levels. Although the various construction kits on offer allowed for a variety of levels to be created for distinct genres of games, they were not built into particular games themselves thus becoming more generic toolkits for those wishing to build on a particular genre further rather than a particular game franchise. However, these kits recognise early producer-consumer relationships offered by games during the 1980s and Newman's discussion of going beyond *Doom* and early first-person shooter games in reference to co-creativity starts to open up a dialogue about other histories of games during the 1980s. Here we can see how the level editor in the offline space offers a slightly different take on co-creativity, where the player feeds their creations back into the player community, but does not necessarily influence the rest of the game's production.

However, we can see a similar model appearing in games that allow for online connectivity showing how cycles of media change continue and present themselves years later. Four years on from Morris' article, the concept of Game 3.0 is coined by Phil Harrison in his keynote speech at the 2007 Game Developer's conference (cf. Wirman 2009). Game 3.0 is paralleled with the producer-consumer relationship seemingly offered by Web 2.0 media, where user-generated content plays a key role in the player's engagement of/with the gameworld and subsequent levels they might create. One such example of this is the game *LittleBigPlanet* with its tagline of 'Play.Create.Share'. As well as being able to play various levels of the game, *LittleBigPlanet* comes equipped with its own level editor containing tutorial voiceovers in a similar style to that of the main game. This part of *LittleBigPlanet* allows for the game not only to be played, but also allows players to use what Wirman (2009) terms to be "tools" of level creation, adding to the co-creativity of the gameworld. These tools are also presented in the form of assets bundled with the game in order to extend it. Not only is the content generated in the game, it is also shared by players and users of the *LittleBigPlanet* community through the Playstation Network system as linked to the game platform. What we can term here to be the 'LittleBigPlanet effect', the ability to Play. Create. Share as per the game's tagline, can also be seen in offline games present in microcomputing cultures in

Britain in the 1980s. As Melanie Swalwell (2012, p.11) notes in reference to this time in the context of Australian microcomputing cultures, there is an “historical amnesia of those who think that user productivity began with the age of broadband”. The inclusion of the level editor within games in the 1980s allowed for a type of user productivity akin to that found in games such as *LittleBigPlanet* today with the sharing of content being platform dependant much like in the case of the Playstation Network. Here we can see similar trends emerging as linked to the cycles of media content and production discussed previously.

Platform recognition

Much like the computing scene of America, as outlined by Campbell-Kelly (2004) above, many platforms of the 1980s in Britain were not machines solely for game playing. Instead a variety of homegrown microcomputing platforms emerged including the ZX Spectrum and Commodore 64. Histories of microcomputing from this time often pitch debates about the ZX Spectrum and the Commodore 64 as game machines of choice; a rivalry that exists today both online and in magazines such as *Retrogamer* (2014, issue 136, p.9). In a similar vein, games were often released across multiple microcomputing platforms during a certain period of time; games such as the previously mentioned *Lode Runner*, *The Hobbit* (cf. Stuckey 2014), and *Elite* (cf. Gazzard 2013). Just as the game titles become dominant in retellings of game history, so too do the platforms. Yet by taking a media archaeological approach to the platform, as recognised by scholars such as Apperley and Jayemanne (2012) and Parikka (2012), we can echo Huhtamo’s thoughts about how media archaeology, “emphasizes the multiplicity of historical narratives and highlights their constructed and ideologically determined nature.” (2011, p. 28) The dominance of the platform in the battle of the ‘ideal’ games machine, the machine best suited to not only creating games but displaying them, means that other microcomputing platforms are often removed or little discussed in these historical narratives.

Whereas the ZX Spectrum and Commodore 64 are often remembered as the gaming platforms of choice, other machines such as the BBC Micro also allowed for users to program and play games. Whilst Sinclair’s ZX Spectrum was released as a low cost microcomputer, the BBC Micro was developed by Acorn Computers Ltd, who won the bid to create a machine to serve as the ‘face’ of the Computer Literacy Project backed by a national

television provider, the British Broadcasting Corporation. The BBC Micro's link to the Computer Literacy Project, along with its higher price point and use in schools, means that the resultant connotations of the machine were ones connected to education rather than entertainment. Yet the BBC Micro had similar cultures of allowing users to type in game programs from magazine listings, play a range of games released for the system, and save content to cassette tapes or floppy disks.

Although not unique in their capabilities for file sharing through saving content to cassette tapes or floppy disks, the cultures of British microcomputing games went beyond the fixed console game development industry that was emerging in parallel during this decade. Alex Wade recognises these differences in each of these industries, once again drawing on the producer-consumer relationships of British microcomputers when he states,

“US consumers were more inclined towards using what they were being sold - hardwired into the process of consumption - whereas the UK was as flexible as the Spectrum's rubber keyboard, flouting copyright and established trade practices to integrate production and consumption seamlessly, a genuine precursor to the user network societies generated today by participatory media culture, and 'Web 2.0' applications where the consumer is fully and willingly complicit in the production process” (Wade 2007).

The properties of the platform become paramount in our understanding of how software could be written, played, and shared including the abilities of editing levels. As Montfort and Bogost (2009, p.147) note our ability to study the platform exposes not just the computer system or architecture but helps to connect “the fundamentals of digital media work to the cultures in which that work was done and in which coding, forms, interfaces, and eventual use are layered upon them.”

In the case of the ZX Spectrum and BBC Micro, when turning on the platforms the user was confronted with a limited screen. Commands had to be typed in order for anything to happen, even if this was purely to load a cassette tape from an attached player. Both platforms required some form of user engagement with the versions of the BASIC programming

languages presented as a default start up, and for others, the ability to create even further content was a key feature of the machine. These properties were then transferable as games allowed for other forms of content creation and sharing. However, it is by examining the game series *Repton* that we can see how another layer of creation and participation occurred through further extensions of its level editing functionality through its different releases. This in itself extends the examination of microcomputing cultures undertaken by scholars such as Swalwell (2012) who discuss the microcomputing scene in New Zealand being one of active learning through the typing and tracing of code as an integral part into the user's participation and engagement with the gaming scene. Instead we can look to the games themselves and how level editors allowed the player to use the tools built into the game software instead and have another sense of "learning by doing" (Swalwell 2012) as well as sharing the results of their labours. Interestingly in the case of *Repton*, this layer of being able to program the game as well as use the graphical level editor became integrated into the game creation possibilities of the system in later versions. In order to uncover these differences and changes in production, we need to look at the archive, one of the fundamental starting points of media archaeological work (cf. Parikka, 2012, p. 113). For the purposes of this article, the archive constitutes print magazines from this time, most notably the platform specific *Acorn User* and *The Micro User* issues as well as fan created archives of material placed online years after the release of the game, but which continue to document the levels once and still created with it.

Level Creation and Lost Histories

As noted in the *Edge* magazine's 'Making of *Repton*' feature, "after *Elite*, [*Repton* is] probably the best-known game ever to be released for the BBC family of home computers. Its 15-year old creator earned telephone-number royalties from its publication, and that of its sequel." (Edge Staff 2009) Released in 1985 *Repton* was created by Tim Tyler in a month on his BBC Micro and subsequently published by Superior Software. The game involves the player controlling a reptile like character along different paths to collect diamonds whilst pushing boulders on the monsters that stood in its way through each of the 12 levels.¹ Although now compared to *Boulderdash*, Tyler is quoted as never playing the game, and as

¹ When all 12 levels were complete a congratulations message was displayed on the screen. The first person that sent Superior Software a photograph of the screen won £100 as noted in adverts for the game in 1985.

such the similarities are only in retrospect (see Edge Staff 2009). Reviews of the game in *The Micro User* and *Acorn User* magazines were both complimentary with statements such as “this is an astounding game reaching new heights in BBC arcade adventures” (Tudor 1985, p.78) and “...for my money the best arcade game for the Beeb and Electron yet!” (Smith 1985, p.155). The success of the game amongst the BBC Micro playing public meant that after only three months Superior Software asked Tyler to create a sequel; with that *Repton 2* was released. However, as the ‘Making of Repton’ reveals, “it’s notable that the idea to include a password and map facility in the original Repton was down to Chris Payne, Superior’s then marketing manager” (Edge Staff 2009). *Repton 2* was significantly harder than the first *Repton* yet it was initially released to positive reviews in both *The Micro User* and *Acorn User* magazines as noted by one reviewer, “I haven’t completed even 10 per cent of this adventure, but I relish the prospect of finding my way further into it” (Andrews 1986, p.89). After his success with the first two games, Tyler sold the series and didn’t create another.

However, Superior Software decided that audiences deserved another game in the series and this time Matthew Atkinson, along with Chris Payne and Richard Hanson (managing director of Superior Software) were responsible for creating *Repton 3* released in 1986. Although the game contained similar elements to the first two in the series, *Repton 3* went one step further by including a level editor along with the game itself. According to ‘The Making of Repton’ article, “Repton 3 was the best-selling game for the BBC from its launch in November 1986 until mid-February 1987. Then in-house, using the same tools they shipped with the game, Superior produced *Around the World in 40 Screens*, *The Life of Repton* and *Repton Thru Time* over the next 18 months, all selling spectacularly and running on the same code as the original” (Edge Staff 2009). It was this ability to create new Repton experiences in a relatively short amount of time that enabled the franchise to continue and for the team behind the Repton games to keep up with player demand for new levels. Similarly, players could now also modify the iconic character of Repton, and new levels could be created ready to share with others as another way of keeping the game franchise alive.

The ability to copy content was already prevalent within the microcomputing scene. Listed game examples in magazines often copied game mechanics and/or characters from well-

known arcade games in order to help users learn how to program their own games in reference to those they would have had access to in other forms (Gazzard 2014). Copying also allowed for the sharing of data in offline spaces; including the school playground or the computer club. In his research about microcomputing in 1980s Britain, Lean (2008) positions the computer club as a social mediator, taking the term “mediator” as serving “an interface between users and technologies and their producers”. With reference to the role of the computer club in terms of copying software, Lean notes,

“Software was a different matter as it could simply be copied and swapped between members...Clubs were considered by the software industry to be hotbeds of pirate activity, but they were involved with legitimate software distribution as well, by supplying programs users had written or in some cases obtaining commercial software at a discount” (Lean 2008, pp.110–111).

It is this notion of sharing between users that is mentioned in many of the *Repton 3* reviews found in magazines from the time. However, as is shown in the following examples this detail is often not as prominent as the game play elements that are still the main discussion point of the articles. In his analysis of computer game magazine reviews in *Computer and Video Games* magazine and *Commodore User*, Graeme Kirkpatrick (2012) notes how there was a shift in how the computer game was discussed during this time. As computer games became more familiar to audiences, elements such as playability, graphics and the value of games started to become distanced from other references to computing culture (Kirkpatrick 2012). In parallel to this we can see that the level editor as a point of discussion is a relatively new factor in magazine reviews of *Repton 3* and as such not as much page space is dedicated to this part of the game, which more generally relies on the player’s understanding of other game related concepts including graphics and playability. As such histories of level editor use start to get lost, as the appeal of the using the editor is not always recognized within the magazine archive.

In the January 1987 issue of *Acorn User* magazine, David Lawrence opens with a discussion of *Repton 3*’s playability and graphical competencies stating, “To be, fair *Repton 3* is very good, the graphics are large and colourful, the tune almost bearable and the scrolling

acceptable. The basic idea is exactly the same as its forebears: diamonds still have to be collected, boulder puzzles solved and monsters killed”. However, later on in the review a few sentences are dedicated to the “main facility of Repton 3 [being its] screen and character designer.” Lawrence continues to inform the reader “This enables you to redefine totally all the characters and screens used in the game. Screens are designed in sets of eight and three sets are provided”. Yet beyond this description little is made of the level-editing feature within the review and instead the fact the game is the third in a series becomes the focal point of the discussion.

Similarly a review in the December 1986 issue of *The Micro User* also focuses on the gameplay and the similarities and/or differences to the other Repton titles. The game space of *Repton 3*, throughout the review, is continually referred to as a maze with comments such as “each level is laid out like a maze” and “your route through the maze must be carefully planned” (Riddell 1986, p.21). It is not until the last few sentences of the review that the level editor is discussed but, again, in limited detail. Here the reviewer, James Riddell, comments, “Not only does Superior Software give you one of the best games of 1986 it also supplies a maze-editing utility. You can design your own fiendish mazes, save them to cassette or disc, and pass them on to your friends for them to solve”.

A review of *Repton 3* in the January 1987 issue of *Computer and Video Games* magazine also briefly mentions the level and character editor functionality in the game with comments about how you can “redesign the game to baffle your mates”. The review continues to discuss the editor stating, “You can invent your own puzzles and design your own characters if you so desire, although speaking for myself the existing ones are more than adequate” (1987, p.45). In all of the game reviews the level editor does not feature heavily as a selling point of the game, but instead, more of an additional feature that might be of use to some. However, the emphasis is on sharing content with others rather the resultant game being played purely by the player as friends are mentioned as the purpose of the editor in two of the reviews. Here the social spaces of the game are emphasised by the reviewers and the ability to share content in some form. The focus shifts from the player interacting with the levels of the game on their own to the ability to produce content and allow others to play levels they may have created, pre-dating the *LittleBigPlanet*, Play, Create, Share concept by 25 years. Although not stated

in those exact terms, co-creative media content generation is implied and made possible by the competencies of the player and the platform. For the Repton series this became a unique selling point seeing the level editing feature continue in the next iteration of the series, titled *Repton Infinity*.

