

# Super Mario Bros.



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Bloomsbury Academic

An imprint of Bloomsbury Publishing Inc

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NEW YORK • LONDON • NEW DELHI • SYDNEY

**Bloomsbury Academic**

An imprint of Bloomsbury Publishing Plc

1385 Broadway  
New York  
NY 10018  
USA

50 Bedford Square  
London  
WC1B 3DP  
UK

**www.bloomsbury.com**

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First published 2015

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**Library of Congress Cataloging-in-Publication Data**

Schartmann, Andrew.

Super Mario Bros. / Andrew Schartmann.  
pages cm. — (33½)

Includes bibliographical references and index.

ISBN 978-1-62892-853-2 (pbk. : alk. paper) 1. Kondo, Koji, 1961-. Super Mario Bros. I. Title.

ML410.K735355S33 2015

781.5'4—dc23

2014046607

ISBN: PB: 978-1-62892-853-2  
ePDF: 978-1-62892-854-9  
ePub: 978-1-62892-855-6

Series: 33½

Typeset by RefineCatch Limited, Bungay, Suffolk

## Introduction

The entire *Super Mario Bros.* (1985) soundtrack is just under three minutes long—and that includes internal repetitions, of which there are many. If you remove the most obvious of these from the “Overworld” theme—ba-dum-pum-ba-dum-pum-PUM—less than 90 seconds of original music remains.<sup>1</sup> Think about that for a moment. Nintendo composer Koji Kondo breathed life into an entire art form with just a few well-sculpted ticks of the clock. What conditions made this remarkable feat possible? What accounts for the music’s game-changing status? And why do our hearts still dance to the “primitive” 8-bit tunes of a bygone era? These are the questions at the heart of this book.

As is to be expected from a 33½ title, this study is first and foremost about music. *Super Mario Bros.*, however, is an unusual case, in that its historical context is *so* intimately tied to the eventual sounds that emerged from Kondo’s pen. It’s impossible, at least in my view, to fully appreciate his musical innovations without a decent grasp of the 1980s video game landscape. Without this context, we risk framing Kondo as a lone visionary who single-handedly revolutionized game sound, when in fact a large part of his success was

circumstantial: not only did it hinge on Nintendo's unprecedented decision to hire a full-time composer for their games, it also relied on a team of inspired designers who produced a video game of staggering originality, such that Kondo's music had a stage on which to shine. To be clear, this is not meant to detract from the merit of Kondo's score. It is intended, rather, to highlight the collaborative spirit of the *Super Mario Bros.* enterprise—Kondo's music included.

In this respect, readers will notice that music creeps into the discussion gradually. The first two chapters, in addition to this introduction, focus largely on contextual questions whose relevance to the music itself becomes obvious only at a later stage. Rest assured: your patience will be rewarded.

To set up the background against which Kondo's story unfolds, it's worth reflecting on the history of Nintendo's mustachioed heroes 30 years after their North American debut. Gamers need no reminder of the influence our beloved Bros. continue to wield in the video-game world. The more popular of the two, with his Nintendo-red plumber's suit, remains at the center of a Japanese–American institution. In one of his recent incarnations, Mario takes on foes both old and new in a retro setting that hearkens back to the original NES (Nintendo Entertainment System). A perfect mixture of old-school and modern, *New Super Mario Bros. U* (2012) was a smashing success. Such is the power of nostalgia—a nostalgia that lies at the heart of Nintendo's marketing strategy. With each new console, Mario is reborn. And so are we.

Because of Nintendo's astute and constant reinvention of their 1985 success, our Bowser-busting friend never recedes into the shadows. He never leaves our side. This lasting power,

a relentless ability to remain relevant, is a true marvel of video game history—one that allowed journalist David Sheff to write, a full eight years after Mario's first success, that "Nintendo's mascot . . . was more recognized by American children than Mickey Mouse."<sup>2</sup> But how could this be? How did a Japanese creation overtake an American icon on its own turf?

Before video game designer Shigeru Miyamoto (*Super Mario Bros.*, *The Legend of Zelda* [1986]) pitted "Jump Man" (the early Mario) against his barrel-throwing pet gorilla, Donkey Kong, Nintendo wasn't exactly a household name. Founded in Japan in 1889, the company started out inventing and manufacturing card games. By the mid 1960s, it had evolved into a toy company, which set the stage for its 1970s venture into the electronic games market. By the end of the decade, the arcade industry was on the brink of a massive breakout, with Taito's *Space Invaders* (1979) leading the way. In May of 1980, the American release of Namco's *Pac-Man* opened the flood-gates. Looking to capitalize on a healthy base of arcade dwellers, Nintendo struck gold with the release of *Donkey Kong* in 1981.

Despite their early success, Nintendo was not the top player in North America's arcade-game market. That title belonged to Atari—a pioneering video-game company founded by Nolan Bushnell (also the brain behind Chuck E. Cheese) in 1972. Beginning with the release of *Pong* (1972), Atari produced a solid stream of popular arcade games, including *Breakout* (1976), *Asteroids* (1979), *Centipede* (1980), *Marble Madness* (1984), *Gauntlet* (1985), and many others. With these coin-op hits, the company's place atop the

arcade market remained virtually unchallenged. A very different battle, however, was taking place in the homes of consumers.

