Game On to Game After

Sources for Video Game History

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Kristen Nyitray began her immersion in video games with an Atari 2600 and ColecoVision console and checking out games from her local public library. Later in life, she had the opportunity to start building a video game studies collection in her professional career as an archivist and special collections librarian. While that project has since ended, you get the benefit of her expansive knowledge of video game sources in "Game On to Game After: Sources for Video Game History." There is much in this column to help librarians wanting to support research in this important entertainment form. Ready player one?—*Editor*

Video games have emerged as a ubiquitous and dominant form of entertainment as evidenced by statistics compiled in the United States and published by the Entertainment Software Association: 60 percent of Americans play video and/or computer games daily; 70 percent of gamers are 18 and older; the average age of a player is 34; adult women constitute 33 percent of players; and sales in the United States were estimated in 2017 at $36 billion.[1]

What constitutes a video game? This seemingly simple question has spurred much technical and philosophical debate. To this point, in 2010 I founded with Raiford Guins (professor of cinema and media studies, the Media School, Indiana University) the William A. Higinbotham Game Studies Collection (2010–2016), named in honor of physicist Higinbotham, developer of the analog computer game *Tennis for Two* (as it is most commonly known).[2] This game achieved several landmark firsts in 1958: use of handheld controllers, display of motion, access by the general public, and intent as pure entertainment. However, the word "video" connotes transmittal of a video signal that creates and displays a rasterized image. While Higinbotham's contribution was critical to advancing the domains of games and entertainment, *Tennis for Two* was not technically a video game because the oscilloscope employed electric voltage and not a raster process.[3] *Computer Space* (1971) by Nutting Associates was the first commercial arcade video game. *Pong* was the first widely successful arcade video game, released by Atari in 1972.[4] More broadly, a video game is an interactive game experience that uses a device to display graphics on a screen.

Beginning in the 1980s, books and articles about video games were aimed for younger audiences and focused on lineage presented as ordered facts and chronological histories. Despite many diverse areas of intellectual interests, only within the past decade has attention shifted to critical video game historiography.[5] From concept to production, video

games uniquely present a convergence of computer science, the arts, humanities, and social sciences. They are highly complex artifacts. Each component part contributes to the gaming experience and is worthy of study for its impact on social experience and popular cultural history. Examples include source code, ROM cartridges, platforms, controllers, circuits, corporate records, papers of developers, and ephemera such as box-art. The growing community of documentation initiatives has primed and cultivated the progression of works on video games toward transdisciplinary historical and critical studies.[6] Contributing to this shift are archival and preservation activities surrounding video game hardware and software, which are paramount for research on technological innovation and to further understanding and appreciation within larger contexts of cultural heritage. Students today are increasingly eager to study games, as new degree programs and course offerings in higher education have been founded in recent years. Major academic publishers have established book series to support academic interests in games.[7]

Coin-op and arcade games, consoles, joysticks, cartridges, and related ephemera provide tangible evidence of shared experiences. Conversely, current popular games such as the cultural phenomena *Fortnite* are played online from anywhere, while app-based games only require a mobile device. This article presents a curated selection of resources on video game history that is reflective and forward-looking. While it is not possible to include all materials worthy of inclusion, the aim is to highlight diverse content that offers historical context, new research, and thought-provoking critical analyses that fosters understanding of video games and their impact on shaping our past, present, and future.

BOOKS

Titles in this section were selected by consulting reviews in *CHOICE*, *Library Journal*, *Publishers Weekly*, and *Booklist*, and by surveying sources found within notes and bibliographies of authoritative texts. The ISBN listed is for the most recent edition of the print format.

REFERENCE

Fox, Matt. *The Video Games Guide: 1,000+ Arcade, Console and Computer Games, 1962–2012*, 2nd ed. Jefferson, NC: McFarland, 2013. ISBN: 9780786472574.

Fox's expanded, second edition reference guide was published in conjunction with the fiftieth anniversary of the early influential game *Spacewar!* (1962). The author presents in alphabetical order an evaluative overview of video games developed from 1962 and 2012. Particularly useful for research are the several thematic appendixes: a game chronology; a chronology of computers and consoles; a list of programmers and designers; a compilation of annual game awards and awardees; and suggested sources for procuring hardware and software.

