

CHAPTER 17

MUSIC AND SOUND IN EARLY FILM-TO-GAME ADAPTATIONS

WILLIAM O'HARA

INTRODUCTION

THE opening sequence of a 1993 episode of *The Simpsons* (1989–present) finds two main characters in a video arcade. The camera moves across the noisy panorama and settles on a boy playing an arcade cabinet called *My Dinner with André*—a parodic adaptation of the 1981 film of the same name, which stars André Gregory and Wallace Shawn as thinly fictionalized versions of themselves and takes place almost entirely at a single booth in an upscale café. In the film, the two converse about their lives, about working in the theater, about society, and about the nature of reality and experience. The player in this imagined adaptation—which is drawn in a slightly pixelated style, with the telltale scanlines of a cathode-ray tube—seems to assume the role of Wallace Shawn. As André takes a sip of espresso and pauses in his musings over expressing the inexpressible, the camera pans down to reveal that the player may respond by pointing a joystick at one of three options painted on the arcade cabinet in bold yellow: TRENCHANT INSIGHT, BON MOT, or “TELL ME MORE.”¹

This vignette can be read in several ways, and probing it reveals the precarious critical and ontological status of film-to-game adaptations at an important moment in their history. On the surface, it is a throwaway gag that relies on the viewer's knowledge of established characters to fill a few seconds before the episode's action begins: a nerdy minor character is drawn to the most subdued and cerebral game imaginable, in stark contrast to the violent game that Bart Simpson plays at the adjacent cabinet. In this capacity, the joke is also a commentary on the movie itself—a film in which virtually nothing happens besides an extended conversation—and its ill-suitedness to the video game format. While narrative games have become common in the decades since the episode

was made, two men nibbling on roasted quail and discussing the fascist undertones of esoteric performance art would be unusual material for a video game even today.

If taken a bit more seriously, however, the joke carries additional subtext. At the time this episode aired, video games based on movies were ascendant. The first mainstream adaptation games appeared in the early 1980s, and the genre grew steadily in popularity over the coming years, becoming widespread by the time of this 1993 episode. Most Hollywood blockbusters of the era boasted a tie-in game, and sometimes several. Along with a touch of self-awareness—*The Simpsons* was itself the subject of two game adaptations in 1991—the series' many arcade sequences happily present parody adaptations in frequent sight gags, responding to the ubiquity of the format at the time in comic book or magazine advertisements, filling the endcaps of the local video rental store, or advertised within the pages of any magazine or comic book. And much like real film-to-game adaptations in their early, graphically abstract forms, recognizable movie titles provide the audience with a ready-made frame of reference (Aldred 2012, 94–98): a viewer can easily imagine what a game based on a familiar title might be like. Finally, hinging as it does on the tongue-in-cheek juxtaposition of art house cinema with coin-operated amusement, the joke dramatizes the position of aesthetic inferiority from which games (and games based on movies in particular) have often struggled to rise.

Such tensions between media are a central concern of the discipline of adaptation studies. While critics have often been interested in analyzing or critiquing the translation of literature (to take one common example) to the silver screen, contemporary scholars of adaptation generally argue that transmedia adaptations ought to be regarded as works in themselves, rather than pale imitations of their source material (see Leitsch 2007, 2008; Hutcheon 2006). Video games adapted from movies are not immune to the former critique, as the *André* joke humorously dramatizes, and as numerous negative reviews attest. But regarded from another perspective, video game adaptations might be seen to encourage the latter style of reading. Given the need to transform a fixed, linear narrative into a flexible one, the need to offer choice and interaction, and (in more recent decades) the expectation that games ought to provide much more than 90 minutes of entertainment, one would be hard-pressed to say that many tie-in video games are true adaptations of a source work at all; instead, they are loosely related works that refer to an original. Rather than evaluating them purely by their degree of fidelity, we might productively regard game adaptations as an important form of *media convergence*, which Henry Jenkins (2006, 2–3) describes as “the flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behavior of media audiences who will go almost anywhere in search of the kinds of entertainment experiences they want.” Adaptations are thus useful as cultural texts that help to shed light on the relationships between media, and the interactions between large media entities: film studios, game development companies, auteur directors, programmers, and engineers.

This chapter explores the role music and sound played in early film-to-game adaptations, with a particular interest in the production process. It covers the birth and early growth of the genre in the 1980s, in two important formats: early home video game consoles, and coin-operated arcade games. The former format accounts for the birth of

the genre and offers its earliest prominent examples, but the latter format—with more sophisticated technology and greater audiovisual flexibility—serves as the core of this essay through a pair of case studies covering sound and music development in two Atari arcade adaptations from the mid-1980s. I will investigate how *Star Wars* (1983) and *Return of the Jedi* (1984) used cutting-edge voice synthesis technology (and how the former title was effectively a test vehicle for Atari's adoption of that new technology); how the development team corresponded with Lucasfilm to acquire audiovisual reference materials and align the gameplay with the narratives of the films; and how sound and music were used in both the gameplay and the advertising campaigns that promoted the games.

These case studies combine traditional archival work, carried out in the Atari Coin-Op Division Corporate Records collection at the Strong Museum of Play in Rochester, New York, with extensive research in digital archives, including the Internet Archive (www.archive.org), various videogame enthusiast websites, and even the personal website of a former Atari engineer. Alongside the official documents held in the Strong's Brian Sutton-Smith Library—which include internal memos, weekly project updates, design documents, cost estimates, and more—the diligent documentation of fan-driven websites has been essential in finding examples, collating release dates, and tracking versions, while the Internet Archive has made these games available for all to play and study in virtual form. Studying the production process behind these games reveals that they are far more than translations of narrative, image, and sound from one medium to another; rather, their production is nonlinear, following numerous paths from concept to playable game. They are collaborations between engineers and executives, between game developers and marketers, and they are shaped by the forces of technology, intellectual property, advertising, and storytelling. As we will see, music was one of the most important and vivid ties between a game and its source film. Understanding how sound and music were approached at the origins of the film adaptation genre better prepares us to understand how it has functioned throughout the format's four-decade history.