Throughout the late 1970s and early 1980s, a number of companies (e.g., Atari, Bally, Coleco, Mattel, Magnavox) vied to bring an authentic arcade experience to living rooms across the nation. This sparked the “home-console wars,” which began in earnest in 1977 when Atari released their Video Computer System (VCS), later renamed the Atari 2600. Over the next five years, as game libraries grew alongside the number of companies competing for market space, a number of complicating factors emerged that would eventually lead to the video-game crash of 1983, which temporarily quashed the North American home-console market. Scholars have proposed a number of reasons for this crash, including market saturation (Herman, 2001; Campbell-Kelly 2003), mismanagement at Atari (Cohen, 1984), poor quality games (Kent, 2001), and a shift in teen culture (Friedrich, 1983).<sup>3</sup> Specific reasons aside, the crash cleared the way for Nintendo to rekindle the dying flame of the home-console market and stoke it into an unbounded fire of Japanese dominance.

So from his *Donkey Kong* provenance, “Jump Man” went on to bigger and better things. He became an overnight celebrity in the fall of 1985 and, unlike many who once enjoyed similar success, remains a celebrity of the highest order. In 2015, Mario stands as strong as ever, beckoning me from across a Barnes & Noble aisle to purchase a checkers set—not because I like checkers, but because marketers know that his very presence incites a wealth of warm childhood

memories. This is why I am so drawn to the countless YouTube videos of talented musicians rendering their versions of Kondo's tracks on every instrument imaginable. And this is why I nod with approval at the US Post Office's decision to honor Mario with a commemorative 2015 stamp. Why wouldn't we pay homage to a character who recalls the sweet innocence of youth, when our greatest worry was a fire-breathing lizard that stood between failure and a princess? And why wouldn't we plug into Kondo's sonic ocean every now and then to surf his 8-bit waves in search of something—perhaps a part of us—we thought was forever lost?

For many of us, a mere glimpse at the *Super Mario Bros.* title screen, or better yet, a few characteristic notes of a Mushroom Kingdom tune, brings forth a flood of fond memories. Despite these profound associations between graphics, music, and the past, however, I'm convinced that nostalgia is only part of the reason Mario and his music continue to enthrall our senses in the most positive of ways. There's also something fundamentally engaging about the music itself—something divorced from all nostalgic ties. My hope is to turn that ineffable “something” into words.

Our journey through Kondo's score divides into two broad sections (or “Worlds”). The first, “Contexts,” explores the various forces responsible for creating an environment in which Kondo's project could thrive. The second, “Music,” probes the details of Mario's soundscape to unearth the compositional strategies behind its success.

“Contexts” takes us first to an alien graveyard in the New Mexico desert, where memories of the video-game crash of 1983 linger some 30 years later. Like an allegory hidden

beneath the sand, this graveyard encapsulates both Atari's fateful demise and Nintendo's meteoric growth, and sheds light on the circumstances that made Kondo's project possible. Our story then takes us across the Pacific to Nintendo's locus of innovation where a new era in video-game history was born—one in which Kondo's musical imagination played a substantial role. Using the groundbreaking design of *Super Mario Bros.* as a launch pad, "Contexts" then migrates to Kondo's studio where the master reveals some of his compositional secrets, thus preparing us for the second leg—or "World"—of our journey: a nuanced exploration of the music itself.

Despite their segregated presentation, these "Worlds" are just as interconnected as those in the *Super Mario Bros.* game itself. Common threads run through them, and familiar themes take on new roles as the scenery changes, but all contribute to the same end. All work together in the search for answers to questions posed throughout this introduction. And all seek to understand our seemingly inexhaustible fascination with a handful of well-organized sound waves.

Great music has a tendency to attract a wide range of perspectives. What follows is but one of many ways in which Kondo's music can be analyzed, appreciated, and understood. To proceed under the illusion that my reading is somehow definitive would do little more than close doors. I prefer to leave them open. Therefore, in the spirit of collaboration, consider this first monograph on Kondo's *Super Mario Bros.* score as the beginning of a conversation—an opportunity to join heads and create a richer experience for all. And so our journey begins: Mario Start!



## 1-1

### An Unlikely Hero is Born

On September 27, 1983, residents of Alamogordo, New Mexico opened their morning papers to a curious headline: “City of Atari: ‘E.T.’ Trash Go Home.”<sup>4</sup> Readers discovered that their town had become a dumping ground for mysterious lots of rubbish—mysterious because Atari had hired security guards to keep spectators from catching a close-up glimpse of their operation.<sup>5</sup> The suspicion garnered by Atari’s secrecy led many to speculate on what and how much the company had banished to the underworld. Unconfirmed reports identified anywhere between ten and twenty truckloads of goods, and *E.T. the Extra-Terrestrial* (1982), Atari’s game based on the Spielberg film, was listed as a primary suspect.

*E.T.* was well known to gamers as yet another commercial flop for the ailing Atari, who had released a laughable version of *Pac-Man* (1982) just over a year prior. Anyone who followed the market knew the company was coming down hard and fast: after projecting a 50 percent increase in sales for the fourth quarter of 1982, Atari soon downsized their projection to 10–15 percent, much to the dismay of investors. The lack of confidence bred by this sudden shift in numbers led to a substantial decline in company stock.<sup>6</sup> In

this respect, it didn't really matter what the company had buried out in the New Mexico desert, for the end result was the same: a public that envisioned Atari covering up their losses in the most literal of ways. *E.T.* just happened to be in the video-game spotlight at that moment, and so the game was served up as fodder for urban legend: somewhere under the southern sun, they'd say, lies an 8-bit alien graveyard—the final resting place of some 3 million unsold cartridges.

