

With a Foreword by Ted Dabney



The Golden Age of **Video Games**

Roberto Dillon

Appendix A

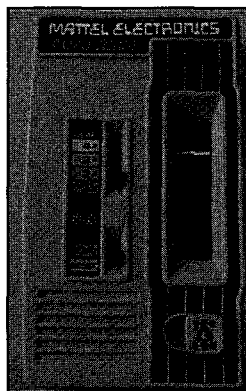
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A Brief History of Handheld Devices

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Interestingly, the history of handheld electronic gaming devices is almost as long as that of their arcade and home counterparts. After a first experiment by Waco in 1972 with a tic-tac-toe game, it was Mattel in 1977 that seriously pushed into the market by releasing its first dedicated handheld game, *Auto Race*. This, followed by *Football* and other sports-based titles, was met with great success by the general public and proved that electronic and video games could be a viable product “on the go” and not only in homes or at the arcades.

Coleco, Milton Bradley, and others soon followed Mattel and the handheld market started becoming a lively and growing segment in the gaming industry alongside the home sector. Milton Bradley, in particular, was responsible for the first cartridge-based handheld: the Microvision, released in 1979. Unfortunately, the Microvision was an extremely fragile device and both the system and games were prone to break very easily, seriously stifling its chances of success.



Mattel's *Auto Race* was the first fully electronic handheld game ever released and ran through a very simple LED display system and 512 bytes of memory.



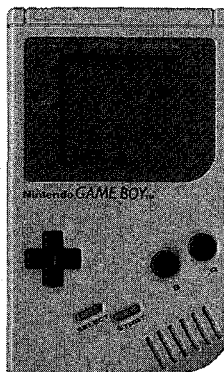
The Microvision—the first cartridge-based system having a display of only 16×16 pixels. It was released in October 1979, and then discontinued in less than two years due to its poor success.

To find the next successful series of products, let's shift to Japan where, from 1980 onwards, Nintendo decided to follow up its early successes with a set of simple electronic games based on LCD screens—the *Game & Watch* series was born. Designed by Gunpei Yokoi, *Game & Watch* was a clear breakthrough for Nintendo and helped to define many elements that became commonplace in later systems, both handheld and home based, like the D-Pad. Different series were produced till 1991 and are now coveted collector's items.

Also in Japan, in 1984 Epoch tried to develop another cartridge-based handheld, named Game Pocket Computer. This time, the screen had a resolution of 76×64 pixels but the technology of the time was not yet mature enough to deliver complex experiences on the go.



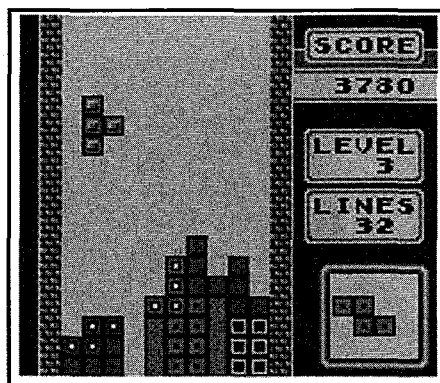
Donkey Kong in its *Game & Watch* incarnation dating back to 1982. Note the D-Pad and the dual screen, which were later adopted in the NES and the Nintendo DS, respectively.



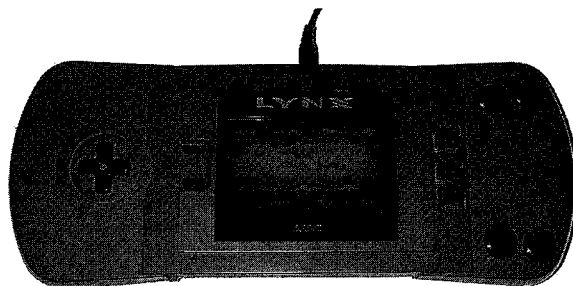
The Game Boy retailed for \$89.99 and was an instant success. The display size was 160 × 144 pixels and it featured an 8-bit LR35902 CPU by Sharp that merged the best of the Intel 8080 and Zilog Z-80 processors, delivering enough power for the development of fun and addictive games.