Herman, Leonard. *Phoenix IV: The History of the Videogame Industry*. Springfield, NJ: Rolenta, 2017. ISBN: 9780964384804.

Touted as the first comprehensive book on video games, *Phoenix IV*'s chronological narrative carefully details video game hardware and software, and the development of the industry between 1951 to 2015. Author Herman first published this reverential book in 1994 as *Phoenix: The Fall and Rise of Videogames*. Now in its fourth edition, much of the content has been rewritten and updated; it encompasses more than 800 pages and features 1,000 illustrations.

Weiss, Brett. *Classic Home Video Games,1972–1984: A Complete Reference Guide*. ISBN: 9780786469383. *Classic Home Video Games, 1985-1988: A Complete Reference Guide*. ISBN: 9780786469376. *Classic Home Video Games, 1989–1990: A Complete Guide to Sega Genesis, Neo Geo and Turbografx-16 Games*. ISBN: 9780786432264. All titles published by McFarland, 2012.

These three comprehensive reference works authored by professional writer Weiss provide documentation of best-selling and lesser-known video games released between 1972 and 1990. The attention to gameplay elements, evaluative content, glossaries, and indexes makes this trio of books noteworthy sources for game research. Arranged alphabetically by console, the 1972–1984 title covers sixteen brands from Adventure Vision to Vectrex; the 1985–1988 work focuses on games designed for Atari 7800, Nintendo NES, and Sega Master System; and the 1989–1990 volume includes Sega Genesis, Neo Geo, Game Boy, and more.

VISUAL HISTORIES

Amos, Evan. *The Game Console: A Photographic History from Atari to Xbox*. San Francisco: No Starch Press, 2018. ISBN: 9781593277437.

Genealogy meets video game history in *The Game Console*. Arranged in eight generations beginning with Magnavox Odyssey (1972) and concluding with Steam Link (2015), author and photographer Amos documents with high quality, full-color photographs of the hardware exteriors and rare views of interiors of eighty-six consoles. The information accompanying each console varies and includes specifications on console creators, launch years, prices, processors, models, and units sold.

Burnham, Van. *Supercade: A Visual History of the Videogame Age, 1971–1984*. Cambridge, MA: MIT Press, 2003. ISBN: 9780262524209.

Burnham's meticulously researched history of the "videogame age" pays homage to the innovators and technologies instrumental to the development of the industry primarily from 1971 through 1984. Essays and interviews with influential developers and leading scholars set the thoughtfully selected, vibrant, illustrative content in historical context.

The oversized dimensions of the book showcases a remarkable amount of primary source materials. Author Burnham is founder and steward of Supercade Collection, one the world's most significant private collections of vintage games.

World Video Game Hall of Fame. *History of Video Games in 64 Objects*. New York: Dey Street Books, imprint of Harper-Collins, 2018. ISBN: 9780062838698.

This work traces milestones in video game history from *Humpty Dumpty* (1947) to *That Dragon, Cancer* (2016) through a highly selective, curated collection of sixty-four objects drawn from the archives at The Strong National Museum of Play. The museum's International Center for the History of Electronic Games (ICHEG) has the most comprehensive assemblage of materials in the world for game research. The book offers in-depth analyses and essays for the objects deemed most reflective of the medium's influence including Roberta Williams' pioneering graphic adventure game *King's Quest* (1984) and Nintendo's Wii Remote (2006), which expanded the genre with its physicality and multi-generational appeal.

HISTORIES

Ackerman, Dan. *The Tetris Effect: The Game That Hypnotized the World*. New York: PublicAffairs, 2016. ISBN: 9781610396110.

Author and journalist Ackerman examines the riveting international history of *Tetris*, the iconic puzzle game designed by Russian computer scientist Alexy Pajitnov. It details the cultural and industry challenges that influenced its production. Box Brown's book *Tetris: The Games People Play* (London: Self Made Hero, 2017. ISBN: 978-1-62672-315-3) skillfully depicts the game's rich history as a graphic novel with understated artwork reminiscent of the game.