Whatever the facts, Atari's *E.T.* game had secured its place in popular culture, not least because its funeral coincided with a defining moment in gaming history: the North American video game crash of 1983, which tagged Atari with \$536 million in losses and caused parent company Warner Communications to sell off its critically wounded subsidiary.<sup>7</sup> For the companies that perished from the video-game business altogether, such as Magnavox and Coleco, *E.T.* was a symbol of demise. For others, however, Atari's extra-terrestrial misfire cleared some much-desired space in a competitive industry. Keen to seize the opportunity, a soon-to-be video-game juggernaut prepared to make its move from across the Pacific.

Nintendo made its first big splash in North America *before* the crash, with the arcade game *Donkey Kong*. Given the game's immense success, it's surprising to learn that it was little more than a desperate attempt to break even. Nintendo's original plan to tap into the North American market involved the *Space Invaders* knock-off *Radar Scope* (1979), which was quite successful in Japan.<sup>8</sup> Company president Hiroshi Yamauchi, however, underestimated the importance of American branding: no one in the United States had ever heard of

Nintendo, and arcade owners were reluctant to purchase yet another alien-shooter from an unknown company. In the end, *Radar Scope* didn't sell as many copies as Yamauchi had hoped, leaving him with a warehouse full of surplus cabinets, and leaving the company to reconsider its bid for a spot in the competitive North American arcade market. How could they turn this costly miscalculation into success?

The answer came from Yamauchi's son-in-law, Minoru Arakawa, who was charged with planting Nintendo's feet in the New World. His suggestion: develop a *new* game to put inside of the unsold cabinets, or in author Jeff Ryan's words, "reheat yesterday's blue plate special into a new entrée."<sup>9</sup> To cut a long story short, the stars aligned and *Donkey Kong* was born. And, pertinent to our story, Mario made his first appearance on the arcade stage.

Fast-forward two years to 1983, the year of *E.T.*'s burial and "The Last Hurrah" for the Golden Age of video games.<sup>10</sup> As former Midway programmer Brian Eddy explains, "video arcade games had been on a fast ride up in popularity since first appearing in the 1970s, but 1983 marked the first year of a downturn ... the business was still profitable for many developers ... [but] no one knew whether 1983 marked just a temporary dip or the start of a steady decline."<sup>11</sup> "Steady decline" turned out to be an understatement, as the industry collapsed faster than anyone thought possible. The culprit? No one can say for sure. But an over-saturated market, whose effects were felt most acutely in the home-console business, was certainly a factor.

Atari had long been the home-console leader, and their games had earned them astronomical profits. Between 1977

and 1980, the company's earnings surged from \$75 million to \$2.2 billion.<sup>12</sup> As is only natural in a booming sector, everyone had dollar signs in their eyes. Developers everywhere wanted a piece of the hearty home-console pie.<sup>13</sup> And not just that: they wanted it *now*. This rush-to-market mentality prized quick release over quality, and consumers soon lost confidence in the console market as a whole. Dismayed by the overwhelming influx of subpar products, people were hesitant to commit to any one company. Understandably, they feared being limited to a pool of poorly designed games. In response to the resulting lack of consumer demand, retailers pushed back against their suppliers, returning unsold products and refusing to stock new items. Not long afterwards the North American video-game empire came crashing down.<sup>14</sup>

Of course, Atari's *E.T.* was not the sole reason for the 1983 crash, but it was indicative of a widespread issue. Historian Steven Kent's assessment of Atari during this time is telling: "with the continuing growth of video games, some executives began to believe that they could sell anything as long as it came packaged as a video game."<sup>15</sup> *E.T.* was the poster-boy of that belief. A quick YouTube search reveals that the only good thing about the game was its title screen.<sup>16</sup> Beyond that, gamers were left to navigate barren lands with what looked like a poorly postured and out-of-shape dinosaur.

So what does all of this have to do with Nintendo, which wasn't even a part of the North American home-console market when it crashed? It turns out that Japan was more or less immune to the troubles of American video-game makers. Since Japanese game retailers didn't import many North

American products, they hardly noticed when the stars-and-stripes ship went down. With business as usual in Japan, Nintendo released the Famicom (a home console) there in 1983. The console was an immense success, selling more than 500,000 units within the first two months.<sup>17</sup> But Nintendo had its eye on something more. With their new product, executives believed they could reinvigorate the dying American market. Ambitious? Yes. Possible? Not everyone was so sure.

A brief entry in the March 1985 issue of *Electronic Games* exemplifies the skepticism some had toward Nintendo's decision: "Considering that the videogame market in America has virtually disappeared, this could be a miscalculation on Nintendo's part."<sup>18</sup> But criticism did not dissuade Yamauchi and his crew, as the company decided to bring the Famicom to North America under a new name: the Nintendo Entertainment System (NES). This was their chance "to enter a billion-dollar market where the others had just forced themselves out in a Mexican standoff gone wrong."<sup>19</sup> But there was a catch. They couldn't market their product as a video game.

Nintendo's Trojan horse came in the form of a plastic gun (the NES Zapper) and a robot named R.O.B.<sup>20</sup> These items were of limited use to gamers, as they were used in just a few titles (e.g., *Duck Hunt* [1985] for the gun, *Stack-Up* [1985] for R.O.B.), but they played a vital role in the company's resuscitation plans. Rather than marketing the NES as a video-game *console*, Nintendo would market it as a *toy*, and to this end, none of their promotional materials included the words "video game."