It was only in 1989, and again thanks to Nintendo and Gunpei Yokoi, that handheld gaming was finally able to move to its next generation as a result of the popularity of the Game Boy. The Game Boy was an instant success, thanks also to its being bundled with *Tetris*. Across its multiple iterations and restylings like the Game Boy Pocket and Game Boy Color, it sold more than 118 million units worldwide.

Such instant and staggering success excited many other companies and the handheld market started getting crowded very fast. The first challenger was Atari, which, in 1989, released the Lynx by implementing a previous prototype developed by Epyx in 1987.



Designed by Alexey Pajitnov, *Tetris* found a perfect platform in the Game Boy. Thanks to this very simple yet addictive action/puzzle game, the Game Boy was successful in attracting not only youngsters but also a more adult crowd.



The Atari Lynx was the first handheld with a backlit and color screen. Built around a MOS 6502 CPU, it was released in 1989 at \$189.99 and needed six AA batteries for just a few hours of playing time. Overall, it sold less than five million units.

Despite its technical qualities, the Lynx had all the same issues that would soon plague other upcoming devices like the NEC Turbo Express (1990, a portable TurboGrafx-16), the Sega Game Gear (1990),³⁰ Nomad (1995), and others, preventing them from being able to compete seriously against Nintendo. In particular, poor battery life, big clunky size, and a much higher price tag all contributed to diminishing their appeal to a crowd for which all of these characteristics were more important than raw power for a device to be used while not at home. At the same time, Nintendo, thanks to its dominant position in the market and the doubtful strategies implemented by its competitors, was able to maintain its leadership comfortably by gradually releasing new iterations of its device that featured small, but meaningful, technical improvements³¹ together with more ergonomic designs.

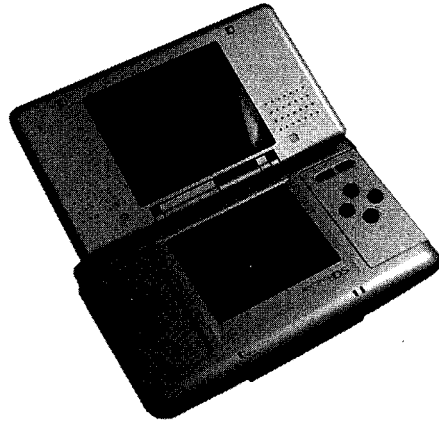
The strategy of pleasing its audience thanks to small incremental improvements while delaying a more robust next generation until the underlying technology would be more affordable—and thereby maintaining high profit margins—proved successful and the Game Boy Advance was not released until 2001.³² Following this, though, Nintendo, decided to release its next console, the Nintendo DS, in 2004, probably in anticipation of the release of Sony's PlayStation Portable (PSP) in 2005. The DS was a staggering success, especially after the release of the "Lite" version in 2006, selling more than 135 million units worldwide. However, Sony was still able to seize a respectable share of the market with its PSP by selling more than 60 million units.³³

³⁰ The Game Gear was actually the most successful among the Game Boy competitors and sold around 11 million units worldwide.

³¹ The Game Boy Color, the first Nintendo handheld with a color display, wasn't released until 1998.

³² The Game Boy Advance sold more than 81 million units overall.

³³ As of September 2010.



The original Nintendo DS as released in 2004. As with its predecessors, several iterations offering small but meaningful improvements followed within a few years, turning this device into the most successful handheld gaming system ever released.

Though an analysis of past results shows that, at any given time, only very few players are able to take a meaningful role in this industry, many small and big companies alike keep trying to carve a niche audience for themselves by providing new ideas and systems. For example, despite the marketplace becoming even riskier and more competitive after the sudden and powerful rise of Apple's iPhone/iPad platforms, companies such as South Korean Game Park Holdings succeeded in building a small but significant following by producing devices open to hobbyists to freely develop games. And tech giants like Panasonic recently announced the upcoming release of a new handheld focused on online gaming (the Jungle, planned for 2011).