UNDERSTANDING GAME ADAPTATIONS

As Kevin Flanagan (2017, 441–442) has argued, the history of video games is in many ways a history of adaptation. Many of the earliest games, such as *Tennis for Two* (1958) and *Pong* (1972) were digital versions of existing sports, while other games appropriated hardware intended for business or research purposes.² As video arcade games became well established in the 1970s, early home consoles gained a foothold in large part by adapting coin-operated games for the home, with early devices such as the Magnavox Odyssey relying almost entirely on the pioneering arcade hit *Pong*, and successor consoles like the Atari VCS and the ColecoVision building their libraries around well-known games like *Asteroids* (1980), *Missile Command* (1981), and *Centipede* (1981).

One of the most important cross-media relationships in the history of video games is their relationship to cinema, and their entwinement with popular Hollywood franchises.

Much as early cinema sought to model itself on the prestige of the opera house,³ early game developers and marketers looked to the silver screen for both narrative inspiration and for tropes and techniques that could be repurposed. As Neil Lerner (2013) has shown, early game sound design was heavily indebted to tropes that originated in silent film scores and cartoons, such as brief invocations of familiar tunes like Chopin's "Funeral March" (from the B-flat minor piano sonata) and "Taps" to indicate that the player character has died, or "Ta-Ra-Ra Boom-De-Ay" to indicate success. These early applications of music were pragmatic, meant to help make games legible to their players. "Early game melodies were not only familiar," writes Lerner, "but they possessed narrative functions similar to those same melodies as they had been used in early cinema accompaniment" (331).⁴ These references were also expedient from the standpoint of game development: early design teams were very small, and programmers often had to take on sound design tasks themselves—even if they were not necessarily trained musicians (Gibbons 2009, 41). They turned to notated, public-domain music that offered ready-made cultural and narrative associations, happily deploying clichés from cartoons and early sound film to help make their games legible for players.

Connections to film soon became explicit rather than indirect and metaphorical: as the so-called golden age of video games reached maturity, game development companies turned their attention to transmedia opportunities, licensing games from major Hollywood studios like Warner Bros., Paramount, Lucasfilm, and Universal. After several fits and starts, the concept of the film adaptation game began to reshape the game industry in the early 1980s as a flood of adaptations arrived. "Once upon a time, excellence in books, comic strips, radio shows and other forms of American popular culture would be recognized by adaptation into a motion picture," begins a 1982 article in *Electronic Fun* magazine. "Times have changed and it looks as though the hottest new translation medium is the video game" (Hulse 1982, 22). This cross-pollination was mutual: as Judd Ethan Ruggill (2009, 109) notes, games and game-based aesthetics began to appear prominently in Hollywood films such as *Tron* (1982), *WarGames* (1983), and *The Last Starfighter* (1984) around the same time. The entertainment industry's infatuation with cinematic games burned hot, and in some ways quickly burned out, before settling into the form it would take over the next few decades. The lower-quality titles within the flood of adaptation games are often held up—whether fairly or not—as a primary factor in the video game industry's severe post-1983 contraction (Ruggill 2009, 109; Aldred 2012, 91).

BEGINNINGS: ADAPTATIONS ON THE ATARI VCS

Video games based on films began inauspiciously in the mid-1970s, with a series of unlicensed titles that were adapted from hit movies without their studios' consent. First came *Shark Jaws* (1975), a game clearly based on Steven Spielberg's *Jaws* and released

under a false company name to protect its actual creator (Atari) from liability. The second was *Death Race* (1976), developed by Exidy and inspired by—though not affiliated with—*Death Race 2000* (1975).⁵ The first prominent home tie-in, *Superman* (1979, for Atari's VCS console)⁶ arrived in 1979, already the product of corporate synergy: Warner Communications had purchased Atari in 1976, and the company was eager to create a game to promote its 1978 *Superman* film.⁷ After the game's tepid reception, however, it would be several years before another tie-in adaptation was attempted (Aldred 2012, 93). The format did not hit its stride until 1982, a year that saw adaptations of several prominent blockbuster films: *Raiders of the Lost Ark*, *Alien*, *The Empire Strikes Back*, and—infamously—*E.T. The Extra Terrestrial*. Most of these adaptations were for the Atari VCS, which was at the time the most popular home console; a few were also available for competing consoles like Mattel's Intellivision and ColecoVision. "Where do you look for dramatic new game ideas?" asks a 1982 article in Atari's own enthusiast magazine, *Atari Age*. "If you're Atari, you turn to the top creative teams in filmmaking . . . and form partnerships to develop tomorrow's breakthrough video game concepts" (Atari 1982, 7). Numerous other game magazines reported on the trend as well: *Blip*, *Videogaming Illustrated*, *Vidiot*, and *Electronic Fun* all ran cover stories with titles like "Video Games Go Hollywood" and "Hollywood Video Game Explosion."⁸

Jessica Aldred (2012, 96–101) has analyzed the difficulties and the affordances of representing prominent film characters in the rudimentary graphics of the Atari VCS. The use of humanlike avatars was rare at the time—rather than attempt to render humans, game developers were more likely to omit the player's avatar entirely in favor of a first-person or fixed third-person perspective, or to let the player be represented by a vehicle or an object. Film adaptation games, however, often invoked their star characters directly, in highly abstracted forms. For Aldred, this representational gap between the film or the game's cover art, and what was actually shown on the television screen—the player did not control Harrison Ford, they controlled a stick figure wearing a squared-off fedora—left imaginative space for the player to relate to the hero as they saw fit. The player's relationship to a pixelated Indiana Jones or E.T. was carefully described in marketing copy, and instruction manuals often explicitly situated the player as either controlling the action from the outside—the player "helps" E.T., for instance—or fully embodying the hero.