A successful plan, however, involved more than avoiding a few unpopular words. It was essential that Nintendo not repeat the mistakes of its forebears; quality had to be non-negotiable. Luckily this wasn't much of an issue for Yamauchi and his team. The company was built on uncompromising standards, which it routinely upheld.<sup>21</sup> When the Famicom was released in Japan, for instance, it was discovered that some units would crash under particular conditions. Instead of waiting for consumers to complain, and despite the hefty price tag, Yamauchi ordered a recall.<sup>22</sup> As Jeremy Parish writes, "The Famicom recall cost Nintendo dearly in the short term, but by many accounts engendered a sense of trust among consumers rather than suspicion. Because Nintendo preemptively and electively recalled the systems rather than being forced to do so under scrutiny, they presented themselves as good corporate citizens."<sup>23</sup> This was the Nintendo way, and it would work wonders for them in the North American market.

When the NES was released in 1985, all of its games came stamped with the Nintendo seal of approval—quality control made (emphatically) visible to the public. Their message was personal, packaged just for you: "This seal is *your* assurance that Nintendo has approved and guaranteed the quality of this product."<sup>24</sup> But what exactly did this seal mean? What did it stand for? Our best hint comes from a company-issued pamphlet entitled, "The Facts on Home Video Games."<sup>25</sup> Written by Howard Phillips, an avid gamer and the first editor of *Nintendo Power* magazine, the document addresses a number of concerns that were vexing parents: Are video games hampering my child's social skills? Do they have an

educational benefit? How do I know which console to choose? And so on.

On one page of the pamphlet (Example 1), with the heading “Then . . . And Now,” Phillips lists the technological shortcomings of early video games. The main offenders: subpar graphics, simplistic gameplay, and banal sound. On the very same page, in contrast to the unsophisticated experiments of yesterday, Phillips lists the virtues of contemporary games. One in particular is of special interest to us: “lush audio characteristics complete with complicated musical scores and realistic sound effects.” Although the pamphlet was published in 1989, Phillips’s “new generation of technology” found its first expression in *Super Mario Bros.* In order to understand exactly what that meant for video-game music, however, we must take a brief detour into the history of game sound.

In the early years of video arcades (circa 1971), game sound was not conceived of as music. It served, rather, a purely practical function, attracting new customers and providing feedback to gamers. Even today, the vast majority of arcade games include something known as an attract mode: an “unplayable demonstration of a game that runs between play sessions . . . specifically designed to entice passersby to part with their money.”<sup>26</sup> Given the longstanding success of this crowd-hailing technique, gaming companies developed an ear for little more than flashy sound effects. To put matters succinctly, art was not part of the equation. Nor could it be.

Throughout the 1970s and early 1980s, so-called video-game composers were actually sound programmers.<sup>27</sup> As

## SUPER MARIO BROS.



Example 1. “Then . . . And Now” from Howard Phillips’s Nintendo pamphlet.

*Credit:* Courtesy of Matthew Henzel at [VideoGameObsession.com](http://VideoGameObsession.com).



such, their principal focus was on fluency with various computer languages, not composition. Given this shortage of musical expertise, it was common practice for companies to use pre-existing classical melodies in their games, and in truth, this was about all the early hardware could handle. Because of these obstacles, original composition simply didn't factor into the industry paradigm. In fact, even in those rare instances when a programmer produced non-derivative work, they were rarely credited.<sup>28</sup> It therefore seems that the explicit lack of music in early video games came about through "a combination of the technological constraints of the time and the social constraints surrounding the specialized knowledge required to engage the chips."<sup>29</sup>

We already know that the approach to game sound changed with the advent of the Famicom and its North American equivalent. But we have yet to explore what exactly Nintendo did to initiate this change. As Howard Phillips's pamphlet tells us, top-notch graphics and gameplay were not enough for the budding industry titan. Every single one of a game's elements, including audio, had to live up to Nintendo's seal of quality. And so in stark contrast to industry standards, the company decided to hire someone *specifically* to compose music for their games.<sup>30</sup> The move was bold, but not entirely unexpected.

Nintendo had always prided itself on being different—on being the game-changer rather than an obedient pack-animal. As current Nintendo of America CEO Satoru Iwata recalls, "[Yamauchi] couldn't stand making the same kind of toy the other guy was making, so whatever you showed him, you knew he was going to ask, 'How is this different from

what everybody else is doing?’ The worst way to answer was to tell him, ‘It’s not different, it’s just a little better.’ He’d be furious.”<sup>31</sup> This attitude fostered the perfect environment in which creative game music could thrive. It also acted as an antidote to slapdash products. Nintendo had no need for a mass grave in the New Mexico desert, for they had observed Atari’s blunders and learned from them. “E.T. trash” was not in their future.

And so we come full circle to the curious headline that launched our inquiry into the history of Nintendo on North American shores. We’ve already learned how the *E.T.* myth influenced Nintendo’s takeover strategy, but we have yet to find out exactly what went down—literally—during Atari’s fateful dig in 1983. We thus return to *E.T.*’s alleged tomb, this time zooming in on April 26, 2014, three decades after the crash.