At the same time, Nintendo is ready to release its new device, the 3DS, which will be able to deliver actual 3D images on the go without the need for special glasses, thereby pushing the industry and its competitiveness to new heights once again.

Appendix B

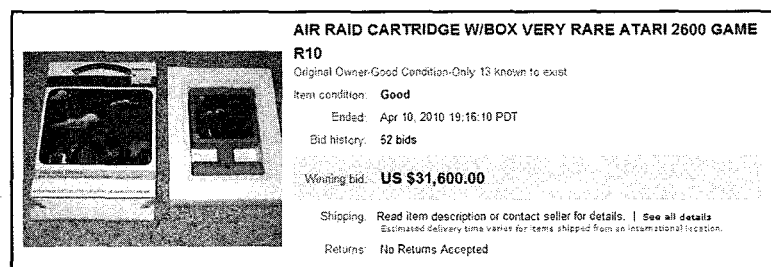
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Collecting Classic Games Today

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An interesting phenomenon that has grown in popularity during the last few years is the collecting of old and classic games. Many people all around the world, whether adults looking to remember their younger days or new gamers eager to know more about the history of their favorite hobby, are seeking to experience old games once again and enjoy their legacy.

Online forums and websites are very active, and meetings and conferences on the subject are regularly organized around the world. Through a variety of means, the dedication of so many enthusiasts has successfully turned forgotten pieces of plastic and electronics into valuable collectibles that can fetch very high prices on popular auction sites.



On April 10, 2010, an extremely rare game for the Atari 2600, *Air Raid*, sold for \$31,600 on the popular auction site eBay.

An Interview with Mike Kennedy

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To understand more about classic games collecting, we interviewed Mike Kennedy. Mike is the founder and CEO of GameGavel.com, the cohost of the RetroGamingRoundup, a monthly podcast on retro games, and, obviously, an avid game collector and expert on this subject.

Roberto Dillon: *Hello Mike, can you tell us something about yourself and how games came to play a significant role in your life?*

Mike Kennedy: I grew up in the 70s and 80s. So, obviously, video and arcade gaming played a big part in my childhood. Unlike for many of my friends, gaming has continued to play a big role in my life—so much so that I have started a business centered on this lifestyle (yes, lifestyle) that I love so much. I started gaming, like many of us, in the arcades and on the Atari 2600 at home. Soon I moved onto computers, owning first a Timex Sinclair 1000 and moving quickly onto the Commodore 64 and ultimately to an Apple IIc when I was in high school. So, I had a good mix of arcade, console, and computer gaming while growing up. Fast forward to today. With the advent of the Internet as well as the weekly swap meets year round here in Southern California, I have been able to go back and experience all the games and gaming systems I didn't have as a child. I currently own pretty much all the classic gaming systems from the Atari 2600, Intellivision, ColecoVision, Odyssey 2, NES, SNES, Sega Master System, Genesis and Dreamcast, Vectrex, and TurboGrafx right through the current generation systems, the Nintendo Wii and the PS3. I love mobile gaming as well on my Nintendo DS, GBA, GP2X, iPod/iPad, etc. In addition to console gaming, I also spend lots of time in our home arcade playing some of the arcade and pinball games that I dropped so many quarters into back in the day.

RD: *How and why did you get the idea of starting GameGavel? How many users does it currently have?*