Musical cues in the earliest adaptation games functioned in much the same way. Just as early console graphics were limited in their representational capacity, so too were the sonic capabilities of those early consoles highly constrained. The Atari VCS, for instance, had only two sound channels at its disposal, controlled by a programmable sound generator that derived its frequencies through an idiosyncratic division of the fundamental pitch, yielding an incomplete gamut with notable tuning problems (Collins 2006). For this reason compromises often had to be made, and musical scores were often monophonic, since harmony was difficult to achieve with an incomplete gamut: one voice might lack the notes present in the other, or needed to harmonize with it. Even a simplified theme can be powerful, however; as Mark Richards (2016, 1) notes, cinematic main title themes have a tendency to "become part of a film's entire identity," serving as



FIGURE 17.1 Theme from *Raiders of the Lost Ark* (Atari VCS, 1982).

one of the most recognizable signifiers of a given movie; in turn, the musical theme is identified almost entirely with the movie from which it came. Given these games' visual and ludic abstraction, and the anxiety over faithfully representing beloved characters in a few dozen pixels, it is clear that music also played a prominent role in tying early film-to-game adaptations to their source material. "Put this cartridge into your VCS, turn it on, and listen—it's the theme song from *Raiders*!" begins a write-up of *Raiders of the Lost Ark* in *Atari Age* magazine (Atari 1982, 7). After the cover art, hearing a recognizable main title theme was one of the first and most compelling ties to a franchise—even if that theme was heard in drastically reduced form.⁹

The opening screen of *Raiders*—which lacks even the game's title, depicting only a small figure wearing Indiana Jones's fedora—features a four-measure loop of composer John Williams's title theme ("Raiders' March") from the film, which has been rendered in 3/4 time for the game, as opposed to the 4/4 original. As shown in Figure 17.1, the distinctive dotted rhythms of each pickup beat have been smoothed out into straight eighth notes, and the end of the theme has a simplified (and lower) contour, presumably due to the limitations of the VCS's programmable sound generator. In the absence of a true title screen, this theme serves as the cartridge's primary identification.

Other Atari VCS adaptations treat their themes in similar ways. *Star Wars: The Empire Strikes Back* (1982) begins with the fanfare from the films' opening title. No music plays during the game itself, however; outside of the flourish, its soundtrack consists entirely of white noise of various timbres, representing laser shots, explosions, and crashes. And while *E.T.: The Extra Terrestrial* is notorious for the role it played in the "Great Video Game Crash" of 1983, the game's presentation of Williams's famous "Flying Theme" serves as a model for incorporating a recognizable soundtrack.¹⁰ So too does *Halloween* (1983), which seems to be the first game to incorporate polyphony in its rendition of a movie theme. The film's haunting 5/4 piano motif is rendered with a bass line, although as Figure 17.2 demonstrates, the two-voice limitation renders the final sonority as an uncharacteristic (and almost comical) major chord. Faced with the choice between the two notes in the film soundtrack's sixth measure (and perhaps forced to take the higher note by the console's limited gamut), the sound programmer ended the line on A#. Because the Atari's higher voice also does not follow the change of harmony in m. 5, the bass's A# fills in the F#—C# perfect fifth, creating a surprising major chord.

In this format, recognizable movie themes became a sonic signature for an adaptation game. Due to the technical limitations, music did not loop throughout a game.¹¹ Instead, like the blocky outline of Indiana Jones's fedora, a few measures of music would set the

(a)

Piano

Synthesizer

f#

4

u#

(b)

Upper voice

Lower voice

f#

4

F#

FIGURE 17.2 Themes from (a) the film *Halloween* (1978), and (b) the Atari VCS cartridge *Halloween* (1983).

stage for the action to come. In many cases, it also served as a reward (much like “Ta-Ra-Ra Boom-De-Ay” did in 1977’s *Circus*). As a preview of Atari’s *The Empire Strikes Back* notes: “If the player wins, he or she is rewarded by invincibility through the Force—and two electronic refrains of the *Star Wars* theme.”¹²

Not every movie tie-in game incorporated music from its source film’s soundtrack. For example, *Alien* (1982), an Atari VCS adaptation of the 1979 film, closely resembles the arcade hit *Pac-Man* (Namco, 1980) in both its gameplay and its sound design. A blocky figure (presumably Ellen Ripley) flees through a square, single-screen maze from three pastel-colored aliens (reminiscent of *Pac-Man*’s ghosts), attempting to pick up every dot on the screen without being caught in the creatures’ disproportionately large jaws. The game does not incorporate any music from Jerry Goldsmith’s influential (though admittedly less than tuneful) score; instead, its sound design is virtually indistinguishable from *Pac-Man*, from the siren-like noise that accompanies the player’s movement, to the shift in tone when the player picks up a starburst to turn the tables on the aliens. It could be argued that *Alien* is not so much an adaptation of the film, but rather an imitation of

Pac-Man with the name of a movie attached, and the lack of music is yet more evidence of its failure in that respect.