The sun shines brightly through a dusty haze, while hundreds of onlookers track the movements of a giant mechanical arm. As each stroke cuts clumsily into the dirt, the air thickens with anticipation. Some 31 years after McQuiddy’s suggestive article, the *E.T.* urban legend is set to face judgment. Shortly after noon, the arm strikes alien gold, revealing to the world once and for all the truth behind Atari’s 1983 undertaking. *E.T.* is indeed among the exhumed, though the final yield doesn’t even approach 3 million. But that doesn’t matter. The game is there, and people applaud the discovery.

The economic tensions from the crash have long since dissipated, allowing us to reevaluate *E.T.* and its attendant meanings. Without question, the game remains a symbol of

decline. But with full knowledge of the events that transpired shortly after Atari's demise, we can reflect on the positive aspects of the *E.T.* debacle. More than just a pixelated mess, the game is *also* a symbol of renewal. It stands for the reasons Nintendo took it upon themselves to reinvigorate a dying North American market, rather than leaving it to perish under the Alamogordo sand.

## 1-2

# Mario Grows Up

Writing a great video-game soundtrack doesn't always lead to notoriety. Tim Follin's music to *Silver Surfer* (1990), for instance, is arguably the most virtuosic NES score of all time, yet few people have ever heard it.<sup>32</sup> With the exception of dedicated Marvel fans, consumers had no incentive to spend money on the comic-inspired game. When GamesRadar.com compiled their list of the 100 worst games of all time, *Silver Surfer* checked in at #76.<sup>33</sup> The fact is that musical success in the video-game industry requires a complete product—one that provides quality and innovation in all facets of the gaming experience. In this respect, Koji Kondo's *Super Mario Bros.*'s triumph owes a great deal to Nintendo's star-studded design team—a team intent on breaking new ground.<sup>34</sup> As Kondo recalls, "There was so much enthusiasm on this project because *we* were trying to create something that had never been done before."<sup>35</sup> Kondo relied on the innovations of his colleagues just as much as they relied on his. So by examining some of the game's influential non-musical features, we paint a more accurate picture of the intensely collaborative environment that nourished Nintendo's record-breaking project.

The development of *Super Mario Bros.* was entrusted to the same man who brought the company its first arcade hit (*Donkey Kong*) in 1981: Shigeru Miyamoto. Always eager to push boundaries—an approach very much in line with Yamauchi's philosophy—Miyamoto recast his gorilla-thwarting hero in an unprecedented setting.<sup>36</sup> In Steven Kent's words, "*Super Mario Bros.* took Mario out of his single-screen setting and placed him in a huge, vivid world. Instead of simply climbing ladders and moving around on platforms, players now controlled him as he ran through a seemingly endless, brightly colored countryside filled with caverns, castles, and giant mushrooms."<sup>37</sup> Miyamoto's new game was expansive, clever, and downright quirky. And that is exactly what Nintendo emphasized in its marketing. The original box includes screenshots of all four environments—the Overworld, the Underworld, the Underwater World, and Bowser's Castle—alongside the following description:

Do you have what it takes to save the Mushroom Princess? You'll have to think fast and move even faster to complete this quest! The Mushroom Princess is being held captive by the evil Koopa tribe of turtles. It's up to you to rescue her from the clutches of the Koopa King before time runs out. But it won't be easy. To get to the Princess, you'll have to climb mountains, cross seas, avoid bottomless pits, fight off turtle soldiers and a host of black magic traps that only a Koopa King can devise. It's another non-stop adventure from the SUPER MARIO BROS.!<sup>38</sup>

That's right, mountains, seas, and bottomless pits—all suggestive of a boundless world. What separated *Super Mario*

*Bros.* most from its predecessors, however, wasn't so much the size of its bright and varied environments as it was their richness—a direct result of Miyamoto elevating the concept of “Easter eggs” (i.e., hidden items or areas) to new heights. Incidentally, the very notion of an Easter egg was inspired by The Beatles' *White Album*, which, according to urban legend, had a hidden message that could be accessed only by playing the music backward.<sup>39</sup> This led programmer Warren Robinett to include a hidden room in his 1979 game *Adventure* for the Atari 2600.<sup>40</sup> Piggybacking on this idea, Miyamoto made Easter eggs one of *Super Mario Bros.*'s central attractions—something to keep gamers coming back even after they'd defeated Bowser in the eighth and final castle. By hiding coins, mushrooms, flowers, stars, beanstalks, and bonus areas throughout the game's 32 levels, Miyamoto offered two competing goals for players to achieve: one could either speed through the game to finish as quickly as possible, or spend time searching for hidden items in order to rack up an impressive high score.

The richness of Miyamoto's levels was further enhanced by an imaginative repertoire of enemies, which required the gamer to develop a number of different attack skills. As authors Bill Loguidice and Matt Barton point out, each category of enemy has specific mechanics and requirements for being defeated.<sup>41</sup> Piranha Plants, Cheep-Cheeps, Bloobers, and Spinys are immune to all attacks other than fireballs and star power; Bullet Bills, Lakitus, Hammer Bros., and Goombas fall under a single stomp; and Koopa Troopas and Buzzy Beetles require a swift stomp-and-kick to be banished from the screen. Or at least that's close enough. In

reality, even this categorization oversimplifies the variety of ways in which Mario can dispose of his foes. With a single stomp, for instance, a Koopa Troopa becomes a weapon, whose effect is much like that of a fireball. A Koopa Para-Troopa, however, requires two stomps before it retreats into its shell. And that's to say nothing of Mario's head-bopping blows, with which he can upend his shelled nemeses and put Hammer Bros. and Goombas completely to rest. Of course it would be too simplistic to subject Bowser and his lookalikes to these same attacks. To defeat them, Mario must find his way to an axe on the other side of a treacherous bridge.