Donovan, Tristan. *Replay: The History of Video Games*. East Sussex, England: Yellow Ant, 2010. ISBN: 9780956507204.

Many works on videogame history lean toward an "Americentric" perspective and focus on hardware, according to *Replay* author Donovan. To expand the corpus, the book explores the evolution of video games chronologically and geographically from a global perspective with attention given to the underexamined yet transformative Japanese and European influences on development. Quotes and anecdotes culled from 140 interviews are weaved throughout the narrative. The book includes a "gameography" and a glossary that elevates this title to an essential source for video game studies.

Hansen, Dustin. *Game On!: Video Game History from Pong and Pac-Man to Mario, Minecraft, and More*. New York: Square Fish, 2019. ISBN: 9781250294456.

Predicated on the idea that video games are relatively "super young" and therefore an accessible area of research and study, video game designer and author Hansen draws upon his personal and professional video game experiences to enthusiastically chronicle in 39 chapters the history of games from *Pong* to *Angry Birds*. The book is recommended by *School Library Journal* for students in grade four and up.

Hennessey, Jonathan, and Jack McGowan. *The Comic Book Story of Video Games: The Incredible History of the Electronic Gaming Revolution*. Berkeley, CA: Ten Speed, 2017. ISBN: 9780399578908.

In this entertaining and engrossing graphic novel, author Hennessey and artist McGowan detail the electronic gaming revolution spanning from the origins of early development of computers in government-funded laboratories during World War I, to the transition from arcade games to home consoles, and concluding with current app-based games. With readership aimed for older teens and general readers, the book also spotlights individuals who transformed the global entertainment industry.

Kent, Steve L. *The Ultimate History of Video Games: From Pong to Pokemon—The Story Behind the Craze That Touched Our Lives and Changed the World*. New York: Three Rivers, 2001. ISBN: 9780761536437.

In thirty chapters, Steve L. Kent presents video game history with an emphasis on early lineage, the US market, and hardware. The book begins with an overview of early amusement games and segues into discussion of industry pioneers, pivotal technological advances, and the interpersonal dynamics that impacted the growth of the industry. Though published in 2001, this accessible work remains a popular title.

CULTURE AND CRITICAL STUDIES

Bissell, Tom. *Extra Lives: Why Video Games Matter*. New York: Vintage, 2011. ISBN: 9780307474315.

According to acclaimed journalist and gamer Bissell, studies of game play are challenging because each interaction is unique, and the ability to re-experience and replicate immersive encounters presents technical challenges. The visceral and emotional responses innate to gaming are central to this book. Blending memoir with criticism, the author discusses platforms, storylines, visualization, and dialogue within the larger framework of advancing games as an art form.

Bogost, Ian. *How to Talk About Videogames*. Electronic Meditations Series. Minneapolis: University of Minnesota Press, 2015. ISBN: 9780816699124.

This collection of twenty essays by scholar, author, and game designer Bogost (Georgia Institute of Technology) brings new dimension to criticism with paradoxical philosophical explorations, e.g., "Games are part art and part appliance, part tableau and part toaster." Rather than suggest instructive dictums to evaluate impact and significance, the

author shares theoretical frameworks for criticism and by extension (and ironically), of criticism itself. Other titles by Bogost include *Persuasive Games: The Expressive Power of Videogames* (2007) and *How to Do Things with Videogames* (2011).

Ervin, Andrew. *Bit by Bit: How Video Games Transformed our World*. New York: Basic Books, 2017. ISBN: 9780465039708.

Writer and critic Ervin deftly surveys video games from the 1950s to the present and summons attention to the multi-dimensionality and diversity of the medium. Drawing from primary sources, interviews with creators, and his own personal experiences engaging with games, the author traces the technological milestones, business histories, and artistic geniuses that have advanced and amplified the impact of video games on culture, media, and art, and on society as a whole.

Guins, Raiford. *Game After: A Cultural Study of Video Game Afterlife*. Cambridge, MA: MIT Press, 2014. ISBN: 9780262019989.