ADAPTING STAR WARS FOR THE ARCADE

While corporate synergy and the emergence of multimedia entertainment conglomerates played a significant role in the birth of film adaptation games, not all adaptations began as product-promotional tie-ins; others acquired their promotional licenses after development had already begun.¹³ For instance, Atari's well-known arcade game *Star Wars* (1983), which came several years after the movie it adapted (1977), began with a memo circulated in late 1979. In it, Atari engineer Jed Margolin proposed a game entitled "First-Person Space War." As corporate documents held by the Strong Museum of Play reveal, the game was to be made with vector graphics (three dimensional wireframes, along the lines of Atari's *Battlezone*, which was then nearing completion under the similar working title "First-Person Tank"). Margolis envisioned the player in the cockpit of a starfighter, facing off against either computer opponents or another player in a linked cabinet. "A tie-in with one of the space movies such as *Star Wars* II might be desirable," Margolin noted near the end of his proposal.¹⁴

Margolin's notes indicate that while he hoped the game could be attached to an upcoming movie (*The Empire Strikes Back*, here referred to as a generic *Star Wars* sequel), this was at the time speculative; the license would help promote the game, rather than vice versa (indeed, company documents indicate that Atari would pay a licensing fee to use any theme that might be attached to the game).¹⁵ The project was developed for nearly three years under the working title *Warp Speed* until the middle of 1982, when Atari finally acquired the license that Margolin had hoped for: a wide-ranging contract with Lucasfilm to create games based on the *Star Wars* license.¹⁶ Comments from project director Mike Hally imply that the existing *Warp Speed* project—characterized as "a two-year-old space game research project," which memos indicate was lying fallow¹⁷—benefited from this new contract; the deal was not motivated by the in-progress game, but rather the game's status within the company was resurrected by the new collaboration. The refreshed, reimagined game progressed quickly, and appeared in 1983, six years after the original film. A follow-up arcade title adapted *Return of the Jedi* a year later, and a conversion kit appeared in 1985, allowing arcade operators to turn their *Star Wars* cabinets into a new game based on *The Empire Strikes Back*.¹⁸

In the early 1980s, arcade cabinets—which were built from scratch for each game, or at least customized from previous models based on the needs of each title—had the potential to deliver more sophisticated hardware designs than early home consoles, which were restricted to very few sound channels and a limited range of timbres (Guins 2015, 9–15). Arcade game designers thus had much broader sonic palettes with which to work, and, as we will see, they were able to quickly incorporate new technologies into their games, rather than being limited by the capabilities of consoles that might have been

developed years before. At the same time, coin-op developers were beholden to both production costs and logistics; numerous Atari documents indicate the per unit price associated with every aspect of hardware, and innovative designs had to be balanced against potential profit. Developers were likewise beholden to the conventions of arcade game design, since their customers were not players but arcade operators who had certain expectations about the consumption patterns their games should encourage. Both of the *Star Wars* games studied in this chapter follow a “three-stage” model: each chapter presents a novel challenge to the player, and these cycles repeat at increasingly higher difficulty levels, until the player stops putting coins in. Both were subjected to focus groups during their development and compared against competing cabinets in “field tests” before their full commercial release.

Despite its origins, *Star Wars* thoroughly integrates sound and music from its source film, and this audible reference was an important part of its appeal. One advertising flyer proclaims, “*Star Wars* features ‘random’ music. A song will be repeated no more than once every 7 minutes, in stereo. And the music is taken from the original *Star Wars* soundtrack.”¹⁹ Unfortunately, this seems to be an exaggeration, in two respects. First, the music of *Star Wars* is anything but random. The game is underscored by a series of short, recognizable fragments of John Williams’s soundtrack. Each theme lasts less than 10 seconds, and contrary to the claim of “randomness,” they occur in precisely the same order, each time, separated by several seconds of silence (see Table 17.1). There are even clear narrative correlations: the transition from the first stage to the second, for instance, is underscored by the battle music that accompanies a squadron of X-Wings

TABLE 17.1 Soundtrack Excerpts in *Star Wars* Arcade Game (see Lehman 2022)

Theme	Appearance in Game	Source from Film
“Main Theme,” A-section	Game start	Opening logo and title crawl
“Main Theme,” embellished	During gameplay, first stage	Simplified version of main title credits, B-section
Fragment from end credits: Modification of Main Theme B-section, leading to final fanfare	During gameplay, first stage	Final credits [2:03:16]
“Force Theme,” imitative and intensifying	Transition to second stage (skimming surface of the Death Star)	X-Wings flying down to the surface of the Death Star [1:46:17]
Rebel fanfare	During gameplay, third stage (Death Star Trench)	<i>Millennium Falcon</i> being pulled into the Death Star’s hangar [1:05:24]
Death Star explosion	End of game—victory	Immediately post—Death Star explosion [1:57:20]
“Force Theme,” march version	End credits / high scores / attract mode	Medal Ceremony

turning downward to attack the Death Star in the film.²⁰ Next, regarding the length of time: there is some degree of adaptive variability in the game, in the sense that if a player takes longer to clear a given wave of enemies, they might hear a few more themes. It is also possible to miss the pivotal shot in the Death Star trench at the end of the game, which causes the trench sequence simply to start over—as clear a dramatization as any that early video games treated narrative differently than films. But even the slowest playthrough of *Star Wars* takes only about three minutes.²¹ The claim of “seven minutes” between repetitions seems only tenuously to be true, perhaps if one takes into account the “attract” mode and the game’s high-score screen.