After the next iteration of Repton titles built around the *Repton 3* game engine, *Repton Infinity* saw the game format change slightly once again. Unlike *Lode Runner* and *Impact!*, not only did *Repton Infinity* have a level editor, it also had its own language built into the editor, going under the name of Reptol. Released near the end of 1988, *Repton Infinity* was the last game in the Repton series for the BBC Micro. The back of game box sums up its release with the following statements, “Repton Infinity is the ultimate Repton program. You can completely redesign all of the game characters and game screens. But more than this, you can now also create a wide range of diversely different games using a special game-creating language.” Here the characteristics of the level editor changed slightly, from being based around rearranging game assets to being able to rearrange them and change some of their properties through the built in programming language. User creativity could be found through level design, but also through some of the earlier computer programming related to computer literacy built into the rhetoric of microcomputing use. *Repton Infinity* bridged these two forms of “learning by doing” as players were able to design their own levels in much the same way some of the levels were created for the playable part of the game. Adverts for the game used this as a unique selling point of *Repton Infinity* with the “sophisticated game creator” taking pride of place in their headlines.

However, the game’s release came at a time when both the BBC Micro and the Acorn Electron were being phased out by other more contemporary machines. Searching through magazine archives from this time shows how this starts to become apparent through the lack of reviews found. Reviews of games once focused purely on the BBC Micro and Acorn Electron (a stripped down version of the BBC Micro marketed as a cheaper, more games focused machine) now had to cater for games developed and released on the BBC Micro, Acorn Electron and the Acorn Archimedes. Where details were found in amongst the game pages of magazines, once again they primarily focused on the possibilities offered by the

game package. This can be seen in the Hac Man column within the December 1988 issue of *The Micro User* magazine, which offers the following,

“No Christmas would be complete without a Repton game. Repton Infinity is the name of this latest offering, so called because [in] it almost everything can be redefined – including the actions of the creatures and objects – allowing almost infinite scope for designing screens and puzzles that are even nastier than is currently possible. No doubt we will see some examples in due course” (Hac Man 1988, p.70).

There is also a brief mention of game found in the January 1989 issue of *Acorn User* magazine noting, “The main news in the games world this month is a new Repton. Repton Infinity is a complex games designer that you can use to build up your own games: Repton, Ravenskull, Pengo, Pipeline, possibility even Space Invaders and a spreadsheet – they are all possible. It comes with three example games, and you can compile any number of new versions” (Greenhill 1989, p.127).

Whilst the game is pitched by *Acorn User* to be the main news in the games world, this commentary only affords a small paragraph at the end of other more prominent game reviews. On the border between a pure level editor and a game playing experience without this functionality, the final iteration of *Repton* did not seem to warrant as much page space due to this unique quality of the release. A screenshot of *Repton Infinity* is posted in the following month’s issue of the magazine, but does not have any mention within the accompanying text (instead the Archimedes version of *Repton 3* is discussed, one of the machine that followed the BBC Micro in Acorn’s line up). In line with Graeme Kirkpatrick’s (2012) findings about UK gaming magazines between 1981 and 1995, near the end of the 1980s reviews of games were more prominent than articles about how to use the computers that the games were made for. The ability to create new levels, program character and world states in this instance fell into the category of technical competencies rather than gameplay possibilities, thus more popular, easier to market games took precedence in the pages of gaming magazines, except for those still focusing on the functionality of the platforms they were released on.

A closer look at the advertisements for *Repton 3 Infinity* and its box art cover reveals how Superior Software tried to sell the game as both playable product and one that could be extended through other features in a way that was accessible to game playing audiences. The tag line on the box emphasises the creative aspects offered by the game stating, “You control the behaviour of the creatures... You determine the rules of the game... You create the whole scenario!” Yet at the same time *Repton Infinity* includes four playable games to give the player “some indication of the versatility of [the] package” including Repton 3 “to show [the] way”, Repton 4, “a new puzzling predicament for our hero”, Robbo “a crazy robot in a strange topsy-turvy world” and Trakker, “with 4 animated opponents to petrify you”. The decision to start the games with *Repton 3* and build on the players’ prior knowledge of the series or introduce new players to its mechanics helped to familiarise them with the type of gameplay inherent in the game series as a means to build on it in their own creations. The additional features in the game are marketed in a similar way, drawing on known conventions in popular culture and in technical product creation as a way of appealing to different knowledge bases of potential audiences. The character designer is named the ‘filmstrip’ and although serves a different purpose to a traditional film strip, it provides a platform for not only designing characters but animating them in a way akin to a timeline format offered by the filmstrip. Remediating (cf. Bolter & Grusin 2000) familiar terms aids the transition from player to content creator by drawing on other popular media forms that players would have had access to. In this instance the game creator, where the player uses the unique Repton language, to generate new relationships between assets in the game is termed to be ‘Blueprint’. As a recognisable term for setting the foundations and planning, Blueprint can be interpreted by those that may not be as familiar with programming terminology or do not see themselves as capable of programming in the same way that the BBC Micro would have afforded with creating their own programs in BBC Basic or machine code. Using Blueprint once again seeks to open up an audience not necessarily fluent in programming languages but might be drawn into tinkering with one provided within the game editing functions.

Adverts for the game take known terms one step further by listing “Landscape” as the screen designer where new levels of *Repton Infinity* can be created and “FileLink” stated as being “The Co-ordinator”. The FileLink option is emphasised with a screenshot of the game depicting a flow diagram linking up the landscape, blueprint and filmstrip options that come

together to create the final game file. Once again, terms such as “Landscape” rather than level editor generate a familiarity with terms not linked to terminology whilst “FileLink” uses computer based terminology in a way that demystifies the process. The interplay of technological and non-technological terms helps to attract audiences who may not have thought about creating their own games before, and separates the processes out from those that once relied on users being able to generate or modify other people’s own code.

Whether these terms did draw in new audiences that wanted to make games is not clear and due to the nature of the platforms the games were created on at the time it is not always possible to find any games that were made with the level creation facilities. Searching the above magazine issues does not provide any clues to games made by others but fortunately, due to the archives of player material uploaded online, through fan communities linked to particular hardware platforms or game series, some of these levels created have since emerged on various webpages dedicated to showcasing them. One of these is the Repton Continuum site that has tried to compile a list of levels (old or newly created) made in *Repton 3* or *Repton Infinity*.² Whilst levels are downloadable and potentially playable on an emulation platform for the Acorn Electron or BBC Micro, the website also displays screenshots of levels that have been uploaded to the site. Levels created for *Repton 3* and *Repton Infinity* feature weather symbols mapping out the game’s landscape, football themes, and even attempts to create a top down perspective version of the game. Alongside these there are anecdotes to some of the level creation, such as Dave Jeffrey’s levels that include “London” and “Farmdat”, which was based on the farm the author lived at. Under images of the levels, the author states, “All the levels were done between 1986 and 1991. There is a level called “TIMOTHY” on the set “SET1” which is the first I ever designed for Repton 3 back on Christmas day 1986”. Once again, what these images and the development of such software during the 1980s shows is that player-created content, the ability to change, adapt and play other people’s levels associated with gaming practices on microcomputers at the time were prevalent before the world wide web, downloadable content and online connectivity. However, it is these technologies that have subsequently enabled this content to be archived, found and potentially played again.

² See Repton Continuum at: <http://aw.drobe.co.uk/REPTON/> [last accessed 6 August 2014]

Lessons Learned from Repton

As has been documented throughout this article, by tracing the “topos” of the level editor as a means to use graphical assets to create games, we can see how user-generated content and creativity existed beyond *Doom* and beyond *Little Big Planet*. Similarly, the sharing of content, albeit in an offline space was also platform dependant highlighting the need to recognise the platform in discussions of both games and game histories. By tracing cycles of media production and consumption practices through the example of the level editor, we can also see how, in the case of the Repton series the games that were released continued to draw on the player’s ability to not only play new levels, but also create their own. This saw the level editor change from one focused on re-positioning graphical assets to one that also allowed for the integration of new programming languages. In the late 1980s when game play rather than game creation was starting to take the forefront of discussions in microcomputing magazines (Kirkpatrick 2012), we can also see how not all games or magazine articles adhered to this discourse. The development of the Repton series, as often lost in game histories, shows how there was still a desire amongst the game playing public to create their own games and add to the levels already created by the game’s creators. *Repton Infinity* in particular responded to this demand, and although uptake was not necessarily widespread amongst owners of micros, this case study provides an alternative history to game creation during this time as so often focused on the “bedroom programmer”.

The case study of the *Repton* series also presents an interesting insight into both the history of games in 1980s Britain and the way in which game histories can be uncovered. Moving beyond dominant ideologies of platform use and reception we can see how media archaeology and the tracing of “cultural vessels” (Huhtamo 2011) of the “topos” of the level editor on different platforms expose new insights. Utilising the archive, combined with the recognition of the platform specificity of some game releases, allows for these once neglected or suppressed platforms and the games created on them to be brought to light and into conversation with more recent trajectories of game cultures. As has been shown throughout this article, the archive exists in multiple forms; in print through magazines and instruction manuals, in digital form through ported software packages that emerge to keep game franchises running on different platforms, and online in the form of uploaded content, emulation platforms, and magazine articles. In his discussion of the archive from a media

archaeological perspective, Parikka (2012, p.115) outlines how the archives of technical media and software are “based on both technical processes (software and networks) and social ones (participation and collaboration...)” By drawing on what we can from social processes offered by today’s fan communities and those presented in the archive, as well as assessing the platform in terms of technical processes as linked to hardware and software practices we can start to piece together deeper histories of a particular game’s functionality. Each of these components of the archive can be used together to build a greater understanding of (other) game histories and how we can start to interpret the life cycle of games through a variety of material available to us. New histories can be exposed in amongst more dominant ones; histories that include a 1980s vision of Play, Create, Share as so often ignored, until today.

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SPACE ODYSSEY: THE LONG JOURNEY OF *SPACEWAR!* FROM MIT TO COMPUTER LABS AROUND THE WORLD

Devin Monnens, Martin Goldberg

Abstract

Although *Spacewar!* is credited with inspiring the arcade videogame industry, little is recorded about the game outside its origins. It has been assumed that *Spacewar!* spread rapidly between computer labs and across computer platforms, but no systematic survey of its actual distribution and use has ever been attempted. Based on records and accounts from computer labs from 1962 to 1972, the authors propose a model wherein *Spacewar!* spread slowly, tied directly to the development of the interactive computer display industry around which communities of players developed, spreading more rapidly from 1967 on with the introduction of large numbers of CRTs.

Keywords

Spacewar!, Steve Russell, PDP-1, Stanford, MIT

Spacewar! is considered one of the most important videogames ever made. The game was created by Steve Russell and a group of other hackers at MIT in 1962 as a demonstration program for the PDP-1 minicomputer by Digital Equipment Corporation (DEC). It went on to capture the imagination of players across the United States, eventually inspiring the first commercial arcade game, *Computer Space* (1971), helping launch a multibillion-dollar industry. In *Spacewar!*, two spaceships duel around a central star displayed in an overhead 2D perspective, firing torpedoes and using the star's gravitational pull to execute complex maneuvers. There are separate controls for rotating clockwise and counterclockwise, thrust, and fire; most versions also feature hyperspace, which allows a player's ship to disappear and

reappear in a random location with increasing chance of self-destruction. The tight controls, realistic acceleration, and strategies of orbital mechanics made *Spacewar!* extremely popular well into the 1970s. Steve Russell also made the code available for anyone to modify, resulting in dozens of variations.

Spacewar!'s origins have been well-documented by one of its creators, J. Martin Graetz (1981), and are in every general history book on games (Herz, 1997; Kent, 2001; Donovan, 2010; see also Levy, 1994). Equally well-known is Stewart Brand's 1972 *Rolling Stone* article, which chronicled the game's continued popularity at Stanford University and its impact on computing. These two articles served as 'bookends' for the history of *Spacewar!*, fitting it neatly into a historical nutshell.

However, in the 1960s, neither *Spacewar!*'s creators nor its players had any idea of its historical significance, perhaps even that they were witnessing the origins of something extraordinary. For one thing, *Spacewar!* was only available in computer labs, making it accessible only to a select group of students, scientists, and technicians, and on occasion their friends and relatives. In fact, it was only by the end of the 1960s that the general public was finally made aware of the game. In addition, computers in the 1960s were incredibly expensive, with costs often calculated in dollars per minute. Games were accessible only during computer downtime, which was often late at night, or they were simply banned outright. Finally, despite its high appeal, *Spacewar!* was conceived as an entertaining demo and never intended to be a mass-produced product, even though its open-source nature permitted its distribution to many computer labs and platforms. In sum, like a rare comic book whose value is only realized in hindsight, *Spacewar!* has gathered a certain degree of mystique, its scholarly and popular interest relegated largely to its "firstness" and creation rather than its later history.

As a result, little is known about *Spacewar!* between 1962 and 1972. According to popular wisdom, the game spread rapidly from MIT to computer labs virtually everywhere. Graetz (1981) wrote that after *Spacewar!*'s creators left MIT in the summer of 1962, "Program tapes were already showing up all over the country, not only on PDP-1s but on just about any research computer that had a programmable CRT." Brand (1972) echoed this statement,

writing, “Reliably, at any nighttime moment (i.e. non-business hours) in North America hundreds of computer technicians are [playing *Spacewar!*].” In effect, programmers who encountered the game became addicted and eventually brought a copy to their own labs or programmed new versions based on what they remembered. Yet, by reducing an entire decade of *Spacewar!*'s history to a catchphrase, little to no interest has been made in locating these variations or understanding precisely how the game spread in the first place.