"What happens to video games when they are out of date, broken, nonfunctional, or obsolete? Should a game be considered an 'ex-game' if it exists only as emulation, as an artifact in museum displays, in an archival box, or at the bottom of a landfill?" In this scholarly work, media historian Guins explores the life cycle and afterlife of video games after they have served their immediate, utilitarian use as objects of entertainment and play.

Kocurek, Carly A. *Coin-Operated Americans: Rebooting Boyhood at the Video Game Arcade*. Minneapolis: University of Minnesota Press, 2015. ISBN: 9780816691838.

Cultural historian Kocurek (Illinois Institute of Technology) investigates the influences that contributed to the game industry's construct of a "technomasculine" narrative over time. Written from the perspective of why boys and men have been the focus of industry attention, rather than why girls and women have been excluded, the author surveys the gendering of gaming through the arcade experience, violence in games, gaming competitions, and the representation of gamers in media and advertising.

Lowood, Henry, and Raiford Guins, eds. *Debugging Game History: A Critical Lexicon*. Cambridge, MA: MIT Press, 2016. ISBN: 9780262034197.

Through diverse historiographies and analyses, editors Lowood (Stanford University) and Guins (Indiana University) establish a lexicon to advance discourse surrounding video game history. By "debugging" prevalent approaches to game studies, the authors seek to catalyze a shift from the chronicle format to critical studies. Arranged in alphabetical order, essays from established and emerging scholars explore game related topics and concepts drawn from etymology to media archaeology, e.g., "adventure," "controller," "fun," and "game glitch."

McGonigal, Jane. *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*. New York: Penguin, 2011. ISBN: 9780143120612.

Grounded in sociological, psychological, and game studies research, game designer and scholar McGonigal examines the significance of games in society and suggests they can transcend the entertainment genre to foster happiness. The author theorizes the same skills and tactics required to achieve advancement in gaming environments can be re-imagined and applied to problem-solve and address a wide spectrum of universal societal issues from medical to social.

Montfort, Nick, and Ian Bogost. *Racing the Beam: The Atari Video Computer System*. Cambridge, MA: MIT Press, 2009. ISBN: 9780262012577.

Racing the Beam was the first book published in MIT's Platform Series, which investigates and interrogates foundations of digital media. Scholars and critics Montfort and Bogost (the series' editors) deconstruct the specifications of the Atari VCS and six game cartridges. They present both an instructive and a humanistic study of how scientific and engineering limitations spurred creativity and innovation among a team of developers and programmers, and the impact of the platform on computing, game design, and culture.

INDUSTRY

Harris, Blake J. *Console Wars: Sega, Nintendo, and the Battle That Defined a Generation*. New York: Dey Street, 2015. ISBN: 9780062276704.

Named a best book in 2015 by *NPR*, *Slate*, and *Publishers Weekly*, Harris traces the behind-the-scenes corporate drama that fueled the rivalry of video game industry underdog Sega, led by Tom Kalinske's bold leadership beginning in 1990, in response to rival Nintendo's monopoly of the video game market. Culling from hundreds of interviews and meticulous research, this work underpins the technical, global, and interpersonal dynamics that shaped and defined this distinct console war.

Kushner, David. *Masters of Doom: How Two Guys Created an Empire and Transformed Pop Culture*. New York: Random House, 2004. ISBN: 9780812972153.

This highly acclaimed and compelling book by award-winning journalist Kushner details the true story of video game developers and pioneers John Carmack and John Romero, the forces behind landmark games and franchises DOOM and Quake series. The author documents the interpersonal and professional dynamics that brought the two together and the indelible marks they have left on the gaming, software, and entertainment industries.

Schreier, Jason. *Blood, Sweat, and Pixels: The Triumphant, Turbulent Stories Behind How Video Games Are Made*. New York: Harper Paperbacks, 2017. ISBN: 9780062651235.

What is the journey of a video game from concept to production? In this national best-seller, author and journalist Schreier shares untold stories within the domain of development and delves into the seemingly Herculean efforts required to produce video games. Five obstacles discussed are interactivity, advances in technology, changes in tools, scheduling challenges, and the practical consideration that the fun level of a game cannot be assessed until it is played. The book describes the highs and lows experienced by developers, artists, and financial backers through the struggle-fraught histories of ten games.