Mike: I had been a pretty regular eBay member since 1997 so I had a good understanding of online auctions. Towards the end of 2007, I could tell that eBay was changing its vision and would be making changes that were really going to turn me off. I was trying to find other places to buy and sell video games and realized that the options were pretty limited. So, I decided to deal eBay the ultimate blow and start an auction site dedicated only to video gaming, and GameGavel (originally named ChaseTheChuckwagon.com) was born on March 24, 2008. To give back to the community and to the hobby that I love, I wanted to make an auction site that was similar enough to eBay in its appearance but featured a less expensive environment to sell on. So, I made the decision to do away with listing fees and then cut the eBay selling/final value fees and commissions in half. The bottom line is that, for sellers, it is a much cheaper place to sell their items. Since launching the auction site, I have added other community features such as gaming forums, industry blogs, a retrogaming-themed streaming radio station (<http://www.retroarcaderadio.com>) and we have also spun off a monthly retrogaming podcast (<http://www.retrogaminggroundup.com>). Overall, GameGavel is more than a video game auction site, but rather a unique, all-inclusive gaming destination where gamers can buy and sell, and also mingle and catch up on

the latest industry news and opinions. There is really nothing else like it anywhere. Currently, after about two and a half years, GameGavel has nearly 5,000 members and is visited monthly by over 50,000 unique visitors. It has hosted over 300,000 gaming auctions and sold nearly \$200,000 in merchandise.

RD: *Is vintage game collecting a hobby that has spread mostly in North America or do you think it is also getting more popular worldwide?*

Mike: Again, with the dawn of the Internet, I think vintage gaming is a worldwide interest. I think it appears to be predominantly a North American hobby, maybe because a lot of the earliest forms of gaming were invented here in the United States, at least until after the crash of 1983 when Japanese companies Nintendo and Sega established themselves as the new leaders of the industry. But for the most part, gamers want to experience lots of things they missed out on during the first go-around. And now it is easier than ever to collect a variety of vintage gaming systems from all around the world.

RD: *What do you think makes it so attractive? Why do so many people see game carts from previous console generations as not just old pieces of plastic?*

Mike: A lot of the gamers who grew up in the advent of gaming are obviously much older now and have some discretionary income. What better things to buy than video games? It is a relatively inexpensive hobby that has the ability to transport people back to their younger days with the flip of a switch and the twitch of a joystick. There is no shortage of gaming systems and memorabilia to collect. And you can take your collecting as far as you want to. Do you want to go after the expensive rare games or prototypes? Or just try to complete a collection of the more common less expensive games? It is your choice and there is a level for about any collector's budget out there. There is just so much you can collect, from the systems themselves to the games, and the loads of gaming toys and memorabilia that has come out over the years.

RD: *What suggestions would you give to someone who wants to start a new collection?*

Mike: First, you have to decide how much money you want to spend and if you are going to be a hardcore collector who has to have every game made for a system, or a more passive collector who is happy just picking and choosing games to their liking. If you fall into the hardcore, gotta-have-it-all category, to begin I would recommend starting a collection with a system that is easy to collect—perhaps a system like the Atari 5200 or the Odyssey 2. Both systems have a smaller game catalog as compared

to some of the other systems like the Atari 2600 or Nintendo NES. If you are passive, like me, then you simply pick up the games you remember or had as a child. Or games that you would have liked to have owned back in the day, but missed out on. Personally, I like to spread my collecting around a variety of systems, not just a single system.

RD: *Which games and platforms are particularly sought after nowadays?*

Mike: Right now, it really depends on the various generations of gamers. I believe that the dawn of collecting the first generation systems has reached its peak and is on the decline. Most collectors of this earliest era have been collecting for the past 10 years or so and have what they want, or are chasing rare or more out-of-reach games. Today, I think the second generation of gamers is leading the way, collecting for the Nintendo and Sega systems from the mid to late 80s to mid-90s. It is cyclical and soon the third generation collectors will be trying to find the sought-after Sony PlayStation, Nintendo 64, and Sega Dreamcast games they grew up with.