Miyamoto's many attack strategies are entertaining in and of themselves, but their full impact on the gaming experience relies on a combination of rich character design (as described above), memorable sound effects (see Chapter 2–4), and airtight gameplay. This latter feature came about from Nintendo's inventive use of a relatively simple controller.<sup>42</sup> With just two buttons (A and B) and a directional pad (D-pad) to work with, designers found ways to employ buttons flexibly. As Loguidice and Barton write, “each button had a main function and a secondary function, depending on the environment or status of the character.”<sup>43</sup> When on land, for example, pressing the A-button causes Mario to jump. When in water, the same button causes him to paddle. The longer a player holds the A-button down, the higher Mario jumps (to a limit, of course). Doing the same with the B-button, which is also used to shoot fireballs, causes Mario to move more quickly.

Because these controls are so intuitive, it's difficult to appreciate the work that went into their design. But as

Miyamoto explains, developing a satisfying set of actions that remained in-tune with Mario's magical world didn't happen overnight; in fact, it began with the *Mario Bros.* (1983) arcade game some two years earlier: "Our [initial] idea was that direct contact with an enemy would kill you, but hitting them from below could knock them out. That wound up being too boring, so we settled on the final system where you first knock them off their feet, then jump back up to deliver the final blow."<sup>44</sup>

A continuation of this struggle for intuitive controls can be seen in some of the original sketches for *Super Mario Bros.* In these documents, the up-button is marked "jump," the B-button is marked "accelerate" and "rocket → shoot," and the A-button is marked "depends on tool," with the following choices: "empty handed → kick," "rifle," and "beam."<sup>45</sup> As this sketch makes clear, the original design had Mario shooting bullets and riding rockets into the air.<sup>46</sup> In the end, however, Miyamoto opted for the less cluttered, more sophisticated array of functions known to gamers today.

To nuance the gameplay even more, designers incorporated realistic constraints on Mario's movement. With only ~200 words to describe the game's historical importance, this is precisely the feature video-game critic Chris Donlan draws out in his blurb for Universe's *1001 Video Games You Must Play Before You Die*: "*Super Mario Bros.* has a sense of believable physics—something still missing from a lot of modern-day platformers. Set Mario running, and you'll need time and space to get him to slow down; attempt a big jump, and you're going to have to get a running start; bounce on an enemy, and you may well need to fine-tune your landing while still in the air."<sup>47</sup>



Miyamoto's blockbuster recipe of Easter eggs, a diverse set of enemies, and sophisticated gameplay resonates with his concise assessment of the development process: "we squeezed as much as we could out of the NES technology."<sup>48</sup> Indeed they did, more or less rewriting the game-design manual along the way. Coupled with an impressive marketing campaign, *Super Mario Bros.* was well-positioned to revitalize the ailing American home-console market. More than this, it was poised to revolutionize gaming itself—music included. As a collaborative member of the *Super Mario Bros.* team, the young Kondo composed a score to match the many non-musical innovations of his Nintendo colleagues.

Given the extent to which Kondo's music changed the industry, it's worth probing, at least briefly, the source of his musical abilities. What prepared him to pen those now-famous notes? And how did he land what is now one of the most celebrated jobs in the video-game industry?

### Koji Kondo<sup>49</sup>

Born in Nagoya, Japan in 1961, Kondo began studying music at the age of 5, taking his first lessons on a Yamaha Electone organ—an electronic keyboard instrument that was popular throughout the young composer's formative years. The Electone's simulated organ stops, which could be "opened" or "closed" with the slide of a switch, allowed Kondo to produce a variety of flute- and reed-like sounds, some of which resembled those of the NES. Thus at an early age he was exposed to the timbres of his future craft. The influence of

Kondo's technical training can be heard in his early music, which, unlike that of many of his contemporaries, rarely departs from idiomatic keyboard textures.

Kondo eventually put his musical skills to work, playing in a jazz and rock music cover band throughout his teenage years. While a member of this band, he covered music by one of his favorite groups: Deep Purple. It is often suggested that their song "April" influenced his soundtrack to *The Legend of Zelda*—the end of the dungeon theme, in particular. Although certainly possible, the passage in question (which begins at the 2:00 mark of "April") is nothing more than an arpeggiated diminished-seventh chord—a relatively common gesture (B–D–F–A-flat on the piano, for example) that occurs in countless pieces. That said, the timbre of the arpeggiated chord in "April" is strikingly similar to that of the NES's pulse-wave channel (see ahead to Chapter 1–4), and the arpeggiation continues for a relatively long time in both pieces, thus strengthening the purported connection. Unfortunately, Kondo himself has been silent on the issue, acknowledging only the influence of Ravel's *Bolero* on the *Zelda* title-screen music.<sup>50</sup>

Despite his deep engagement with music, Kondo never planned specifically to work as a professional musician. As he recalls, "I went to school at Osaka University of Arts, where I worked toward becoming, in general, some kind of director or producer of artistic work." But his love for music and video games was never far from his thoughts. At university, Kondo often played popular arcade games at a local coffee shop. Although interested in the games themselves, it was the music that mesmerized him most: "I was ... interested in

[arcade games] because they were really the only place where you could find the kind of sound creation that I was looking for. PCs were just starting to become widely purchased, so I used BASIC programming to create sounds . . . that interest led me towards video games.”