Recognizing the lack of scholarly work in this area, as well as the need to record the games, testimonials, and documentation from this period, we sought to explore in greater detail *Spacewar!*'s “lost decade.” We conducted an extensive survey of primary sources and in addition to collecting existing accounts, asked users on mailing lists and classic computer hubs¹ to share their *Spacewar!* experiences through a questionnaire.² We also identified different versions of the game published in *DECUS*³ and tracked names, universities, and computer platforms to crystallize dates. In some cases, we were able to contact and interview the creators and collect source code. This is thus essentially an oral history of *Spacewar!* and provides a fascinating perspective on game history.

***Spacewar!* on the PDP-1**

In the first few years of *Spacewar!*'s existence, the game could only be played on a PDP-1 with a Type 30 display, using source code originating from MIT. J.M. Graetz (1962) even encouraged *DECUSCOPE* readers to ask Steve Russell for a copy. There were several labs with PDP-1s near Boston, including BBN's Air Force Cambridge Research Lab (Cossell, 1995) and Princeton (Auslander, 2014).⁴ Bruce Baumgart, winner of the 1972 *Spacewar!* Olympics at Stanford, was introduced to the version at Harvard while a student there in 1966 (Baumgart, 2014). Further afield, the University of Michigan in Ann Arbor had *Spacewar!* running on a PDP-1 at least as early as 1965 (Swartz, 2014a).⁵

1 These include the Google user group alt.folklore.computers (<https://groups.google.com/forum/#!forum/alt.folklore.computers>) and ClassicCmp's cctech mailing list (<http://classiccmp.org/>).

2 <http://ataribook.com/book/spacewar-questionnaire/>

3 *The Digital Equipment Corporation Users Society*, the official publication of DEC.

4 Yale, University of Rochester, and the Rutgers Physics Department are all known to have possessed PDP-1s, but it is unconfirmed if they had *Spacewar!*

5 The PDP-1 was installed March 1964 and the display in April.

At DEC, *Spacewar!* was advertised in a brochure illustrating the capabilities of the PDP-1 and also famously used for testing shipped units – salesmen would first load *Spacewar!* in the factory, and if the game started up correctly, the computer was deemed to be in good working order.⁶ While this suggests widespread distribution, only 55 PDP-1s were ever built, and not all shipped in 1962 and 1963. Of these, perhaps 20 had a display, although not all shipped with it (Bell, 2014). Furthermore, it is questionable whether *Spacewar!* was played frequently, if at all, in facilities with strict security, such as military research centers.

Spacewar! could be played with the console switches on the front panel of MIT's PDP-1, but two of the game's creators, Alan Kotok and Bob Saunders, built a set of control boxes with two switches and a button.⁷ However, not all locations adopted this method: Harvard and the University of Michigan used switches only, sometimes with interesting effects. In Michigan, one of the switches controlled gravity, and a particularly devious player could trick his opponent by switching it off (Swartz, 2014a). Still other places such as BBN initially used test switches, but eventually replaced them with controllers. Aside from contracting “Spacewar elbow” from playing in an uncomfortable position, the switches would eventually fail, and were difficult to replace, angering lab administrators and necessitating the upgrade (Wexelblat, 1996).

At MIT, *Spacewar!* continued to be played steadily, mostly at night, but also during Open House events such as “freshmen rush week” where Richard Greenblatt, a new student and future creator of Lisp, encountered the game in fall 1962. The students played with the lights off, immersed in the phosphorescent glow of the CRT – an iconic image that would be repeated throughout the history of videogames (Levy, 1994).

In September, Jack Dennis, a faculty member and one of the originators of the operating system Multics, developed a time-sharing system for MIT's PDP-1, allowing *Spacewar!* (or any program) to be played while other programs were running. Around this time, MIT also

⁶ Steve Russell heard this story secondhand while an employee at DEC. It is first recounted in Zito (1983) and told in greater detail in Levy (1984) and Kossow (2008).

⁷ This happened roughly after two months of play, which would place it around April (Zito, 1983). Interestingly, according to Russell, four-button control boxes were briefly used before this, but wore out quickly (Kossow 2008).

received a Type 23 Parallel Storage Drum from DEC. The drum had 32 tracks storing 4K of data each, and one of these was soon dedicated to *Spacewar!*, allowing it to load quickly off a two-foot-long paper tape, dramatically reducing startup time (Morris, 1993).

Most modifications to *Spacewar!* were subtle changes to existing code, as was the case on the PDP-1. Variables such as gravity, fuel, acceleration, and rate of fire could be easily altered to change play balance, but any major hacks required significant investments in time. *Spacewar!* continued to be modified throughout the spring 1963 semester by Monte Peronas, a graduate student. Peronas hacked the code to make it run more efficiently, such as by drawing the star as a dotted rather than solid line – a cosmetic change that is barely perceptible on-screen, but reduced CPU time significantly, allowing for the inclusion of a second star. He also recoded the hardware multiply/divide function to conduct gravity calculations more efficiently and tweaked the fuel consumption rate. Other collaborators added a patch for on-screen scoring.⁸

In fall 1962, Steve Russell left Harvard to work at Stanford, taking *Spacewar!* with him. Russell was tasked with creating a Lisp compiler and getting their PDP-1 timeshared. *Spacewar!* was one of the first programs available and was so popular staff immediately restricted its use (Yasaki, 1963). Russell found it as entertaining as pinball (Levy, 1994, p. 65).

Although accounts from MIT and Stanford describe night-long *Spacewar!* sessions with dedicated cliques of players, this does not appear to have been common elsewhere. The University of Michigan, for example, had *Spacewar!* running on the PDP-1 in the basement of West Physics, but although the display was installed in April 1964 (University of Michigan, 1966, p. 35), only a trio of programmers played it regularly in 1966. Most of their interest came from discovering how it worked, and play was so infrequent that *Spacewar!* wasn't forcibly removed or regulated. As former student Fred Swartz recalled, “No one knew [about it] as far as I remember. We loved programming so playing was just done when we

8 Version 4.8 by DFW, dated July 24, 1963.

felt like taking a break” (Swartz, 2014a). Later, Michigan had *Spacewar!* running on a PDP-4 purchased in 1963 (Kuniavsky, 1996),⁹ and a DDP-224 in 1967.

Bruce Baumgart tells a similar story about his experience with *Spacewar!* on a PDP-1 at Harvard.¹⁰ The PDP-1 was installed in the Physics Department Dunbar Lab, next to the Cambridge Electron Accelerator. Baumgart worked in the lab over the summer starting in late June 1966. The game was occasionally shown to visitors, and sometimes the programmers brought their girlfriends, but space warfare left little impression (Baumgart, 2014).

Harvard's PDP-1 was used primarily for conducting tests on the Cambridge Electron Accelerator, and *Spacewar!* could only be played when the Accelerator was down, which happened infrequently. Contrary to MIT and Stanford where the PDP-1 could be blocked off for *Spacewar!* all night, graduate students at Harvard often used the late night blocks to conduct experiments. Additionally, Baumgart worked alone in the lab from 12:00 AM to 6:00 AM, giving him few opportunities to play.

While it is possible the game saw more frequent use when it was first installed, by 1966, *Spacewar!* on the PDP-1 had only a limited audience in at least two universities, and probably elsewhere as well. In some cases, even when the PDP-1 was replaced by newer machines, *Spacewar!* was only infrequently used for demo purposes, as at Sanders Associates around 1969 (Gorin, 2014).¹¹

***Spacewar!* On Other Computers**

Due to the incomplete nature of the record, it is difficult to document where and when versions of *Spacewar!* first began to appear on other platforms. Furthermore, identifying the programmers – let alone tracking them down – is often next to impossible. However, what

9 Steve Russell thought Bob Saunders may have programmed a version for the PDP-4 (Kossow, 2008).

10 Harvard had a second PDP-1 at the Jefferson Lab where Ivan Sutherland conducted 3D modeling experiments. It would have been rarely used for *Spacewar!*, if at all.

11 Ralph Baer developed the Magnavox Odyssey prototype at Sanders in 1966-1971. He reported never seeing *Spacewar!*, suggesting the PDP-1 was in a different department. Ralph Gorin saw it just once.

survives does provide an interesting glimpse at *Spacewar!*'s distribution and its variations, which is far more complex than the familiar distribution narrative – particularly when considering the hundreds of hours involved in each adaptation.

Location	Platform	Platform Release	Install Date	Earliest Known Date	Programmers
MIT	PDP-1	November 1960	September 1961	January 1962	Steve Russell, Bob Saunders, J. Martin Graetz, et. al.
University of Michigan	PDP-4	1963			
University of Michigan	DDP-224	May 1964		1967	
MIT Computation Center	IBM System/360 Model 65	1965		1965	Edson Hendricks
Stanford University	PDP-6	October 1964	June 6, 1966	Fall 1966	Steve Russell
Cambridge University	PDP-7	1965	May 19, 1966	1969(?)	M.S. Peterson, John C. Viner
University of Minnesota	CDC-3100	February 1965	April 1, 1966(?)	1967	A.W. Kuhfeld
DECUS	LINC-8	1966		August 12, 1968	E. Duffin
Fall Joint Computer Conference	Data General NOVA			December 9, 1968	

Stanford University	PDP-10	September 1967		1969	Ralph Gorin (1971)
University of Illinois	PLATO/ILLIAC			1969	Richard Blomme
	IBM 1620	October 21, 1959		1969	Jim Burroughs
	Imlac PDS-1	1970		1970	
University of Pittsburgh	PDP-7	1965		1970	Russell Randshaw
DECUS	PDP-8	1965, 1966, 1968		January 11, 1971; March 22, 1971	Evan Suits

Table 1 – Known Spacewar! Versions, 1962-1972

The First Adaptation at MIT

One of the first documented *Spacewar!* adaptations was programmed in 1965 by Edson Hendricks (creator of VNET, which became a foundation for the Internet) on MIT's IBM System/360 Model 65 running a 2250 Model 1 display. Unlike previously discussed versions, this wasn't a strict hack – Hendricks was paid to program it as part of his job at the MIT Computation Center. At the time, he was offered one of two positions: washing light bulbs and operating a computer. Choosing the obvious, Hendricks quickly became adept at the System/360 and was put in the role of system programmer. As fate would have it, soon afterward, the Computation Center's entire lead system programming team quit, leaving Hendricks as senior programmer (Hendricks, 2014a).

When IBM installed the 2250, someone needed to figure out how the display worked so it could be used by faculty and students. Although he never played it, Hendricks remembered seeing *Spacewar!* running on MIT's PDP-1 and decided to implement the game based on his

observations. Because Hendricks was being paid to program the demo, he was able to complete it after working two weeks straight. He ended up making two versions: the first was scrapped, but everything worked right on the second try (Hendricks, 2014a).

Spacewar! on the Model 65 was seen as a run-of-the-mill project by MIT staff: Hendricks (2014a) recalled, “Really, nobody regularly there at MIT thought the game was anything extraordinary, including myself.” However, to the children of faculty and staff at MIT’s Open House, *Spacewar!* was far from dull, with kids clustered around the display “stacked eight or nine deep” (Jones, 2011). Many parents ended up dropping their children off at the Computation Center and picking them up on the way out after touring the campus, the children understandably reluctant to leave (Hendricks, 2014b). Hendricks was later asked to remove *Spacewar!* because it was “wasting too much expensive computer time” only to reinstall it each year for the Open House. Students attempted to hide the game elsewhere on the system under unassuming names; these were summarily removed. One frustrated student even broke into Hendricks’s office to steal the code (Hendricks, 2014b)!

Hendricks was not the only programmer paid to make *Spacewar!* Imlac produced *Mini Space War* in 1970 for distribution with the PDS-1 as a demonstration. Until additional software could be programmed, the game was a nice distraction during breaks (Palmer, 2014). Data General also produced a version for the NOVA, which was demonstrated at the Fall Joint Computer Conference in San Francisco in December 1968. According to advertisements, *Spacewar!* was capable of running on a standard television monitor using the 4K NOVA, which retailed for \$7950 (Data General Corporation, 1969a, 1969b). Ironically, Atari founders Nolan Bushnell and Ted Dabney considered creating a coin-operated version of *Spacewar!* using a NOVA in fall 1969, but deemed the hardware too expensive and not powerful enough to run the game time-shared, unaware a version had already been developed for it.

***Spacewar!* Ports at Stanford**

With the help of other programmers, Steve Russell ported *Spacewar!* to Stanford University’s PDP-6 in fall 1966 (Gorin, 2014). Stanford installed the machine on June 6 (Ernest, 2009) in

the Stanford AI Lab (SAIL), and Russell described it as one of the first things programmed once they got the displays (Goldberg, 2014; Markoff, 2005, p. 103). The game used four-button controllers and likely ran off a PDP-1 simulator (Kossow, 2008).

As new hardware arrived, the game continued to evolve. When the displays were upgraded in 1967, Stanford's programmers developed a special time-sharing system called Spacewar Mode that allowed users to run *Spacewar!* at full speed alongside other programs. Spacewar Mode used only as much computer time as necessary to run the game smoothly while allowing the computer's idle microseconds to be applied to more serious research projects and resource-intensive programs like computer music or physics simulations (Levy, 1984). In an era when every minute of computer time was valuable, anything that allowed users to conduct research more efficiently was a boon. In November 1968, a PDP-10 was installed at SAIL and hooked up with the PDP-6 to create a dual-processor machine. *Spacewar!* was modified to run on it. When SAIL connected to the ARPANET in 1970, *Spacewar!* was distributed freely across the network. Yet despite *Spacewar!*'s popularity, it was superseded by other activities, such as SAIL's afternoon volleyball matches.