While the music may lack somewhat compared to the advertising campaign’s promises, the selection of dialogue reproduced from the movie is impressive for 1983. *Star Wars* was one of several Atari cabinets to use the Texas Instruments TMS5220 Sound Chip, which allowed developers to employ digitized speech by encoding it and resynthesizing it as needed, thereby avoiding both the prohibitive costs and immense circuit board space that would have been required to store recordings.²² An additional set of documents reveals how Atari’s experiments with then-emerging voice synthesis technology coincided with the development of *Star Wars*, and how the game was one of the first cabinets to use it. In 2001, Jed Margolin—the engineer who had originally proposed *Star Wars*—posted an archive of his internal Atari email, or “VAX Mail,” to his website.²³ A long-running 1982 discussion of the details of the TMS5220 and other voice synthesis chips reveals Margolin’s important role in assessing potential voice synthesis technologies, and pioneering their use in *Star Wars*. In early April, Margolin canvassed Atari’s engineers about their interest in using synthesized speech for their current projects; while four engineers expressed interest and a series of meetings ensued, only *Star Wars* pursued the Texas Instruments voice system in earnest, as the team began working that summer to convert their experimental space game into a blockbuster license.²⁴

Margolin’s early memos show that instead of purchasing the premade “vocabulary lists” offered by Texas Instruments, Atari purchased a workstation called a PASS, which allowed them to digitize their own speech samples for reproduction by the TMS-5220. The device cost the company \$25,000 (roughly equivalent to \$79,500 in 2024).²⁵ A company-wide VAXmail from 1984 details the system’s operation: “[The] TI PASS system analyzes the speech and allows the user to edit it, frame by frame. The system typically makes a number of pitch errors, amplitude errors, and filter parameter errors, which have to be cleaned up by hand. It’s a fairly slow process, and requires some intuitive feel for linguistics and why we perceive certain phonemes the way we do, etc.”²⁶ A 1983 magazine article describes the collaborative process that went into creating the game’s script. “Hally and [sound designer Earl] Vickers pored over the movie script, looking for appropriate pieces of dialogue to use in the game. They indicated their choices to Lucasfilm, who then lifted those pieces off the soundtrack and sent them to the labs for digitization” (Williams 1983, 25). As one memo describes the results, “the sound quality is a little unnatural but preserves some of the speaker’s identity and expression.”²⁷ Through this grainy synthesis, Obi-Wan Kenobi (Alec Guinness) advises the player to “Use the Force, Luke”; Darth Vader (James Earl Jones) growls menacingly,

"I have you now." The dialogue reacts to events in the game: being hit by an enemy will sometimes cause Luke Skywalker (Mark Hamill) to say, "I'm hit but not bad; Artoo, see what you can do with it." Should the player make it to the end of the game, they will hear Han Solo (Harrison Ford) give the "all clear" to take the shot that will destroy the Death Star: an achievement that will be greeted with another appropriately timed flourish from the film's soundtrack.

Star Wars was extremely well received. In their unsigned review, *Computer & Video Games* magazine wrote: "[T]he force of the powerful new video game assaults the imagination visually with graphic simulation and special features that include music and dialogue created from the movie."²⁸ In a later column on arcade games adapted from films, the magazine described it as having "great graphics and even better sounds," while *TV Gamer* described it as "the best non-laser [disc] game to come out of 1983." *Video Games* magazine called it "one of the best video games ever produced," and praised the game's music, sound, and particularly speech, which it compared favorably with 1983's other voice-chipped games, *Sinistar* and *Star Trek*.²⁹

By early 1984, *Star Wars: The Arcade Game* had been ported to numerous home console systems and computers.³⁰ In these versions, the gameplay is generally identical to the arcade versions, but the graphics and sound are noticeably simplified, throwing into sharp relief the audiovisual differences between arcade- and home-based games of the time. The soundtracks are particularly spartan when compared to the original arcade cabinet: voices from the film are entirely absent, and there is no music save for a single iteration of the *Star Wars* fanfare at the beginning of the game. In that sense, these console ports deploy the film's main title music as a brief acoustic signifier, exactly as the made-for-console adaptations discussed above did. On the Commodore 64, this theme is presented in two voices (melody and bass, as in the arcade version), while on Atari VCS and ColecoVision it is monophonic. The VCS represents laser blasts and explosions with two different timbres of white noise, while the Commodore and ColecoVision each mimic laser sounds with their waveform generators.

Star Wars also signaled an important shift in the division of game development labor with regard to sound design. On his website, former Atari engineer Jed Margolin tells the story of how the expansion of the *Star Wars* development team led to changes in sound production throughout Atari:

At some point Rick [Moncrief, director of Margolin's group at Atari] hired Earl Vickers to do sounds and speech development. Up until then, the game programmers were responsible for sounds, which they generally hated doing, so usually the programmers would use Pokey sounds that had already been developed. That's why, for many years, Atari's games sounded alike. The other game groups decided that having someone just do sounds was a good idea, so Earl became the nucleus of a completely separate Sound Group that did sounds for all of the games.³¹

While it would be short-sighted to attribute an industry-wide shift to a single game—particularly on the strength of an anecdote related by one of that game's designers and

chief advocates—Vickers's sound-specific role on this and subsequent titles offers useful context for the rapidly increasing ambition of game soundtracks in the mid-1980s.

WORKING WITH A FILM STUDIO: *RETURN OF THE JEDI* (1984)

In a 1983 interview, project leader Mike Hally recalled the process of working with Lucasfilm to ensure that all elements of the *Star Wars* arcade adaptation were faithful to the film: "They were excited with our ideas, but they're very protective of what they call the "*Star Wars* Universe," Hally explains. This means that all ideas, concepts, characters, and storylines presented in the film must be preserved in any licensed products" (cited in Williams 1983, 24).

The Strong Museum's archives hold very little information about the discussions that went on between Atari and Lucasfilm during the development of *Star Wars*. However, the interactions between the two companies during the development of the game's sequel, *Return of the Jedi* (1984), are well documented.³² So too is the process of sound development and programming, and the incorporation of more digitized speech into the game. While documents concerning the development of *Star Wars* shed light on Atari's exploration of new technology, *Return of the Jedi* offers even greater insight on the collaborative processes of licensed game design and the communication between developer and licensor.