Kondo's lucky break came in 1984, when Nintendo sent a recruitment message to his university. The company was following through on their vow to make quality sound an integral part of the gaming experience. Kondo responded to their call for students interested in composition and sound programming, and was hired without so much as a demo tape.

His first several months at Nintendo were spent on relatively modest projects, but Kondo didn't have to wait long for opportunity to knock a second time. In 1985, he was tasked with writing the score for *Super Mario Bros.* The project was unlike anything Nintendo had ever attempted, and Kondo thrived on the challenge of exploring uncharted territory. His mission was clear: “I wanted to create something that had never been heard before, where you'd think ‘this isn't like game music at all, [is] it?’” Just *how* he did that, however, is not a biographical matter. And so with a sense of the *man* behind the music in mind, we now turn to the *ideas* on which that music was based.

## 1-3

# Kondo's Compositional Philosophy

Over the years, countless interviewers have asked Kondo to single out the music of which he is most proud. His choice is always the same: the original Overworld themes from *Super Mario Bros.* and *The Legend of Zelda*. Many of us would agree that these are the tunes we remember best, but it seems odd for a composer to locate his greatest achievements in the nascent years of his art. What about the steady lifting of compositional constraints afforded by advances in technology, which allowed Kondo to expand his “orchestral” palette, write considerably longer scores, and wield precise control over dynamics, rhythm, and other facets of the musical canvas? Wouldn't this freedom make for better work in the hands of a good composer? Not necessarily. Despite appreciating the variety of sounds now available to him, Kondo views technological advance as a double-edged sword: “[P]eople sometimes think, ‘well, we’ve got all of this.’ So rather than having to create something that’s really great, they ... rely heavily on technology, or say, the instrumentation.”<sup>51</sup> In many ways, the stringent limitations of the 8- and 16-bit systems (i.e., the NES and SNES) fostered innovation to a degree unrivaled by modern consoles. The

point, however, is not to tally bells and whistles, but rather to focus on the underlying substance of the music. And so we arrive at Kondo's compositional philosophy.

Although Kondo's more recent work is painted with lush orchestral colors, his philosophical approach to writing music remains constant. As nearly every interview with the maestro reveals, writing a catchy tune is only half the battle. The other half involves matching the music to both the game environment and the experience of the player. This might seem obvious today, but when Kondo came onto the scene, video game music was still fully steeped in its arcade origins. Sound functioned primarily to attract the attention of customers and to provide background filler for gameplay. A tight bond between sound, environment, and gamer had not yet been formed. In an effort to create this bond, Kondo demanded that his music fulfill two principal functions: (1) to convey an unambiguous sonic image of the game world, and (2) to enhance the emotional and *physical* experience of the gamer.

The first of these functions seems relatively straightforward: compose music that gives the player a general sense of the environment. As you'll read in the second part of this book, Kondo does this (in part) by creating a sonic lightness/darkness binary. By using rhythm, harmony, melody, and form in different ways, he creates two different "sound worlds"—one that is bright and fluffy, and another that is dark and heavy. But Kondo doesn't stop there. He pushes this function one step further by coordinating his music with the animation of various on-screen characters, such that their movement corresponds in some way to the rhythm of the

music. This innovation was made possible by Nintendo's unusual development process. As Kondo recalls, "At Nintendo, we were able to start working on the game as soon as the rest of development was ramping up, so we'd be working in parallel with them. I know in some cases other developers have hired someone to do the sound after a game was pretty much done, so the results and the process were . . . different."<sup>52</sup> Inspired by this highly collaborative working environment, Kondo eventually formalized his greatest contribution to video-game music—the second of the two principal functions listed above: in Kondo's view, the relationship between sound and physical movement should not be restricted to on-screen animation; it should extend to the gamer him or herself.

Despite Kondo's groundbreaking contribution, it would be dishonest to ignore important precursors to the idea that music can enhance a player's physical and emotional experience. *Space Invaders* is perhaps the earliest example of a game whose music elicits a strong emotional response. The tune is simple (a four-note descending scale that repeats over and over again), but the fact that it speeds up as the invading aliens approach is revolutionary. In *Space Invaders*, music is no longer *just* a background effect; it is part of a visceral gaming experience—one that affects the heart rate of anyone who tries to defend the world against Taito's pixelated intruders. The "Time Warning" theme, which initiates a twofold increase in tempo to nudge Mario toward his goal, provides an obvious parallel in *Super Mario Bros.*, but whether or not *Space Invaders* had a direct influence on Kondo is debatable. The general sound, however, was surely in his ear. Not only

did Kondo play the game growing up, but its unprecedented success also made it impossible for anyone in the field to ignore. In fact, one could argue that a large part of that success was due to the game's innovative use of sound. When asked to explain the mania surrounding Taito's blockbuster smash, the company's import manager S. Ikawa emphasized the game's "feeling of tension"—a tension created primarily by the music.<sup>53</sup>

No matter the reasons for the success of *Space Invaders*, the game's latent embodiment-of-music aesthetic became a central pillar of Kondo's compositional philosophy. In *Super Mario Bros.*, Kondo developed that philosophy and applied it on a much larger scale. Instead of using music to incite a particular emotional response (e.g., using faster notes to increase tension), he tried to anticipate the physical experience of the gamer based on the rhythm and movement of gameplay. This is much less abstract than it sounds.