In October 19, 1972, *Rolling Stone* sponsored a *Spacewar!* tournament at SAIL. Dubbed the Spacewar Olympics, this event may have been the first videogame tournament. The version played here was modified by Ralph Gorin, a graduate student in computer science who later developed the first dedicated spellchecking program. Gorin began documenting the PDP-6/10 code from summer 1971 to summer 1972, modifying the game to allow up to five players simultaneously on six displays and adding such features as mines¹² and partial damage (Gorin, 2014). Players could also easily change variables through a text-based menu. It was these features that made the Spacewar Olympics possible and helped bring the game to public consciousness.

Stanford's versions of *Spacewar!* also inspired the first arcade videogames, *Galaxy Game* by Bill Pitts and Hugh Tuck and *Computer Space* by Nolan Bushnell and Ted Dabney. Pitts first saw *Spacewar!* on Stanford's PDP-1 while a student there and later on the PDP-6/10,

12 Baumgart (2014) reports that Gorin produced a bug displaying dozens of mines at once, making the game resemble *Asteroids*. Gorin could not recall this event.

introducing his friend Tuck to it in 1970. Although Tuck saw the possibility of turning *Spacewar!* into a commercial product, it was not until the PDP-11 was released for \$10,000 that they decided the project could be economically viable. In June 1971, Pitts and Tuck purchased a PDP-11 with an HP 1310 Electrostatic Display and ported *Spacewar!*, which they renamed *Galaxy Game*. In September, *Galaxy Game* was installed at the Tresidder Union at Stanford, where they charged ten cents per game or three for a quarter. Although it was popular and ran at Tresidder for many years, it was not until May 1979 that the hardware finally paid for itself and *Galaxy Game* was disconnected (Smith, 2013).

Bushnell, on the other hand, took a more practical approach with *Computer Space*. He saw *Spacewar!* on the PDP-6/10 in fall 1969 and was inspired to create a coin-op version, sharing his idea with his friend Dabney (Goldberg and Vendel, 2012, p. 25).¹³ Working together, the two built custom hardware to run the game at low cost, Bushnell building the cabinet and Dabney the display (Edwards, 2011). The result was the first arcade videogame, location-tested at the Dutch Goose in August 1971 and released commercially in November (Smith, 2013). Thus, although *Spacewar!* originated at MIT, it was Stanford's version on the PDP-6/10 that directly influenced the arcade videogame industry.

Minnesota Spacewar!

Minnesota Spacewar! was another famous version, programmed by Albert Kuhfeld for Control Data Corporation's CDC 3100 with 8K of memory at the University of Minnesota Williams Laboratory for Nuclear Physics. Kuhfeld did the bulk of the programming in 1967, finishing in 1968. Kuhfeld was a graduate of MIT in 1963, where he played *Spacewar!* In the fall, he took a position at the University of Minnesota Department of Physics and Astronomy, which at the time was constructing a new particle accelerator. Work was completed in 1965, and a CDC 3100 was installed. However, it took some time for the computer to get up and running. Kuhfeld (2014b) recalled:

13 Bushnell claims to have played *Spacewar!* first at the University of Utah while a student there from 1965-1968. In 1966, the University had a UNIVAC Type 1108 connected to a PDP-8 with vector display. However, this system was still being developed by February 1968 and would have been reserved for computer graphics experiments by David Evans, making a *Spacewar!* adaptation unlikely (Goldberg, 2014). Bushnell's account has not been confirmed at this time.

A new laboratory needs, of course, a lot of tweaking, tuning, and adjusting, so I didn't even get a chance to lay hands on the computer (except to say hello) well into 1966. Then I was writing particle-tracking software for awhile. 1967 is the first year I really had the time and equipment to work on the game. When the accelerator is working well, there are long data-collection runs during which the RAs sit by the computer twiddling their thumbs. Gotta find something useful for those thumbs to do, not to mention the other eight fingers. And there was that keypunch...

Kuhfeld missed playing *Spacewar!* at MIT and began programming his own version for the CDC 3100. The game went through three iterations:

The first was rough-and-ready, to get things working. That, among other things, was where I learned integer sine and cosine routines were a bit tricky. The second version was for playing, while we gained experience. And the third version added bells, whistles, options, and polish (Kuhfeld, 2014a).

These included a scoring system, timers on the torpedoes, and faster code. The most famous addition was the “Minnesota Panic Button,” a cloaking device that made the player's ship invisible and served as an alternative to hyperspace. Skilled players could project their ship's trajectory and sneak up on their opponents – however, their position would be given away once they fired their rockets. *Minnesota Spacewar!* also added retrorockets for easier deceleration. The sun and explosions were created with semi-random number generators in x/y pairs, which were then reflected into the four quadrants (Landsteiner, 2014). Taking a cue from MIT, Kuhfeld also built two custom control boxes.

Minnesota Spacewar! was played primarily during the day: like at Harvard, research was conducted at night, and the game could only be played when the accelerator was periodically shut down for maintenance. However, with the arrival of a CDC 6600 and PDP-8, there was considerably more time to play *Spacewar!* and the game became increasingly popular. Kuhfeld published an account of *Minnesota Spacewar* in the July 1971 issue of *Analog*, where it excited popular consciousness. The article was picked up by Goodavage (1972), who

visited MIT, but borrowed extensively from Kuhfeld's article, and also by Brand (1972) in *Rolling Stone*.

***Spacewar!* at University of Cambridge, England**

The University of Cambridge is already notable in game history for A.S. Douglas's *Noughts and Crosses*, created on the EDSAC in 1952 as part of his PhD dissertation in human-computer interaction. The game was displayed on a 35x16 pixel screen and has enjoyed some notoriety as the first graphical computer game (Winter, 2013).¹⁴ In the 1960s, Cambridge was still a leader in computer science. The university owned a Ferranti Atlas computer, dubbed “Titan,” and purchased a PDP-7A in 1966 (Soemtron, 2014) to run the Type 340 CRT display connected to the machine (Cutler, 2014). It was used primarily for vector graphics research.

Sometime around 1968, two graduate students, M.S. Peterson and John C. Viner, created the *Spacewar!* adaptation *DUEL*.¹⁵ The game used console switches rather than joysticks, with five switches per player. This version introduced “viscous space,” which allowed the spaceships to decelerate over time – hardly scientifically accurate, but a feature later found in many arcade games. There were also no explosion effects or hyperspace – once a spaceship was hit by a “bullet,” the screen would go blank (Digital Equipment Corporation, 1968). *DUEL* appears to have been simply a demonstration of the PDP-7's graphical capabilities and wasn't taken very seriously: no copies survive at Cambridge.

***Spacewar!* on the PDP-8**

Starting in 1965, DEC released the popular PDP-8 line of minicomputers. At a base price of \$18,000, these affordable machines quickly spread to computer labs across the country. *Spacewar!* followed, with different versions for various models of PDP-8.

14 The EDSAC 1 was shut down in 1958.

15 DECUS catalog number 7-40.

The earliest dated example is *SPCWAR* for the LINC-8,¹⁶ published on August 12, 1968 by Edwin G. Duffin of the University of Pennsylvania.¹⁷ This version was modified from an original source and appears to play identically to MIT's PDP-1 version, sans hyperspace. The University of Pennsylvania also had a LINC in the Biology building in 1964 (Johnson, 2014). At the end of a round, the game displayed text describing its outcome:

- COLLISION
- SNOOPY PREVAILS
- ANOTHER NOTCH FOR THE RED BARON

More often than not, labs used whatever interface the computer came with. *SPCWAR* used a set of knobs on each side of the LINC-8's control panel to operate the horizontal and vertical movements of each spaceship. Sense switches 0 and 5 were used to fire. In the case of University of Michigan's DDP-224, the joysticks were originally used along with a light pen to scan bubble chamber film, but had been repurposed for gameplay (Jones, 2014). The use of knobs and joysticks illustrates an important point about *Spacewar!* adaptations: programmers typically used whatever controls were readily available for the computer rather than built their own.

Next came *Space War*, programmed by Evan Suits of DEC in January 11, 1971 and published in *DECUS* March 22.¹⁸ The game ran on a LAB-8 display and was programmed in PAL8. It retains hyperspace, but with a constant 3:4 chance of survival rather than the original 1:8. The ships here also have retrorockets, allowing the player to decelerate. Torpedoes cannot be fired in volleys, but only once every few seconds. The game code also has a section where programmers can load in special victory messages.

Suits graduated from the University of Michigan in 1968 (Class Notes, 1970) and would have seen *Spacewar!* on the PDP-1, PDP-4, or DDP-224 there. He was obviously an avid Spacewarrior, since his first comment line in the code is “Interplanetary Death and

16 The LINC-8 was manufactured between 1966 and 1968 and was a combination of the PDP-8 and LINC (Laboratory INstrument Computer). The popular LINC was manufactured from 1962 to the end of 1969, and ran on emulation through the LINC-8.

17 DECUS catalog number L-39.

18 DECUS catalog number 8-395.

Destruction on your LAB-8,” and the game's goal is to become “Supreme Ruler of the Universe.” The code is full of similar descriptors: when the Delta ship is destroyed, for instance, the notes state, “DRINK LEADEN DEATH, NUMBER ONE!” Ironically, *Spacewar!* had traveled full circle from DEC to Michigan and back.

At least one other PDP-8 version was programmed in 1974 by Doug E. Wrege and Don Harmer of D.E. Wrege & Associates, a computer software company in Atlanta, GA with ties to Georgia Tech.¹⁹ The ships use retrorockets, but rocket exhaust is not displayed while in hyperspace. The spaceship designs were changed to the Klingon Battle Cruiser from *Star Trek* and the classic *Flash Gordon* rocket, and there are also flying saucers.

PLATO

Spacewar! found its way to the University of Illinois through PLATO, an early experiment in adapting computers to education that allowed students and faculty to both use and program interactive lessons. The game was adapted around 1969 by Richard Blomme, one of the heads of PLATO. Blomme used custom ASCII graphics to represent spaceships instead of drawn images, a common technique on PLATO. *Spacewar!* also made use of an innovative big board style matchmaking system, similar to those found on modern online multiplayer games. The big board displayed a list of user nicknames, allowing players to challenge anyone to a duel.

Unlike in other labs, PLATO users could spend lots of time not only playing games, but also programming new ones – provided other students weren't doing classwork. As a result, games quickly became more sophisticated, and *Spacewar!* eventually lost its popularity. However, it was still requested and played sporadically until PLATO went on the ARPANET in 1974, at which time many big board style games became incompatible. To solve this problem, Silas Warner, creator of *Castle Wolfenstein*, programmed a networked version called *Orbit War*.

19 The two published a paper, “SPACEWAR--A Tool for Teaching Assembler Programming, Operating Systems, and Real-Time Programming” in *DECUS Conference Proceedings*, 1974.

Spacewar!'s influence can be seen on other PLATO games, including *Dogfight* (1973 or 1974), a 2D airplane fighting game, and Brand Fortner's 3D simulation *Airfight* (1975), which later lead to *Microsoft Flight Simulator*. Both demonstrated a fascination with one-on-one duels, a trend also found in arcade games such as *Tank* (1974). However, the greatest influence can be seen in *Empire*, John Daleske's epic game of strategy and tactics. The first version, finished in May 1973, involved managing a planet's resources. It was replaced in September by *Empire Version II*, which featured large battles between different spacefaring races inspired by *Star Trek*. Gameplay was similar to *Spacewar!*, with acceleration, torpedoes, and gravity mechanics, but on a larger scale with fleets of ships. Subsequent versions of *Empire* continued to emphasize tactical space combat, and by the early 1980s, large player communities emerged, staging mock wars between guilds. This concept of including *Spacewar!* style gameplay as part of a larger simulation is an enduring legacy that can arguably be traced through games like *Star Control* (1990).

Observations

The above examples indicate *Spacewar!* spread much more slowly than previously thought. Furthermore, the large, active player communities celebrated at MIT and Stanford are exceptions and should not be used as examples of every computer lab in North America. There is, however, clear evidence of *Spacewar!*'s dissemination from lab to lab, as with the cases of MIT to the University of Minnesota, but notably, the game's spread was not immediate: when Spacewarriors transferred to other labs, they first had to build the software libraries they were hired for before they could start hacking their own programs.

This helps explain the delay between when the platform was manufactured and installed to when *Spacewar!* was programmed for it. Programming *Spacewar!* was a massive undertaking, consuming hundreds of hours at a time when most computers were dedicated to practical research. Games could only be programmed during downtime, excepting unique cases where *Spacewar!* was specifically programmed to demonstrate the capabilities of new hardware, as with the IBM System/360, Data General NOVA, and Imlac PDS-1. Additionally, in some instances there was no need to regulate the game's use simply because most available computing time was already reserved for research purposes and programmers

were interested in other things; laboratories at places like University of Michigan and Harvard were essentially self-regulating. The atmosphere of each computer lab was unique – there was no “national” culture of computing until the proliferation of microcomputers.