Atari's coin-op division was eager to capitalize on the success of *Star Wars*. They turned their attention quickly toward a sequel, though they looked to the franchise's most recent installment to do so, adapting *Return of the Jedi* (1983) rather than *The Empire Strikes Back* (1980), which they would not adapt until 1985. *Return of the Jedi* features an isometric view (angled, from the top down) rather than first-person perspective, and it uses filled, sprite-based graphics rather than line-based vectors. Like its *Star Wars* adaptation, Atari's *Return of the Jedi* featured three "waves" based on scenes from the film. The player first controls Leia for a speeder bike chase in the forest. Then, a combined second wave intercuts between Chewbacca in his commandeered Imperial walker and Lando Calrissian flying toward the Death Star in the *Millennium Falcon*; and a final wave in which Lando blows up the Death Star and then escapes from its tunnels. Marketing copy focuses especially on the "split wave" feature in the second section of the game, which mimics the cinematic intercutting between the action on the surface and out in space.³³ The many speech samples from the film not only tie the game to the film but also serve an important purpose in the game's design. A few seconds before each shift in perspective, the player hears a line of dialogue from either Han, Leia, or Lando, warning them that the perspective is about to shift.

Documents from October 1983 and March 1984 list the sound effects that were planned, including distinct engine sounds for the game's numerous vehicles, as well as

scrapes and impact noises that would represent different surfaces (trees, metal, etc.).³⁴ The developers were clearly committed to reproducing the varied soundscape of the movie as closely as possible, rather than relying on generic laser and explosion sounds. The game would run on four Atari "POKEY" sound chips (referred to as "quad pokeys" in memos, see chapter 12 this volume for further details of the chip's operation), which provide two sound channels each, and one TMS5220 voice chip—the same sound hardware *Star Wars* had used. The developers imagined a rich soundscape based on dozens of sounds and speech samples from the film, and there was concern that there were not enough channels—a familiar challenge facing audio programmers in the 1980s. One issue was the idea of using continuous engine noises, including distinct engine drones for the three or more speeder bikes that might be on screen at once. Combined with music, which was originally planned to occupy six channels of audio (or *twelve* stereo tracks, an almost unheard-of bandwidth), there were not many channels left for other sound effects such as laser blasts and explosions.

In the end, several compromises seem to have been struck to balance the variety of sounds needed with the capabilities of the hardware. In the opening sequence, for example, the speeder bikes are represented by a general backdrop of white noise. Each enemy speeder makes a sound representing its acceleration as it appears and joins the chase, but other than that, the engine noises are not tied to specific objects in-game. The game's music was eventually scored for three voices, generally with a melodic voice, harmony or counterpoint for it, and a bass line. The developers also mostly restricted music to the beginning and end of each level, with the exception of playing the "Imperial March" in three voices as the player flees the exploding Death Star at the end of the game. Presumably, this was possible because there are no enemies in that sequence (and thus no engine noises or shots).

Throughout the development process, Atari's team was in frequent contact with Lucasfilm. Their correspondence indicates the scope of the game's sonic ambitions, with long lists of quotations and detailed, unique sound effects. Atari made their first soundtrack requests in September 1983, asking for 42 lines of dialogue on 1/4-inch reel-to-reel tape, ranging from plot-critical exposition to exclamations from supporting characters.³⁵ After their initial request, Atari would repeatedly ask for more sound and music. While the Strong Museum only holds Atari's side of the correspondence, it seems that concerns must have been raised at Lucasfilm about sharing so much footage: a January 1984 letter pleads for more tapes from *Jedi*, promising that none of the sounds will see personal use, and that direct audio quotes are essential to "increase the game player's interest and fantasy about living in the *Star Wars* experience."³⁶ In March 1984 Atari wrote again, mentioning 18 lines of dialogue that were reproduced poorly on the tapes that Lucasfilm had previously sent, and also requesting 14 *new* lines.³⁷

An internal memo from March 1984 lists the progress on the game's sound production, noting the rough condition of many sounds: the *Falcon* sound is "all wrong," while numerous sound effects "need work" or are "too soft."³⁸ The *Star Wars* theme, the memo notes, needs to be shortened by half, and numerous sounds based on the film were still missing from the game, despite plans for a field test in only a few days. Atari was also

concerned with securing the rights to reproduce John Williams's music: every status update from April to July of 1984 proclaims, "Still do not have rights to use music . . . 'not to worry.'" All this evidence points to a working method in which placeholder sounds were used, before being filled in—at times—with samples from the films. It also chronicles a gradual reduction in ambition, as the great majority of dialogue samples requested here were cut from the final game. Pruning ideas back from the initial stages of development is not unusual, and these documents offers a fascinating glimpse at the team's brainstorming process.

FROM THE 1980S TO TODAY: THE RISE AND FALL OF VIDEO GAME ADAPTATIONS

Taken together, the console and arcade games surveyed in this chapter offer a vivid picture of the early days of cinematic adaptation games. From the early console examples such as *Raiders of the Lost Ark* and *E.T.* to the technically sophisticated arcade cabinets of *Star Wars* and *Return of the Jedi*, adaptation soundtracks went from simple auditory indices pointing toward a film's heroic main theme, to complex compositions in music, sound, and dialogue that, as one Atari memo puts it, supports "the player's interest and fantasy about living in the *Star Wars* experience."³⁹

As computing technology advanced, game developers continued to pursue the techniques and metaphors of cinema. The short-lived, mid-1980s genre of LaserDisc games used video to recreate the aesthetic of Saturday morning cartoons (*Dragon's Lair*, 1983), or incorporate film scenes directly into their arcade adaptations (*Firefox*, 1984).⁴⁰ Beginning in the early 1990s, PC games incorporated recorded voices, live orchestral soundtracks, and fully rendered animations or live video "cutscenes"; console games followed as soon as their storage media would allow, and the close relationship between video games and cinema is now firmly cemented.⁴¹ Far from the suggestive cueing of *Raiders of the Lost Ark*'s brief, looping introduction, the influence of cinema on gaming's audiovisual content has in large part become a broad generic background underlying many—though not nearly all—large-scale narrative games.