RD: *There have been items that fetched very high prices in online auctions. Do you think this trend will continue or have these been one-hit wonders that will likely not be repeated in the future?*

Mike: I think that is anyone's guess. But I believe now is a peak time for collectors of the earliest first generation systems. It is a key time where most of us are in our early 40s and our collecting goals and income is at an all-time high. So I think for now, rare games and systems from the first generation will continue to hit their highest prices, but as each year goes by I think prices will decline. Now the second generation of system collectors is maturing and rarities for the Nintendo NES through the SNES, Genesis, and N64 will rise in value, and then fall. And so on. It is important for gamers to continue collecting as they age, and to introduce these classic systems to their children and to their children's friends. Keep classic gaming alive from the first generation of systems right through to the present day, some way, somehow. If someone is getting out of collecting, sell or give your collection to someone else. Don't throw it away. We must preserve all that we can.

Bibliography

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- Ralph Baer. *Videogames: In The Beginning*. Springfield, NJ: Rolenta Press, 2005.
- Brian Bagnall. *Commodore: A Company on the Edge*. Second ed. Winnipeg, Manitoba: Variant Press, 2010.
- Ian Bogost and Nick Montfort. *Racing the Beam: The Atari Video Computer System*. Cambridge, MA: MIT Press, 2009.
- Van Burnham. *Supercade: A Visual History of the Videogame Age 1971–1984*. Cambridge, MA: MIT Press, 2003.
- Scott Cohen. *Zap!: The Rise and Fall of Atari*. New York, NY: McGraw-Hill, 1984.
- Tristan Donovan. *Replay: The History of Video Games*. Sussex, UK: Yellow Ant Media, 2010.
- Rusel DeMaria and Johnny Wilson. *High Score!: The Illustrated History of Electronic Games*. Second Ed. New York, NY: McGraw-Hill Osborne Media, 2004.
- Jerry Ellis. *The 8-Bit Book: 1981-199x*. Loachapoka, AL: Hiive Books, 2010.
- Andrew Fisher. *The Commodore 64 Book: 1982-199x*. Loachapoka, AL: Hiive Books, 2008.
- Leonard Herman. *Phoenix: The Fall and Rise of Videogames*. Springfield, NJ: Rolenta Press, 1994.
- Steven L. Kent. *The Ultimate History of Video Games*. New York, NY: Three Rivers Press, 2001.
- Chris Kohler. *Power-Up: How Japanese Video Games Gave the World an Extra Life*. Indianapolis, IN: BradyGames, 2004.
- Andrew Rollings. *The ZX Spectrum Book: 1982-199x*. Loachapoka, AL: Hiive Books, 2007.

Michael Tomczyk. *The Home Computer Wars: An Insider's Account of Commodore and Jack Tramiel*. Greensboro, NC: Compute! Publications, 1984.

Brett Weiss. *Classic Home Video Games, 1972-1984: A Complete Reference Guide*. Jefferson, NC: McFarland & Company, 2007.

—. *Classic Home Video Games 1985-1988: A Complete Reference Guide*. Second ed. Jefferson, NC: McFarland & Company, 2009.

Robert Wicker and Jason Brassard. *Classic 80s Home Video Games*. Third ed. Padukah, KY: Collector Books, 2008.

Online resources (accessed on September 1, 2010):

www.klov.com
www.arcadeflyers.com
www.pong-story.com
www.old-computers.com
www.oldcomputers.net
www.atarihq.com
www.wikipedia.org
www.retro-gaming.it
www.retromags.com
www.apple2history.org
www.vgchartz.com
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About the Author



Roberto Dillon was born in Genoa, Italy, in 1973. In 1981, he had his first encounter with a home computer, a Texas Instruments 99/4A, and then with an Intellivision gaming console. In 1983, he received a Commodore 64 that hooked him into technology, computer science, and games ever since.

He holds a Master and a Ph.D. degree in Electrical and Computer Engineering from the University of Genoa and, after having worked both in the software/multimedia development industry and in prestigious academic institutions across Europe and Asia, he joined the Singapore campus of the DigiPen Institute of Technology where he is currently an Assistant Professor lecturing on a variety of game design subjects including Game Mechanics and Game History.

Roberto has led high profile research projects on innovative game mechanics and designed serious, educational, and experimental games that were showcased internationally in newspapers like *USA Today* and at events like the Sense of Wonder Night within the Tokyo Game Show.

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