However, a shift occurred around 1968, as indicated by the large number of documented *Spacewar!* versions after this period. This can be attributed to the growing number of computers available as well as an increase in the number of graphical displays.²⁰ The most popular graphics terminal of the period was the IBM 2250, introduced in 1965 for the IBM 1130 and 360 series of computers. The displays were developed in response to the growing need for computer graphics in such areas as aerospace and drafting. The market, dominated by IBM, included new models from DEC, HP, and Control Data Corporation in 1967 and 1968. By 1971, it was estimated there were approximately 1000 interactive graphic displays throughout the United States (Da Cruz, 2008).

Larger numbers of computers with greater processing power meant more available computing time as well as more computer programmers. Although games were not officially sanctioned, more computer resources meant games were more likely to appear in a given lab or programmed on a certain machine. Ultimately, *Spacewar!* spread with the market for interactive displays, and as the size of that market grew, so did its audience, until eventually the game achieved mainstream notice.

On January 26, 1969, Walter Cronkite demonstrated *Spacewar!* with physicist John Mott-Smith at the Air Force Cambridge Research Laboratory in Everly, Massachusetts on the TV show *The 21st Century*.²¹ The computer was described as “only for relaxation for the programmers,” suggesting it was dedicated to non-critical research, such as computer graphics – Mott-Smith was also a recognized digital artist, with work featured in the London Institute of Contemporary Arts and *LIFE* magazine (“The Luminous Art of the Computer,” 1969). In an era of heightened Cold War tensions and the looming threat of an actual “Space War” with the Soviets, Cronkite was quick to dismiss any military application: “No, the

20 The 1970 issue of *Computer Display Review* lists 43 different models. Some of these, such as DEC displays, the IBM 2250, and Imlac PDS-1, are known to have run *Spacewar!*

21 The episode, “Tomorrow...Today!,” broadcast January 26 and featured training simulations by NASA for Apollo astronauts. A film copy has not been located at this time, but a transcript is available from the Dolph Briscoe Center for American History, Box No. 98-331/30.

Pentagon is not designing interplanetary warships. This 'space war' is an exercise programmers use to relax and to learn what their computer can do" ("Cronkite Flips," 1969).²²

Despite this recognition, it is important to remember that throughout the 1960s, *Spacewar!* was only available at computer labs in universities and research facilities to students, teachers, and employees, and only occasionally made available to family, friends, and visitors. While the general public was made aware of the game through *The 21st Century*, *Analog*, and *Rolling Stone*, it would not be until 1977 when Larry Rosenthal released the arcade adaptation *Space Wars* that Russell's game finally enjoyed a mass audience. Rosenthal in turn influenced other designers, such as Ed Logg and Lyle Rains (*Asteroids*, 1979) and Eugene Jarvis (*Defender*, 1981), who, like many other designers, also played *Spacewar!* while in college.

Conclusion

There are many dangers of making broad conclusions on areas of history where little information is readily available, particularly when having individual examples represent wider trends. This underscores the value of historical research for game studies rather than continued reliance on a small number of primary sources.

The lack of information regarding *Spacewar!* in the 1960s is troubling, though unsurprising. Documentation from this period is scanty at best, and many versions, such as *DUEL*, have so far been impossible to locate. While source code periodically appears thanks to the efforts of projects such as Bitsavers, as well as museums, archives, and individual collectors, the historical record will remain scarce, and we are forced to accept that many early computer games are simply lost forever. For this reason, oral histories are our only chance of recording the history of this lost era of computer games.

22 Conspiracy theorists were unconvinced. Goodavage (1972) suggested *Spacewar!* was a classified simulation used to train pilots to fight aliens.

However, collecting oral histories has its own obstacles. Programmers who were active during the 1960s are now in their 70s and 80s, and memories from half a century ago are often hazy or unreliable and must be verified from period records. Many surviving artifacts are owned by private collectors, few of which are members of organized networks. Some might be interested in recording oral histories of computer games of the era, but if they are unaware of such an effort, how can we record them? Others are difficult, if not impossible to track down. Many of these individuals may also have artifacts from the period, including photographs, code, paper tape, controllers, and other materials that would greatly illuminate our understanding of early computer games.

These difficulties are not insurmountable. We hope to continue documenting the oral history of *Spacewar!* and other early computer games. There are still many more examples of game software that need to be investigated, and many oral histories waiting to be recorded. We hope other historians will continue to follow this method of collecting oral histories and that more people will be willing to come forward and share their stories for future generations.

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Reconstructing *WARRIOR*: Vectorbeams, Natural Magick & Business Intrigue

Thomas H. Rouse

Abstract

Warrior, a two-player fighting game released by Vectorbeam/Cinematronics in 1979, represents an early pinnacle of integration between analog and digital displays in the history of arcade gaming and a terminal point for vector monitor technology. This article examines the business intrigue around *Warrior*, its adaptation of the “Pepper’s Ghost” optical illusion, its use of vectorbeam technology, and several attempts at the game’s reincarnation.

Keywords

Arcade machine, Tim Skelly, Lawrence Rosenthal, Cinematronics, Vectorbeam, platform studies



Figure 1 - Knight 2 in the upper left corner of the screen during attract mode. Screen capture of video taken by the author.

Introduction

"WARRIOR" is a two player vector generated video game designed to give the player realistic sword fighting action. The three dimensional effects brought about by the playfield and the high video resolution of the VECTORBEAM(TM) monitor are only part of this. The feeling of realism is also brought about by the energy hum in the audio circuit and the spectacular artwork by renowned fantasy artist Frank Brunner.

—*Warrior Operation and Maintenance Manual* (1979), p. 3

In the late summer of 1979, workers put the finishing touches on *Warrior* arcade cabinets at the Vectorbeam manufacturing plant in Union City, California. In the depths of Midwestern winter in Ann Arbor, MI, the last *Warrior* cabinet open to the public rumbled loudly in the basement of Pinball Pete's in January 2013, across from *Star Wars: Racer Arcade* (LucasArts, 2000) and right next to *Robotron: 2084* (Vid Kidz, 1982). Perhaps in the middle of the night, or even in the middle of a bout, the vector monitor responsible for drawing the two knights made of triangles on the half-silvered mirror's reflection of the vibrant hand-drawn background burns out. The blacklight still reflects the castle interior onto the mirror; the crotch-height speaker still roars when a curious passerby drops a token into the slot. Yet players can no longer direct the vector-drawn swordsmen to duel or push each other down infinite pits. Is this the moment, some thirty-four years after its release, that *Warrior* in its original form exits the realm of public space?

If there is another *Warrior*-in-the-wild rumbling on in a distant Laundromat or pizza parlor, it seems no word of it has reached the collectors and curators contacted for this article. Perhaps

Pinball Pete's *Warrior* will be repaired and returned to its place on the arcade floor, or another instance of the machine will be made available at a museum exhibit or vintage-themed arcade in the near future. In any case, *Warrior* as originally conceived is no longer readily accessible, even to those players willing to trek cross-country for the chance to play rare games. Collectors with deep pockets may need to wait months or years for an existing copy to enter the market.

In brief, this article attempts to trace the origins of *Warrior*, understand its place in popular culture during its thirty-six year history thus far, and trace the outlines of its peculiar reincarnations. Using *Warrior* as a focal point, this article is also an exploration of what information has been preserved about the early history of games as a mass medium, how perceptions of arcade games have changed for would-be historians, and how later developments in the medium of the videogame have biased later histories. I focus on three divergent points of interest in an attempt to triangulate the origins and of this rich artifact: a media archaeology of the optical illusion that gives *Warrior* its singular aesthetic, a platform study (Montfort & Bogost, 2009) of the vectorbeam technology underlying its digital aspects, and an attempt at parsing the business intrigue that surrounded the game's creation. In turn, this article examines issues as diverse as technological transfer from academia to industry, material limitations on design, obsolete technology, patent fights, and conflict between creators and management. I conclude by examining three moments of *Warrior*'s reconstruction and remediation.

Warrior is a unique game, never inspiring the legions of copycats common to many early titles. Using a clever optical illusion, it combines screen-printed art of a castle interior with two sword-wielding combatants viewed top-down using a half-silvered mirror and a vector monitor, an early alternative to the then-competing and now-dominant raster display. Lacking the memory or processing speed necessary for a computer opponent, the game requires two players, each of whom guides their warrior with a joystick or holds down the joystick's button to stand still and control the swinging sword. This bi-modal control scheme was a compromise made by the game's designer; as a result, players must switch between moving to a strong position and attacking. Guiding their vector-traced combatants around a florescent castle interior replete with staircases and a bridge between two infinite pits, players

must either guide their sword through the center of their opponent's avatar or force the enemy into one of the pits. The richly detailed knights even turn their heads to keep constant watch over their opponent. Gameplay happens at a deliberate pace, with most combat focusing on struggling over the knight's swords in a bind position, reminiscent of the famous lightsaber clashes in *Star Wars*. Players are typically defeated by being forced into a pit, being attacked while attempting to reposition, or by misjudging the range of their opponent while moving and subsequently being hit before switching to controlling their sword. One member of the modding community who has examined the code recently wrote: "The original game included an odd bit of code which seems to have the effect of simulating the knight's armor. You can't kill the other player without having some force behind your swing. What it actually means during the game is added frustration and inability to move your sword as you might like," (Shiels, 2014). After ten "time units," (30-120 seconds, adjustable by the arcade operator) displayed as a countdown on the screen, the player with the fewest deaths wins (*Warrior Operation and Maintenance Manual*, 1979, p. 4). *Warrior* was never tremendously popular, unlike fellow vector-based game *Asteroids* (Atari, 1979) or coin-devouring legends like *Space Invaders* (Taito, 1978) and *Pac-Man* (Namco, 1980), but it has nonetheless taken on the status of a "grail game," an item so desired and difficult to acquire that collectors analogize their quest with the Arthurian quest for the holy grail.

In recent years, the volume of writing on the history of videogames has flourished, from wide-ranging surveys (e.g. Herman, 1997; Kent, 2001; Wolf, 2007; Donovan, 2010), to memoirs (Baer, 2005) and biographical sketches (Kushner, 2004) of pioneering figures in game development, to in-depth analyses of time periods (Burnham & Baer, 2001; Wolf et al., 2012) and platforms (Montfort & Bogost, 2009; Jones & Thiruvathukal, 2012; Maher, 2012; Street, 2012). Other projects have focused on contextualizing and clarifying the early history of single games (Lowood, 2009; Montfort, 2009). Following that approach, this article focuses on a single title in order to analyze a history spanning five decades across multiple disciplines. In the existing academic literature, *Warrior* makes only cameo appearances, appearing in half of a paragraph in Donovan's *Replay* (2010) and ambiguously described in Wolf's *The Videogame Explosion* (2007), discussed below. There are also primary sources and articles written for popular, enthusiast, or industry audiences. I was unable to access many of the coin-operated industry magazines from the time period around *Warrior*'s release

due to a scarcity of archival holdings of this material. Two early histories collected and circulated on Usenet, one by Steve Ozdemir in 1993 and one by Bill Paul in 1996, demonstrate the confusion and rumors surrounding early arcade games during the beginning of the Internet's democratization. In 1999, two long emails, one by programmer Dan Sunday and one by Tim Skelly, circulated on Vectorlist, an email listserv for the discussion of vector-based games. More recently, Keith Smith's "The Ultimate (So Far) History of Cinematronics/Vectorbeam" (2012-2014) stands as the most authoritative source on Cinematronics, Vectorbeam and *Warrior*. This article highlights points of disagreement about and the changing motivations for discussing *Warrior* contained in these sources.

Taking inspiration from Raiford Guins' *Game After* (2014), this article looks beyond the moments of development and commercial viability to the "afterlife" of the videogame cabinet as a physical artifact moving through time and space and a shifting sets of meaning. Guins' focus on afterlife highlights the way the cultural meaning of games change through time and the way their materiality, particularly in preservation, becomes more prominent. Afterlife is in effect a study of afterlives, as different instances of the same machine end up in landfills, private collections, museums, or are transmogrified into arcade emulation machines or used as a cabinet for another game. The materiality of games has been obscured, first by separating the game from dedicated hardware in emulation or recreation on other platforms and later by trends such as digital distribution. Focusing on materiality opens up new sources of evidence for a game's afterlife, from user wear and tear to modification to stickers that reveal licensing and ownership information.

Using archival resources, personal correspondence, first-hand gameplay experience with a working instance of the arcade cabinet and previously published interviews and listserv discussions with creators of the game, this article attempts to account for *Warrior*'s genesis and lifespan. In so doing, it does not strive to be a definitive text of only undisputed facts. Instead, it seeks to bring competing and contradictory accounts into conversation, declining the veneer of unitary authority in favor of capturing and appreciating the value of the ambiguity that exists at the time of writing. As time passes and early games begin to recede from living memory, all future scholars will be at the mercy of what video game historians, curators, collectors and creators write and preserve. This effort stands as a test of the

progress so far and emphasizes areas where records are incomplete or call for further research.

Warrior in Circulation: The Player and the Operator



Figure 2. Warrior arcade cabinet. Photo International Center for the History of Electronic Games (Creative Commons 3.0, By-NonCommercial-NonDerivative)

Warrior lacks the spectacle of near-contemporary *Hercules*, a mammoth pinball machine dubbed the largest ever made (Atari, 1979), large multiplayer pieces like *Tank-8* (Atari, 1976) or *Star Wars: Arcade Racer* (LucasArts, 2000). It has a typical upright form factor not unlike classics such as *Pong* (Atari, 1972) and *Space Invaders* (Taito, 1978) (Fig.1). On closer inspection of the cabinet's exterior, however, it begins to stand out. While titles such as *Pac-Man* (Namco, 1980) featured illustrations suited to a cartoon and Williams Electronics' titles of similar vintage such as *Defender* (1980) or *Joust* (1982) featured bold three-color side panels seemingly printed with a dark arcade or barroom in mind, *Warrior* has a highly detailed full-color screen print drawn by Frank Brunner (*Warrior Operation and Maintenance Manual*, 1979, p. 4), a Marvel artist for titles such as *Dr. Strange* (Smith, 2012b, pt. 4; Cody, 2000).