At the peak of adaptations' popularity in the mid-2000s, *most* box office hits boasted video game tie-ins.⁴² Since 2010, however, mainstream game adaptations have slowly begun to decline, and it is no longer a given that a major Hollywood blockbuster will be translated into videogame form. Numerous lamentations over the decline of the format in the popular and trade presses have blamed the cost of licensing deals with film studios; the short development periods imposed on developers by Hollywood production timelines; and the rise of online-oriented multiplayer games, which have made narrative-driven experiences a less-certain prospect. Journalist Chris Kohler has proposed that video game developers have become better at crafting cinematic experiences, and that prominent game franchises (such as *Call of Duty* or *Assassin's*

Creed) have built up the name recognition—and thus the marketing force—of major film properties.⁴³ Another factor may be the rise of mobile gaming, as film studios and game developers shift resources from time- and labor-intensive console games toward simpler adaptations for smart phone.

The “convergence” described by Henry Jenkins and others continues in more forms than ever, from smart phones to streaming video platforms, and it would be surprising if games did not continue to play an important role in transmedia franchises. As the medium of the cinematic adaptation game enters a new era with unknown prospects and potentially new formats, it is worth keeping its origins in mind. As this chapter has shown, such projects are often even more complicated than they seem, a collective creative endeavor with numerous lines of communication, many sources of pressure, and many developmental roads not taken. And archives like those consulted here—both traditional collections of paper and digital records, and contemporary digital archives maintained by not-for-profit, volunteer, or enthusiast curators—can help us to tell many more behind-the-scenes stories about the design of film-to-game adaptations, and about sound and music development in particular. Those stores should inspire us to look at these games as works unto themselves rather than aesthetic aberrations, and to search for the value, creativity, and cultural relevance that can be found in them. As we see from *Star Wars*, for example, adaptation games can be ideal vehicles for experimentation and innovation, with the production values of Hollywood inspiring Atari’s engineers to test out new ways of rendering space in three dimensions and to explore how new technology could bring the sound of cinema into the arcade. And with the sometimes-quixotic sonic ambitions of *Return of the Jedi* now firmly within the technical capabilities of contemporary video game designers, we are well equipped to understand how the process of adapting blockbuster film into a successful game has changed during the past four decades—and the ways it has hardly changed at all.

NOTES

1. In this respect, the fictional game is almost certainly modeled on LaserDisc games such as *Dragon’s Lair* (1983), which featured animated video on a LaserDisc player within the cabinet. Players interacted with the game by making choices when prompted, and branching narratives and outcomes could be represented based on those choices. See Perron (2017, 137–134).
2. *Spacewar* (1962), for instance, was made by MIT graduate students on a mainframe computer meant for nuclear research and was inspired by the science fiction novels that several of its creators often read (Brand 1972).
3. See Gibbons (2018, 50–71). On early silent film adaptations of opera as a gesture toward prestige, see Marks (2005, 71–76), Altman (2004, 251), and Grover-Friedlander (2005, 19–21). On the cultural implications of opera in video games, see Cheng (2014, 167–171).
4. Zach Whalen (2004) also argues for the indebtedness of video games to early cartoon techniques such as “Mickey Mousing” (the cartoon-like synchronization of music with on-screen actions).

5. For more on these titles see Collins (2008, 108–110); and Monfort and Bogost (2009, 125–126).
6. VCS, or “Video Computer System,” was the original name of Atari’s 1978 console. It was later renamed the Atari 2600 to fit the naming convention inaugurated by its successor, the Atari 5200 (released in 1982). In this chapter, I will follow the common scholarly practice of referring to the system by its original name.
7. On Warner’s acquisition of Atari, see Goldberg and Vendel (2012, 200–207); and Fleury (2019, 100–125). On *Superman*, see Fleury (2019, 162–198). On corporate synergy and the emergence of film adaptations, see *Blip* (June 1983, 3) and *Videogaming Illustrated* (December 1982, 13).
8. See *Blip* (June 1983, 2–4); and *Electronic Fun* (November 1982, 10–15).
9. Gibbons (2018, 59–62) makes a similar argument about *Sorcerer’s Apprentice* (1983), an Atari VCS adaptation of a sequence from Disney’s *Fantasia* (1951): “[b]ecause the game’s narrative differs so greatly from the original story—and because it lacks the lavish visuals of Disney’s animation—sound is central to bridging the gap between *Fantasia* and *Sorcerer’s Apprentice*.”
10. On the pitch and tuning limitations of the Atari VCS, see Collins (2006). For a full transcription and comparison between John Williams’s original score and the Atari VCS version, see Schartmann (2018).
11. Collins (2008, 19) notes that, even once this became technically feasible with consoles like ColecoVision, continuously looping background music did not become common in videogames until 1984.
12. “Eye On: What’s New in Hardware, Software, the Industry!” *Videogaming Illustrated* (August 1982, 10).
13. Archival documents quoted in this section and the next two are from *Atari Coin-Op Division Corporate Records* collection (hereafter *ACDCR*), held at the Strong Museum of Play’s Brian Sutton-Smith Library and Archives. They are identified by the boxes and folder numbers containing the records for each game. Atari had separated the operations of its coin-op and home entertainment divisions in 1978; see Goldberg and Vendel (2012, 362).
14. Memo, Jed Margolin to distribution list, November 14, 1979. Records for *Star Wars* are held in *ACDCR*, Box 4, Folders 30–34.
15. Production Status Report (PSR), *Star Wars*, August 6, 1982.
16. The details of this contract are not publicly documented, but Jamie Williams’s November 1983 “Behind the Scenes” article in *Video Games* describes an arrangement involving games based on each of the three *Star Wars* films (p. 24), while *Atari Age* (September/October 1983, 7) announced the partnership with Lucasfilm alongside a similar relationship with the Children’s Television Workshop.
17. See *Star Wars* PSRs, *ACDCR* boxes 4/31 and 4/34. Weekly project updates began on June 20, 1980 and indicate a hiatus from January through April of 1981. The second half of 1981 is missing from the archive, but later updates indicate a “restart” date of Jan 11, 1982.
18. These games would later be the basis of several updated collections produced by Sega, including *Star Wars Arcade* (1993) for the 32X console, and the arcade cabinet *Star Wars Trilogy Arcade* (1998).
19. *Star Wars* advertising flyer, 1983. *ACDCR*, Box 4/30.
20. It is possible that in the advanced stages of the game, the music is truly random. Atari documents refer to a case in which a player managed a five-hour play session on a single