ART

Lapetino, Tim. *Art of Atari*. Mount Laurel, NJ: Dynamite Entertainment, 2016. ISBN: 9781524101039.

Art of Atari documents the specialty artwork (prototypes to published) commissioned by Atari for the packaging and marketing of its products. Founded in 1972, Atari manufactured arcade games, pinball machines, home game consoles, video games, and computers. This retrospective of Atari's VCS/2600 games offers background information and anecdotes from designers supported by full-color illustrations. Author Lapetino is an award-winning director/graphic designer and founder of the Museum of Video Game Art (MOVA).

Melissinos, Chris, and Patrick O'Rourke, eds. *The Art of Video Games: From Pac-Man to Mass Effect*. New York: Welcome Books, 2012. ISBN: 9781599621104.

This coffee-table book was companion to *The Art of Video Games* exhibition at the Smithsonian American Art Museum in 2012. With an aim to present gaming as "richly textured emotional and social experiences that have crossed the boundary into culture and art," curator Melissinos and co-author O'Rourke highlight the eighty games featured in the show. The book includes historical background for each game and commentary by video game industry pioneers.

MUSIC

Austin, Michael, ed. *Music Video Games: Performance, Politics, and Play*. New York: Bloomsbury Academic, 2016. ISBN: 9781501308536.

Music Video Games explores games from the perspective of music as paramount to a player's interactive experience. With this book, editor Austin (Howard University) fills a void in game studies scholarship. The essays are written by contributors with diverse expertise who address composition, musicianship, and cultural impact. Examples include electronic games as precursors and early history (e.g., Simon), to the ubiquitous Rock Band series, to games designed for smartphones. The work has an index of games, a general index, and a glossary of gaming and musical terms.

DIGITAL COLLECTIONS

Several digital initiatives and projects facilitate opportunities to study video games in their original iterations and to engage with vintage games through emulated experiences.

Learning Games Initiative Research Archive (LGIRA) (http://lgira.mesmernet.org)

This interdisciplinary research collective organized by the University of Arizona has developed an impressive repository of digital objects to bring cohesiveness to distributed collections. With preservation and accessibility as missions, the consortium has built a database of 6,300 diverse digital objects (and growing). The content is searchable by keyword and browseable by assigned tags and collection name.

Internet Archive Console Living Room (https://archive.org/details/consolelivingroom)

Through this Internet Archive database and emulator, users can study classic games and engage in retrogaming by playing games developed for home consoles between the 1970s and 1990s. The emulator system does not require any downloads or plugins. Faceted navigation supports refining search results by year, creator and/or manufacturer, and language.

References

1. "2018 Essential Facts About the Computer and Video Game Industry," Entertainment Software Association, accessed May 12, 2019, https://www.theesa.com/esa-research/2018-essential-facts-about-the-computer-and-video-game-industry/.
2. The William A. Higinbotham Game Studies Collection at Stony Brook University contributed directly to the study of video games as popular culture and to their historical longevity. In 2017, the University Libraries decided to discontinue the collection. A majority of the source materials has been relocated.
3. "The First Video Game?," Brookhaven National Laboratory, accessed May 19, 2019, https://www.bnl.gov/about/history/firstvideo.php.
4. Nick Montfort and Ian Bogost, *Racing the Beam: The Atari Video Computer System* (Cambridge, MA: MIT Press, 2009), 1.
5. Henry Lowood and Raiford Guins, eds., *Debugging Game History: A Critical Lexicon* (Cambridge, MA: MIT Press, 2016), xiii.
6. Locations of video game collections and archives are growing and include the Strong National Museum of Play, Library of Congress, Smithsonian Institution, Museum of the Moving Image, Stanford University, University of Texas, University of Illinois, and University of Michigan.
7. Several book series have been founded in recent years including Game Studies, MIT Press; Digital Game Studies, Indiana University Press; Studies in Gaming, McFarland; and Bloomsbury, Approaches to Digital Game Studies.