Few figures are neglected as much as the operator in the history of the video game. Several of the operators I attempted to contact for this article either had little memory of individual games and their tenure, or were unwilling to participate. Cowan's consumption junction (1987), an analytical focus on technological artifacts from the perspective of their purchasers and the markets they were part of, is a productive starting point for game purchases centered around the home and accessible to middle class consumers, such as the majority of home console and personal computer games. However, arcade machines in the late 1970s were prohibitively expensive for consumers, and were typically purchased by small business owners who either operated the machines on their own premises, which might be exclusively devoted to an arcade or part of an unrelated venture, or leased the machines to other businesses on a "route" travelled for the collection of coins and for periodic maintenance.

Operators existed prior to electronic games, dealing in pinball machines, jukeboxes, slot machines, and electro-mechanical games. As a result, trade publications from the 1970s such as *RePlay*, *Play Meter*, and *The Amusement Review* are a valuable source of information on early video game sales, marketing and distribution. In contrast, the first magazines dedicated to video game consumers, *Electronic Games* and *Computer and Video Games*, began publication in 1981, although other consumer-related magazines included games coverage, such as the “Arcade Alley” column in *Video* magazine beginning in 1978 (Kohler, 2011). According to an advertisement in the May 1979 issue of *Replay*, Cinematronics had fifty-five distributors throughout the U.S. and Canada at the time of *Warrior*’s release. An operator contacted for this article was impressed in the late 1970s by the unique way *Warrior* looks and sounds at a trade show hosted in Chicago by the Music & Amusement Operators Association before purchasing his machine from one such distributor, Cleveland Coin, International (Mike Reynolds, personal correspondence, 2013). During this machine’s commercial peak, it shared the arcade floor with a variety of pinball machines as well as *Space Invaders* (Taito, 1978), *Asteroids* (Atari, 1979), *Night Driver* (Atari, 1976), *Stunt Cycle* (Atari, 1976), *Galaxian* (Namco, 1976), *Battlezone* (Atari, 1980) and *Boot Hill* (Midway, 1977).

In a dark environment, close enough to the machine to peer down into *Warrior*’s display, the player sees the vibrant combination of vector graphics with hand-drawn art reflected onto a half-silvered mirror from the purplish glow of a blacklight. Unlike most games, the monitor is not directly visible to the player, but is instead mounted with its screen facing up beneath the control panel. To see the playfield, participants must stand close to the machine and look down into it. Spectatorship from behind players is difficult if not impossible. Placement within the cabinet partially shields the display from outside light; because *Warrior* relies on reflections for its optical illusion, it is particularly susceptible to glare. A cardboard



Figure 3- Warrior cabinet side-art, ICHEG archival machine. Photo by the author.

screenprint of a brick wall and four fire pits face the player where most machines would display the screen. The monitor produces the stark white outlines of each player's warrior, along with the current score and the time remaining in the match. Above the monitor, slanted at an acute angle, is Brunner's hand-drawn castle interior that the players' avatars traverse. That image is reflected onto a mirror directly behind and below the control panel, which flips the image and projects it onto the half-silvered surface, creating the illusion that the electronically generated graphics and the hand-drawn art exist on the same surface. While capable of generating only four different sounds—"a pit fall, explosion, reappearance hiss and two levels of sword hum" (*Warrior Operation and Maintenance Manual*, 1979, p. 20) the monaural speaker mounted just above the coin mechanism is remarkably loud, even at its lowest setting.

Given the dominance of the computer in contemporary society, it is tempting to overemphasize its role in the history of arcade games. Perhaps historians of electronic games are more comfortable in the computer lab than the barroom. However, *Warrior* is a valuable focus for study precisely because it requires acknowledging roots of the videogame beyond the digital, turning not only to the analog but also the domain of popular entertainment. A review of early magazines of the nascent arcade game industry in the mid-to-late '70s, such as *Amusement Review*, *Replay*, and *Play Meter*, makes this clear: arcade games are often portrayed as novelty items and the pages are dominated by advertisements for pinball machines and bestseller charts for jukeboxes. Given that business operators have plied customers for coin in return for a taste of automated amusement since the 19th century (Costa, 1988) and the earliest arcade cabinet prototypes were evaluated in bars (Donovan, 2010, p. 20), it should be unsurprising that the cultural practices of public places of entertainment and the technologies of the amusement industry would have a strong influence on the early history of electronic games. Furthermore, players from that time period would likely find the appearance of techniques and technologies from electromechanical games and the amusement industry to be a logical extension of what they were accustomed to encountering in similar spaces, while later generations of gamers are unlikely to have a field of reference for the optical illusion and subsequently may view it as exotic. For contemporary game scholars or enthusiasts who come across a mention of *Warrior* in the literature and seek to see it in action, no video of the arcade machine being played appears to

be on YouTube, Vimeo or fan sites (although evidence of video of the game previously available exists in the Internet Archive snapshots of Superzapper.com from roughly 2000-2002). Due to the analog nature of the original game cabinet and its variant on cathode-ray tube technology (discussed below), authentic emulation of its appearance on modern computing systems is unfeasible. I turn to the emulation of *Warrior* at the conclusion of this essay.

Moreover, according to Kirkpatrick's account (2012), what we now recognize as the "gamer" identity had not yet formed at the time of *Warrior*'s release. Players of that time period lacked the lexicon of genre that shape current discussions. Many contemporary players had trouble making sense of *Warrior*—the owner of the machine at Pinball Pete's, the site of the final public machine discussed at the beginning of the article, had to put a sign on the cabinet emphasizing that the game required two players after complaints from patrons that the machine was broken (personal correspondence, Mike Reynolds, November 2013), although many notable games from the time period also required two players (e.g. *Pong*, Atari, 1972).

As for gamers of the present day unfamiliar with the state of arcade gaming at the time of *Warrior*'s release, they are likely to be shocked not only by the tremendously vibrant combination of digital and analog imagery, but also by the lack of visible pixelization, a visual motif as suggestive of the early period of electronic games to current gamer culture as *Pac-Man*, *Donkey Kong*, or the *Space Invader*. To understand why *Warrior* lacks pixels and the origins of its detailed hand-drawn backgrounds, we have to turn to the electronic display technology and the optical illusion that made its aesthetics possible.

Natural Magick

The use of a half-silvered mirror to give the appearance that multiple objects from different perspectives and spaces occupied the same plane was widespread in the genre of electromechanical games that preceded video games. The technique was described in depth in the first published article on the history of video games (Bristow, 1977)— as a hallmark of their electromechanical predecessors, recognized as still competitive with early videogames. Bristow, then the Vice President of Engineering at Atari, described three limitations of the electromechanical games: their use of labor-intensive mechanical components, the cost of

electromechanical components, and the limited motion and number of objects feasible. According to Bristow: “To get around these limitations and to allow better games, the first video games were created” (1977, p. 58). Skelly himself acknowledged that he was inspired to use the half-silvered mirror to combine *Warrior*’s digital characters with a hand-drawn background, and attributes its origins to “the early days of magic” (Cody, 2000).

Indeed, combining multiple images on a half-silvered mirror far predates video arcade games, and even the electromechanical games that proceeded them. Stretching back to the 16th century, Giambattista Della Porta, an Italian playwright, occultist, and early scientist, describes a similar method of combining the reflection of various objects on a single surface in a segment titled "How we may see in a Chamber things that are not" (1658 English translation of 1584 *Magiae Naturalis*):

For we may in any chamber, if a man look in, see those things which were never there. [...] Wherefore to describe the matter, let there be a chamber wherein no other light comes, unless by the door or window whence the spectator looks in. Let the whole window be covered in glass, but let one part be polished, that there may be a looking glass on both sides, when the spectator must look in. [...] For what is without will seem to be within, and what is behind the spectators back he will think to be in the middle of the house, as far from the glass inward, as they stand from it outwardly, and think he sees nothing but the truth.

Friedrich Kittler identifies this very description as a forerunner to the development of the *camera obscura* and part of the lineage of modern cinema (trans. Enns, 2010, p. 53); video games too have a deep history. An inventor named Henry Dircks developed a variation of della Porta’s illusion with the use of plate glass; in the 1860s, London’s Royal Polytechnic Institution,¹ which combined the popularization of science with demonstrations of illusions, inventions and popular education, incorporated the illusion under the direction of “Professor” John Henry Pepper (Brooker, 2007). Due to the success of the illusion at the Royal Polytechnic Institution, it became popularly known as “Pepper’s Ghost.”

¹ Now known as the University of Westminster.



Figure 4: from this perspective, the castle interior painting which is reflected on the playfield below is clearly visible.

The Pepper's ghost effect was widely used in electromechanical games that were near contemporaries of *Warrior*, such as *Shootout* (Chicago Coin, 1976), as well as fellow vector game *Asteroids Deluxe* (Atari, 1981). More recently, it was used to overlay a digital screen over a traditional pinball playfield as late as the last gasp of the major pinball manufacturer, Williams' Pinball 2000 system used in *Revenge from Mars* and *Star Wars Episode I* (1999).

Technological Transfer:

Space War(s)(!) from MIT to Cinematronics by way of Computer Space

Just as Lowood (2009) tells us of *Pong*, the "winding path" of *Warrior* begins at *Spacewar!* (Tech Model Railroad Club, 1962). Lawrence ("Larry") Rosenthal graduated from the Massachusetts Institute of Technology (Kent, 2001, sec. The Golden Age Begins),² the home

² N.B. Kent claims that Rosenthal's version of *Spacewar!* improved upon the original by converting it to vector graphics. While Nolan Bushnell and Ted Dabney's version (*Computer Space*, Nutting Associates, 1971) used raster display technology, the original *Spacewar!* was displayed on an oscilloscope using similar principles to Rosenthal's implementation.

of *Spacewar!* (see Brand, 1972). While Kent and Paul (1996) claim that Rosenthal wrote his master's thesis on *Spacewar!*, Rosenthal actually received his master's in Electrical Engineering at the University of California, Berkeley, with a thesis titled "Machine classification of multiple-unit action potentials: research project" (Rosenthal, 1973). In fact, Rosenthal saw others play *Spacewar!* during his time at MIT, but claims to have never actually played it himself (Rosenthal, 2014, 30:56), but instead played Bushnell & Dabney's *Computer Space* (Nutting Associates, 1971), the first commercially sold coin-operated video game, on a visit to MIT's campus after completing his master's degree (Rosenthal, 2014: 32:05). Rosenthal began work on his prototype of a *Spacewar* clone in 1973 and was able to produce vector images by 1974 (Rosenthal, 2014, 2:10). He eventually filed U.S. Patent Nos. 4053740 and 4027148, which describe a self-contained computer system for running an arcade game and a vector monitor (Rosenthal, 1977). By adapting a commercial raster-based CRT monitor with his own circuitry controlling the electron gun that traces the image on the monitor (2014, 38:01), Rosenthal had a viable way of using readily available commodities to create an arcade machine. After shopping his technology around to many in the industry using a prototype built into a Samonsite suitcase (and, according to Skelly, being widely rejected for his request for 50% of revenue from his version of *Spacewar!*), Rosenthal found a buyer in Cinematronics (Skelly, 2012, 141). Notably, Rosenthal himself has recently disputed the 50% royalty figure (Smith, 2012b, Pt. 3), instead putting the figure at 5% (Rosenthal, 2014, 0:03). Founded in 1975 in El Cajon, California, Rosenthal's partner corporation Cinematronics got its start by selling a *Pong* copy (Smith, 2012b, Pt. 1, sec. "Sidebar - Cinematronics' *Pong* Clone). Its subsequent games performed poorly, but Rosenthal's game, renamed *Space Wars*, became the first vector-based game widely released to the arcades. It sold more than 10,000 units according to Tristan Donovan's *Replay* (2010, p. 84) and more than 30,000 units, with a three year reign in the top ten of best-selling arcades in *Replay Magazine*, according to Skelly (2012, 142). In Rosenthal's recollection (2014, 5:02), however, only 8,000 total units were built between Cinematronics and Vectorbeam: the companies simply did not have the capacity to produce 30,000 units during the peak of the game's popularity. Paul (1996) puts the run of most Cinematronics games at 5,000 units, explaining:

The game industry at the time was a seasonal business. Games would be designed and the software written in the summer. There would be a small production run for

samples and trade shows in the fall. Assuming all went well, the distributors would place their orders shortly after the trade show, and they would start making games as fast as they could.

Warrior, however, was not published by Cinematronics alone. We turn now to Vectorbeam and its namesake technology.