- credit, leading engineers to discuss the randomly generated level structures that a player might encounter after their 20th round.
21. Numerous Atari memos confirm an average of three-minute playtimes for both *Star Wars* and *Return of the Jedi*. See, for instance, an ROTJ Field Test Summary from August 24, 1984 (ACDCR, Box 3/34).
 22. Chips like the TMS-5220 relied on *linear predictive coding* to encode information about phonemes and resonance, rather than actually recording sound. "If all we did was a straight digitization of speech," noted Mike Hally, "then for the amount of speech we used in *Star Wars* we would have needed a printed circuit board measuring 11 1/2" by 19" just to store it! The speech integrated circuit we used is 1/28th in size and basically one memory chip which together replaced that entire board." See Williams (1983, 25).
 23. The VAX-11/780 was a supercomputer used by engineers and developers at Atari, which included an internal, company-wide precursor to email. Margolin's personal archive of other people's messages and his own memos can be found at <http://www.jedmargolin.com/vmail/vmail.htm> and <http://atariemailarchive.org>.
 24. Jed Margolin, "Speech Synthesis Meeting," April 2, 1982; and "TI Speech Development System," April 26, 1982 (<http://www.jedmargolin.com/vmail/Stat82.txt>).
 25. See Jed Margolin, "Speech Status," March 19, 1982; and "Speech Synthesis Status," Sept. 20, 1982 (<http://www.jedmargolin.com/vmail/Stat82.txt>).
 26. Atari VAXmail, "Sound Chips," January 19, 1984. <http://atariemailarchive.org/thread/sound-chips-20>.
 27. Jed Margolin, "Sound Chips." Another message in the same thread indicates a gendered component to the system's accuracy, noting that its default 8 kHz sampling rate is ideal for men's voices, but not women's. The note recommends several settings that should be changed in order to facilitate 10 kHz sampling for women's voices; these are resource-intensive workarounds that indicate a degree of gender bias in the design of the system. See "TI Speech Option, Yamaha & Pokey Clock rates," March 21, 1984.
 28. "Now the Force Is With You!" *Computer and Video Games* (October 1983, 30).
 29. "Arcade Action," *Computer and Video Games* (April 1984, 27); "Games from the Movies," *Blip* (May 1984, 14); "Reviews: Star Wars," *Video Games* (October 1983, 55).
 30. Flanagan (2017, 448) notes that videogame ports are characterized by their adaptation to the "technological, aesthetic, and cultural constraints" of a new platform.
 31. Jed Margolin, "The Secret Life of Vector Generators" (2001, 52). <http://www.jmargolin.com/vgens/vgens.pdf>.
 32. Documents related to *Return of the Jedi* are held in ACDCR, Boxes 3/34 and 4/1.
 33. *Return of the Jedi* marketing document, May 25, 1984.
 34. "Jedi Sounds," handwritten note, October 2, 1983.
 35. Letter from Dennis Harper (Atari) to Rita Dodson ATTN: Gary Summers (Lucasfilm), September 15, 1983.
 36. Letter from Dennis Harper (Atari) to Susan Leahy (Lucasfilm), January 3, 1984.
 37. Letter from Dennis Harper (Atari) to Katherine Gruhn (Lucasfilm), December 5, 1983.
 38. "Jedi Sounds," memo from Chris Downend to Cindy Petroka, March 3, 1984. It is unclear whether the sound effects for *Return of the Jedi* came directly from Lucasfilm, or whether they were created by Atari. In an interview, Earl Vickers mentions having to create his own sound effects for *Star Wars* (see Williams 1983, 25), and the sounds in *Jedi* generally do not resemble those from the film, indicating they may also have been created in-house.
 39. Letter from Dennis Harper (Atari) to Susan Leahy (Lucasfilm), January 3, 1984.

5. For more on these titles see Collins (2008, 108–110); and Monfort and Bogost (2009, 125–126).
6. VCS, or “Video Computer System,” was the original name of Atari’s 1978 console. It was later renamed the Atari 2600 to fit the naming convention inaugurated by its successor, the Atari 5200 (released in 1982). In this chapter, I will follow the common scholarly practice of referring to the system by its original name.
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19. *Star Wars* advertising flyer, 1983. *ACDCR*, Box 4/30.
20. It is possible that in the advanced stages of the game, the music is truly random. Atari documents refer to a case in which a player managed a five-hour play session on a single

40. On LaserDisc games, see Robert Alan Brookey (2010, 7–9).
41. See Collins (2008, 95–97 and 108–111) and Cheng (2014, 59–63).
42. Brookey (2010, 4–5) writes that seven of the top-ten grossing films in each of the years 2005, 2006, and 2007 were accompanied by game adaptations, and describes the lack of a video game companion to Christopher Nolan's *The Dark Knight* (2008) as “the exception that proves the rule.”
43. Kohler, “Why Games Based on Movies Disappeared.”

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