Vectorbeam: the Company and Platform

What separates vector display technology, also referred to as X-Y display (for x, y coordinates) and as Quadrascan by Atari, from typical cathode ray tubes in televisions and computer monitors? Using a platform studies approach (Bogost & Montfort, 2009), we can understand the technical affordances and limitations of the hardware and better appreciate the material constraints that shaped *Warrior*'s design. Early video games such as *Spacewar!* and *Tennis for Two* (Higginbotham, 1958) used an X-Y display presented on an oscilloscope, which uses a different technology for generating images on the screen but follows the same coordinate-based principles. Consumer televisions used raster scan technology, which begin firing an electron beam at the phosphors in the top left-hand corner of the screen, then proceed quickly across the row, activating the beam to draw pixels in some segments, before returning to the left-hand side of the screen on the next row, and so forth until the entire screen is traced and the process begins again at the top, thereby completing one "frame" (Rubin, 1998; Montfort & Bogost, 2009a, p. 83). This process happens so rapidly (from twenty-four to thirty times per second in major film and television formats) that the human eye perceives change between multiple frames as movement due to the persistence of human vision and the persistence of illuminated phosphors. An X-Y or vector display, on the other hand, directs the electron beam to any coordinate, turns on the beam, and then moves to any other coordinate, drawing a straight line in between.³ The vector traces can even be programmed to spend a longer amount of time on one point, thereby increasing the luminance of the image at that point, a technique used in *Asteroids* (Atari, 1980) and its successors. Because the X-Y display system can move freely from point to point, it is not required to break the images it could create into small rectangles known as pixels (or subsequently hold

³ In practice, lines can only be so long; for example, drawing a line from one side of the screen to the other required two connecting lines (Shiels, personal communication).

information for each of those pixels), and is just as capable of drawing a straight line diagonally as vertically or horizontally. As a consequence, vector-beam displays were capable of much higher levels of resolution than raster displays and can smoothly rotate images, but were capable only of drawing outlines on a black background that could not be "filled in" with color. The Vectorbeam system is also only capable of generating a white light at two levels of intensity, rather than the sixteen colors of a near-contemporary raster-based game such as *Defender* (Vid Kidz, 1980) (Camper, 2012).⁴ Over the long-term, the amount of memory available for storing information for each "frame" increased, as did the density of pixels available on a monitor, allowing raster graphics to dramatically improve.

What do these technological affordances mean for *Warrior*? The higher resolution of the vector display allowed for a much greater level of detail than that available to raster-based games; compare the richly detailed knights of *Warrior* with the blocky protagonist of *Pac-man*, for instance. Being able to freely rotate images allows players to engage in combat in three hundred and sixty degrees, with no privileging of the cardinal directions prevalent in other games. We might think again of the four directions of movement built into the level design of *Pac-Man*. On the other hand, the design of the vectorbeam system limits the amount of phosphor that can be illuminated at one time. As a result, vector-based games cannot offer the "filled in" background of later raster games, prompting *Warrior*'s screen-printed background. Limitations on how much can be drawn by the vector in a single cycle may have also prevented Skelly from providing a digital representation of the pits in the middle of the playfield. Without the screen-printed background, *Warrior* is very difficult to play.

Tim Skelly, the designer of *Warrior* as well as many other early games for Cinematronics, joined the company in the fall of 1978—arriving the day after Larry Rosenthal left El Cajon and Cinematronics to start his own company, Vectorbeam, in Union City, California, and took all of the documentation and development hardware required for programming his platform with him (Skelly, 2012, 143). Rosenthal clarified that the development hardware was his personal property, and that he took the instructions on the advice of his lawyer, in the

⁴ However, Atari's Color-Quadrascan on games such as *Tempest* (1981) later introduced colorized vector graphics.

words of Rosenthal a “dumb, dumb stupid mistake” and “the one thing I’m not proud of” (2014, 7:28). Given *Space Wars*' success and their previously negotiated right to produce more games based on Rosenthal's hardware, Cinematronics resolved to focus on vector-based games, despite the fact that they had no personnel who knew how to create new programs for the system or the documentation to tell them how to do so. With the assistance of hardware engineers and a copy of the programming manual made by a former technician, Skelly was able to figure out how to program games on the Cinematronics platform, and before designing *Warrior* had completed *Starhawk* (Cinematronics, 1978) and *Sundance* (Cinematronics, 1979) (Smith, 2012b, Pt. 3). Skelly went on to work in the games industry for several decades with Sega-Gremlin, Gottlieb and Microsoft; during that time, he gave many interviews on his time at Cinematronics and wrote a history that was eventually published (Skelly, 2012). Outside of a few anonymous forum posts and blog comments and an email account from Dan Sunday, Skelly’s was the only first-hand account of Cinematronics’ history until Larry Rosenthal delivered a lecture on his time at Vectorbeam at California Extreme, a collector’s showcase for pinball, video games, and other gaming artifacts, in 2014. As a result, Skelly was also the de-facto source for information about Rosenthal, although the two had met only briefly during Skelly’s initial interview.

For *Warrior*, Skelly drew inspiration from the Elric novels of Michael Moorcock, having read them while waiting for programs to compile while working on previous titles (Skelly, 2012, p. 3263). The game was developed over the course of three months (Rothe, n.d.). He seems to have relied on little if any prior art in the field of arcade game design. Skelly, a long-time comic book fan who once interviewed Jack Kirby on his college radio show (*The Daily Northwestern*, 1971), was able to commission Marvel artist Frank Brunner at the San Diego Comic Con to draw the cabinet art and the intricately detailed castle interior that would provide the background (Skelly, 2012, 150). By making the warriors relatively small, Skelly was able to draw a high amount of detail on their figures before having to trigger the "watchdog" circuit, a safety measure implemented by Rosenthal to keep the cathode ray projector from misfiring and damaging the monitor (Skelly, 2012, 152-153). Notably, Atari’s failure to correctly implement a watchdog circuit in its later Quadrascan system has been identified as the factor that ultimately killed vector gaming (Rubin, 1998). Given the complexity of the figures, Skelly only had spare vector capacity for representing the score

and the amount of time left in the game. Luckily, the background would be filled in by the blacklight-lit, hand-drawn art of Frank Brunner.

Business Intrigue, On the Market, Conflicting Accounts

While Tim Skelly was still employed by Cinematronics in El Cajon, workers at the Vectorbeam factory in Union City, California, more than eight hours away by car, built the *Warrior* cabinets in 1979, with screen-printing done by R&N Silkscreening, Inc., in San Jose, California.⁵ Frank Brunner lived nearby, and Skelly was present at the Vectorbeam factory only twice (Skelly, 2012, 153). What led Cinematronics to build *Warrior* in the plant of Larry Rosenthal, their one-time business partner and erstwhile competitor?

Warrior is the only game that launched with the brand logo "Vectorbeam, A Cinematronics Company." Unfortunately for Larry Rosenthal, not long after leaving Cinematronics, his start-up ran into difficulty. Vectorbeam originally produced a virtually identical version of Cinematronics' *Space Wars*, titled *Space War* (Vectorbeam, 1978), before Rosenthal designed *Speed Freak* (Vectorbeam, 1978) and, with the help of a programmer named Dan Sunday, *Scramble* (Vectorbeam, 1978) (Smith, 2012a). The demand for these games was insufficient to keep the production lines at Vectorbeam active, however, and Tom Stroud and Jim Pierce soon repurchased the company of their prodigal programmer (Skelly, 2012, 152) for "a substantial amount of cash" ("Vectorbeam Snapped Up by Exidy," 1979, p. 66) along with the patents underlying the Vectorbeam technology (Smith, 2012b, Pt. 3). Rosenthal's liabilities to the Internal Revenue Service and the demands of payroll at Vectorbeam were consuming his royalties from the Vectorbeam patents, and he was worried about getting in over his head, motivating the sale (Rosenthal, 2014, 19:54). With a new production facility in Union City, CA, Cinematronics moved production of *Warrior* to the Vectorbeam factory under the direction of Tommy Stroud, Jr. *Warrior* would be the only game Cinematronics made in Union City; despite a claim by Skelly to the contrary (2012, 156), contemporary media reports indicate that the Vectorbeam factory was not shuttered by Cinematronics, but purchased by Exidy, ("Vectorbeam Snapped Up by Exidy," 1979; "Exidy Buys Vectorbeam," 1979, p. 6) which also bought the rights to *Tailgunner II*. Dan Sunday, a

⁵ The company's participation is documented on the bottom right hand corner of the arcade machine's front bezel.

programmer who worked with Rosenthal at Vectorbeam, also confirms Vectorbeam's sale (Moore, 1999). An article in *Replay Magazine* claims that Exidy took over while *Warrior* was still being produced, and that Exidy marketed *Warrior* for a period of time ("Exidy Buys Vectorbeam," 1979), a claim that other sources did not verify.

Rosenthal's appearance at California Extreme in 2014 introduced more complexity and depth to the narrative established in the 1990s and 2000s. His lecture has a fascinating rhetorical frame: Rosenthal stands on stage, reading excerpts from Skelly's accounts over the years, Smith's "The Ultimate (So Far) History of Cinematronics/Vectorbeam" and other articles, offering his light-hearted corrections, significantly re-shaping the historical record of Vectorbeam and Cinematronics. He also presents a pivotal artifact, the original prototype of his vector display system, built into a Samsonite suitcase, as a mute testimony to his authenticity. At one point he reads from a highlighted print-out, "Rosenthal left the game industry, never to be heard from again..." before looking up at the audience and adding, "I guess, until today!" cuing applause from his audience (2014, 8:25). His appearance adds considerable depth to our knowledge of Vectorbeam and Cinematronics, although Rosenthal had nothing to say about *Warrior* and seemed to have little interest or knowledge of games developed for his system after he left the industry.

While *Warrior* was developed at Cinematronics by Skelly, a Cinematronics employee, in the manual that shipped with the cabinet, Cinematronics goes unmentioned—*Warrior* is referred to exclusively as a Vectorbeam game (*Warrior Operation and Maintenance Manual*, 1979). While Skelly writes that he "designed all of the game cabinets and hired the artists to execute the cabinet art" (Skelly, 2012, 140), he attributes the craftsmanship of the *Warrior* cabinet to Tommy Stroud, the son of Cinematronics' owner, Tom "Papa" Stroud (Skelly, 2012, 151). Released in September of 1979,⁶ *Warrior* was likely priced at around \$2,000 when sold to a distributor (Skelly, 2012, 142), the equivalent of \$6,433 in 2013, according to the U.S. Bureau of Labor Statistics inflation calculator. To put that price into perspective, an operator around *Warrior*'s release taking a fifty-percent split of revenue from the game, a common

⁶ Some sources claim October 1979 as the game's release date, such as the Arcade History website. See <http://www.arcade-history.com/?n=warrior&page=detail&id=3144> Earlier information from the mid-90s, such as Ozdemir (1994) and the digital copies of the assembly code of the game available on the internet claim the game was released and copyrighted in 1978.

arrangement between distributors and arcade owners, would need players to sink \$4,000 dollars, the equivalent of 16,000 quarters, or at 30-120 seconds per game, about 134 to 534 hours of playtime for *Warrior* to break even at \$2,000. Distributors doubtlessly marked up the game considerably to turn a profit, increasing the preceding figures by anywhere from ten to thirty percent.

The Collected *Warrior*: Preservation and the Grail Game

In 2008, gaming website IGN claimed there was only one known working *Warrior* cabinet (Fahs, 2008). The most popular registry of classic arcade games as of 2013, The Killer List of Video Games (KLOV), maintained by the Internet Arcade Museum and populated with information volunteered by members of the Vintage/(Video) Arcade Preservation Society, records six known working instances of the game, all located in the U.S. Based on the information provided in the database, this listing does not include the aforementioned machine at Pinball Pete's, a fully restored cabinet working as of 2006 in the UK (Edge staff, 2006), a unit in storage in Wisconsin owned by a dealer known as "Pac-man Pat" (personal correspondence with Dino Manzella, November 18th, 2013), the instance owned by Manzella discussed below, and the archival instance of the game held by the International Center for the History of the Electronic Game at the Strong National Museum of Play. The Strong currently holds a working *Warrior* machine as part of its archive, making it available to researchers and rotating in through public exhibitions. The Strong last made its copy of *Warrior* available to the public in the summer of 2013 as part of its Boardwalk Arcade Exhibit (Saucier, 2013). According to their archive listing, the Strong's unit was purchased as an acquisition from the Videotopia collection, a traveling exhibit of vintage arcade machines. Parts are a particular concern for the ongoing preservation of *Warrior*: vector monitors are relatively rare, have not been produced in decades, and are repaired by very few technicians. The joysticks for the game were custom-made by Cinematronics (Skelly, 1999) and replacements are very difficult to find. Furthermore, the internal electronics in many Cinematronics and Vectorbeam games have begun to fail. Mike Shostak, doing business as Cinelabs (www.cinelabs.com), announced plans to create new electronics and a multigame board (i.e. many games on a single chip) for all Cinematronics titles some time in the early 2000s; his website has not been updated since 2006. Vector Labs (vector-labs.com) reproduces multigame boards for color titles, but has not yet reproduced monochrome games

like *Warrior*. Timothy Shiels is currently in the process of reproducing *Warrior* sound boards. Given the fragility of its components and the finite supply of viable replacements, *Warrior*'s continued existence as a playable game, even in the archive, is extremely uncertain. While parts are still available, however, the upkeep of vector games is also an opportunity for their devotees to understand them more deeply in the process of maintenance and rebuilding.

Due to its scarcity and desirability, *Warrior* is sometimes referred to among collectors as a "grail game," a game so difficult to find and so desired that it is compared to the Arthurian holy grail, on the Vintage Arcade Preservation Society (VAPS) community forums. VAPS members often list their grail games, discuss their "quest" to find them, and debate the most sought after games (and whether they are worth the trouble). In 2011, VAPS member "djw90" asked how many others were interested in reproducing the game and three other users indicated their interest ("Reproduction Warrior cabs," 2011). In a thread on hard-to-find arcade machines, one VAPS member, "lintzgm" revealed that he had been searching for a *Warrior* machine for fifteen years (2012). While researching this article, I came across various posts by another collector interested in a reproduction, Dino Manzella. When I first contacted him in 2013 (personal correspondence), Manzella was trying to gain first-hand access to a *Warrior* machine so that he could take measurements and photographs necessary to create a reproduction of the arcade cabinet with a modified version of the game code (discussed further below). After more than a year of searching for the game online, he was able to purchase the machine from a Canadian collector in late September of 2014, for a little more than \$5,000 including shipping. While *Warrior* is a valuable and rare arcade cabinet in the collecting community, it has ultimately depreciated in value from its original price of \$2,000 in 1979 after adjusting for inflation, losing approximately 20% of its value from its original sale price. It is vital for scholars to keep in mind that arcade games which now sell for a few hundred dollars were much more expensive when they were new products intended as a durable capital good for amusement operators, far out of reach of the vast majority of players.

Novelty & History: *Warrior* as First Fighting Game?

Sources before 2009 list *Warrior* as the first one-on-one fighting game (Cody, 2000; Wolf, 2007; Fahs, 2008; Green, n.d.). Some acknowledge precursors, but give *Warrior* a pass on a technicality: "some early boxing games like *Heavyweight Champ* and Atari's *Boxing* that could be seen as brawlers, but never had the fight been taken out of the sports arena" (Fahs, 2008, sec. Fighters Get Medieval). Skelly himself notes that the game was long considered the first one-on-one fighting game, and that an anonymous editor corrected the record on Wikipedia, crediting *Heavyweight Champ* (Sega, 1976) as the first fighting game with a link to the Killer List of Videogames on April 10th, 2007. Previous scholars and historians seem to have overlooked a much more pertinent game to the first fighting game debate which is immune to the caveats of distinctions between "fighting" games and "sports" titles, an early black and white arcade game called *Knights in Armor* (Project Service Engineering, 1976) which allowed two players to each control the sword and shield of a black knight and a white knight jousting. No working copy of the game is listed on KLOV, and little information is available (see gregf, 2012). It is difficult to pinpoint which was released first in 1976 between *Heavyweight Champ* and *Knights in Armor*, as the month of release has not been published for either game; *Knights in Armor* was at least advertised in the May issue of *Play Meter* (1976).

Three Moments of Rebirth

Beyond its original arcade incarnation, there are at least three recreations of *Warrior*: the emulation of the game to run on modern Intel-based processors, a port released for the Vectrex, a home console with a built-in vector monitor, and an ongoing effort to reconstruct *Warrior* as an arcade game with a modified control scheme. All three projects demonstrate that *Warrior* has a lifespan beyond its original materiality.

In the late 1990s, programmer Zonn Moore developed an emulation of the Cinematronics platform, allowing the recreation of the vector-monitor portion of the game on modern computing hardware. Released in 1997, the emulator was a verification of Moore's reverse engineering of the Cinematronics CPU and programming system; he finished documenting the platform in 2000, providing programmers with everything they need to understand a title's decompiled code, modify existing code, or create their own titles for the hardware. Of

course, only the vectors are emulated, meaning that *Warrior* is very difficult if not impossible to play as intended, as the two infinite pits in the middle of the combat arena are not visible. Aaron Giles, a major contributor to the *MAME* project, added support for the Cinematronics Vector System and *Warrior* in 1999 (*MAME* 0.35b6, 1999). *MAME* can render a raster background below the vector image, making the game much more playable. In any case, the vectors are given a pixelated appearance inconsistent with the smooth lines of the original hardware as they are rendered on low-resolution raster emulators. The only video readily available on YouTube of *Warrior* at the time of this publication is an emulated version with a raster background, and the description does not indicate it is emulated; many who watch the video likely have little idea of how different the original game appears.

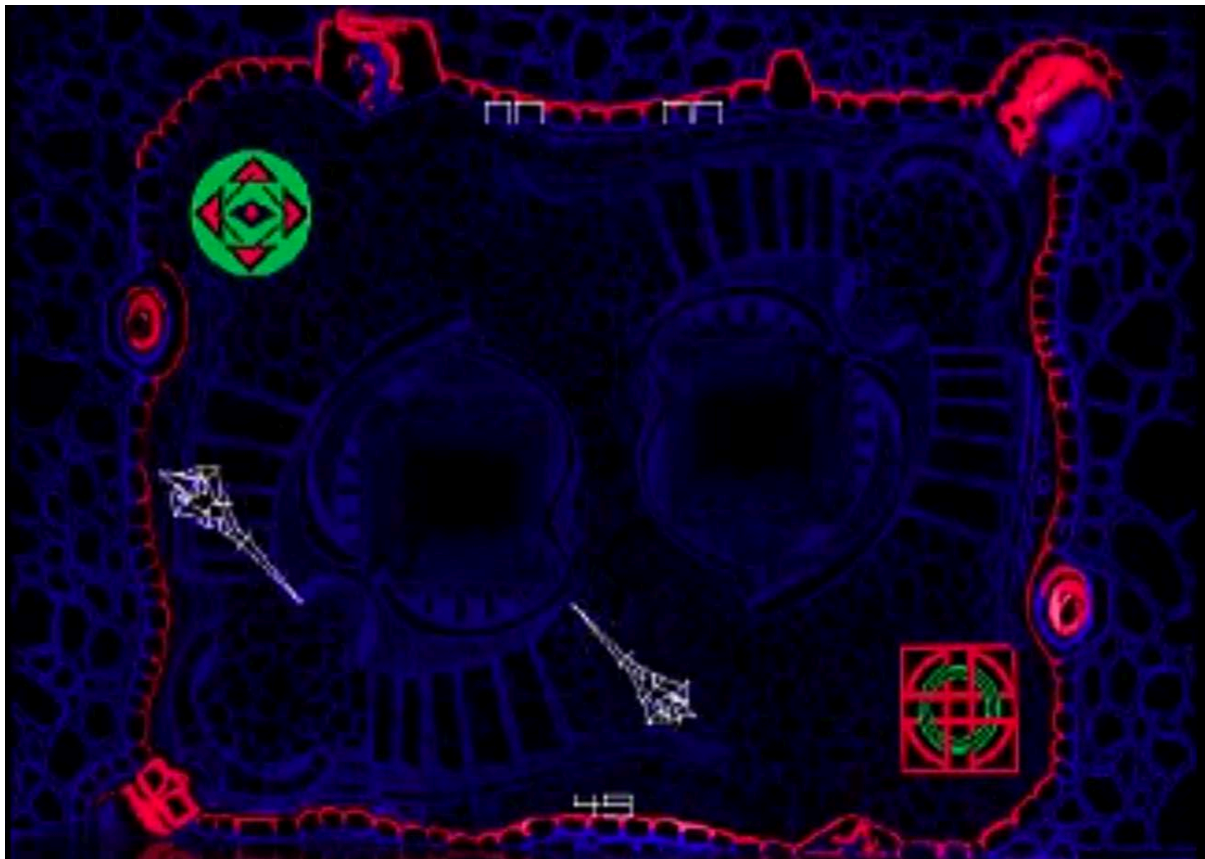


Figure 5 - screenshot of emulation by thedoteaters.com

Emulation is always a selective recreation of the original game, with many of the material characteristics of a game impossible to convey in the medium of another computer. This is an especially acute problem with *Warrior* because it uses a fundamentally different digital

display technology and an analog display. On the other hand, displays such as Apple's Retina for the iPhone offer such high pixel density that they offer an opportunity for once again making the pixel invisible; they could in turn provide a somewhat more faithful rendering of *Warrior*.

Warrior has also been ported to another system: the Vectrex, the only vector-based home console ever released. The Vectrex was released in 1982 by General Consumer Electronics (later bought by board game juggernaut Milton Bradley) that used a built-in 9-inch vector monitor display and a cartridge system to store games, many of which were licensed from Cinematronics (Barton & Loguidice, 2007). Like the Cinematronics/Vectorbeam cabinets, it had a monochrome monitor; transparent plastic overlays came with each game, fulfilling a similar purpose to *Warrior*'s half-silvered mirror. *Warrior*, however, was not developed for the system when it was still being marketed. Many "homebrew" games, usually created by independent amateur developers who make cartridges to run on original hardware, have been released for the system, beginning in the mid-1990s and continuing to the present day. Homebrew developer George Pelonis, doing business as Fury Unlimited, announced a limited edition of 100 *WARRIOR 2012* cartridges in 2011 for \$65, touting features such as a single-player mode, a new custom overlay and several new character models. Due to demand, that run was later increased to 150 copies. However, production of the game was troubled; searching for the game online reveals sometimes acrimonious forum threads and discussions about delays, problems with the complexity of the programming and printing errors with the overlays. Some pre-orders were apparently still unfilled in late 2014. Due to these difficulties, *Warrior*'s Vectrex remake may be as rare as its arcade forebear.

As discussed above, Dino Manzella read that Skelly originally intended *Warrior* to have a "dual-stick" control scheme on Wikipedia, with movement and sword movements controlled both independently and simultaneously. Skelly himself stated that he tested a version with two joysticks, but "the task was like rubbing your stomach and patting your head at the same time" for playtesters (2012, 150)—arcade players at the time had never encountered dual-stick controls allowing motion and aiming at the same time, a technique popularized by *Robotron 2084*. He began posting on forums like VAPS, looking to acquire a machine and evaluate the difficulty of modifying *Warrior* to allow simultaneous controls. He contacted

Timothy Shiels, creator of the website Outerworld Arcade, who had begun documenting *Warrior*'s code in 2010. Shiels (2014) discovered evidence in the code that suggested it was originally intended for four joysticks, and eventually released a modified game file playable through MAME (Multiple Arcade Machine Emulator). (As discussed in the beginning of this article, Shiels also discovered that *Warrior*'s collision system attempted to recreate the effect of "armor" on a knight by requiring a sword to be moving at a certain velocity to kill an opponent). Manzella still plans to clone the *Warrior* arcade cabinet for the modified version of the game and this project is ongoing. Manzella and Shiels' effort is a small-scale analog to the current efforts of fans to create their own patches, updates and servers for discontinued titles.

While *Warrior* and many games of its era may no longer be playable in the coming decades, these moments of recreation demonstrate that the essence of a game's design may well outlast its physical incarnation, provided sufficiently dedicated fans take on this task. Of course, the legality of any of these adaptations is unclear: a vigorous defense of the *Warrior* IP may very well have made these efforts at reconstruction infeasible.

Conclusion: The Bit-Rot of Game History

Many questions remain about *Warrior*'s past and future. Ownership of the legal rights to *Warrior* is uncertain. In 1997, Tim Skelly signed over the rights to all of his games for Cinematronics to Williams/WMS Industries (Skelly, 2012, 164), which left the electronic game market the next year and was sold to Scientific Games Corp. in January of 2013 (Palmeri, 2013). As vector monitors continue to be lost to the passage of time and inevitable attrition, and as no new vector monitors have been produced for many years, the long-term options for keeping *Warrior* operational, even in the archive, remain similarly murky. Despite the wealth of information on *Warrior* recorded by fans and its creators, basic information like the number of cabinets manufactured or its exact selling price has eluded the author.

While this article tries to sort through conflicting accounts of the history of *Warrior*, many sources of information remain inaccessible. Like most video game histories, this account still privileges the contribution of the game designer, Tim Skelly—much remains to be learned

from the perspectives of those who prototyped the *Warrior* cabinet like Tommy Stroud, the Vectorbeam employees who built the machines, the distributors who sold them, the arcade operators who bought them and the technicians that repaired them. Keith Smith, who blogs as *The Golden Age Arcade Historian*, has an unpublished book manuscript on Cinematronics that was put on hold after he was unable to locate several key members of the company. The publication of those interviews would represent a major contribution to the history of Cinematronics and *Warrior*.

As Guins' *Game After* (2014) establishes, the material preservation of early electronic game history has reached a critical point. The struggles to maintain vector monitors in use in *Warrior* and other vector games foreshadow the broader upcoming struggles of the vast majority of games developed for the once-dominant raster-based CRTs. There are still broad lacunae in the larger study of games during this period, with information about managers, operators, assembly workers, and repair personnel mostly uncollected. Similar gaps exist in ethnographic accounts of the arcades and barrooms that hosted early game systems, and the enthusiast press and industry-oriented publications are unevenly archived at best, even at specialist libraries such as the Strong's Brian Sutton-Smith collection. Singular accounts of what happened at the creation of a game are particularly troublesome: as the emergence of Rosenthal's talk demonstrates, history is often written by those who have maintained a connection to the games industry, rather than those with the broadest perspective on the topic. The paratexts of the game industry also have an afterlife, and the material remains of a game production and consumption culture have become increasingly scarce and difficult to find.

Perhaps the public history of *Warrior* is not yet complete. Intrepid collectors, operators and fans might yet bring its hum and ghostly combination of analog and digital forms back to the arcade floor. However, it is difficult to imagine that any amount of fan interest will be able to revive the industrial processes necessary to recreate the constitutive elements of the vector monitor, however. Ultimately, *Warrior* prompts game scholars and fans to consider the mortality of a still-young medium.

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This article is dedicated to my fellow Wildcat, Tim Skelly.

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