Imagine yourself at Nintendo during the development of *Super Mario Bros.* You've been asked to compose music for the game, and the developers have invited you to try one of their working prototypes. As you play through the level, you get a feel for how Mario moves through his environment: your body sways as Mario jumps, stops, runs, changes direction, and so on. You also notice the movement of other creatures: how the Goombas' feet move, how often Piranha Plants open their mouths, and so on. After a while, your body starts to beat in time with the game—you have internalized the rhythm of its movement. Having done so, you head back to your studio and translate the movement of your *experience* into sound.

It is exactly this innovation that Kondo stresses in his many press appearances: “the [*Super Mario Bros.*] music is inspired by the game controls, and its purpose is to heighten the feeling of how the game controls.”<sup>54</sup> In essence, if music does not reflect the rhythm of the game, and, by extension, that of the gamer, it becomes background music. Unfortunately, it’s quite difficult, if not impossible, to identify the exact mechanisms by which Kondo’s music meshes with a player’s movement. But that doesn’t relegate his philosophy to the realm of esoteric hullabaloo by default. When I play *Super Mario Bros.*, the music is always eerily in sync with my on-screen marionette. Individual experience aside, Kondo was convinced that game sound could lessen the gap between Mario and the hands that move him. With Kondo’s visionary techniques, players do more than control a character on screen; they form an intimate bond with it—a bond forged by the motional spark at the heart of Kondo’s music.

From this perspective, the curiosity that initiated our discussion becomes far less curious. Why does Kondo take the *most* pride in his earliest hits? Because it was in these early pieces that he first understood how he was different from those who came before him. More than just a handful of catchy tunes, *Super Mario Bros.* is the cradle of Kondo’s lifelong contribution to video-game music. So it is only natural that he should cherish it as he does.



## 1–4

# Kondo's Instruments

As I sat down to write this chapter, a striking juxtaposition caught my eye. The top layer of my working mess was filled with matters Mario, but every now and then, little black dots written in Beethoven's hand would peek through the pile—bite-sized reminders of my other life as a classic-music scholar. The dots provided a smattering glimpse of Herr Ludwig's celebrated "Waldstein" sonata amidst a sea of computer-generated tones. More than a friendly culture shock, my 8-bit/classical collage highlighted one of the most important aspects of video-game composition—an aspect that is easily overlooked when we focus only on the finished product. In the spirit of investigation, let's pursue this Beethoven-versus-Kondo train of thought to see what it yields.

It is well documented that Beethoven worked out musical ideas both in his head and at the piano, and eventually wrote them out according to the conventions of Western music notation.<sup>55</sup> His familiarity with a standardized written musical language allowed him to convey his ideas clearly to the performer, and he could take for granted the expressive nuance musicians would bring to his music—the sorts of things that can't be written down.

Much like Beethoven, Kondo also worked out his musical ideas at a keyboard (typically an electronic organ), but his final “score” looked nothing like the “Waldstein” sonata—or any music in standard notation for that matter. The NES master’s ideas had to be translated into the language of computer code. And given that Kondo’s music would be “performed” by a programmable sound generator, he couldn’t rely on a human element to bring expression to his work.

I don’t want to belabor these differences, but the perspective they offer is crucial to appreciating Kondo’s art. It’s easy to take basic musical elements for granted, since they require very little effort on the part of a traditional composer or performer to implement. Articulation (e.g., staccato, accents), dynamics (e.g., piano, forte, crescendo), variety of texture, and the ability to bring certain notes of a chord out more than others (i.e., voicing) are commonplace in the music traditions best known to most of us. But when it comes to NES music, each of these features incites a veritable struggle between man and machine.

It is for this very reason that we can speak of, say, a video-game composer’s beautiful execution of a crescendo. For Beethoven, a hairpin (<) conveyed a general concept to the performer: play gradually louder. How exactly the performer did this was beyond the composer’s control, but he could assume that the movement from soft to loud would progress along a dynamic continuum. For a video-game composer, in contrast, a crescendo requires precise calculation: it is expressed in numbers ranging from 0 to 15, each of which represents a specific volume level. There is no continuum to work with, thus forcing composers to create the illusion thereof.<sup>56</sup>

The same can be said of other musical features, including those we typically assume to be part of natural sound, such as resonance. Our purpose, however, is not to list and discuss each case in turn, but rather to glean the implications of this Beethoven/Kondo comparison. In early video-game music, basic musical parameters became aesthetic objects unto themselves, as did the innovative treatment of technological constraints. It's not easy to create a rich musical fabric using just three computer-generated voices!

The range of musical styles that NES composers squeezed from these constraints warrants a book-length study of its own. Yet even when studying the work of a single composer, a basic understanding of these constraints can enhance our appreciation of the music. Perhaps the most palpable constraint was memory. With just a small amount of space devoted to music, composers had to reconcile two opposing features: repetition and variety. How does one reuse material without it sounding tiresome? This question is central to my discussion of Kondo's "Overworld" theme (Chapter 2–1), but for now I turn to the very locus of these compositional constraints: the NES's five-channel sound generator.

### **Kondo's "Instruments"**

Stylistic variety is one of the greatest achievements of NES composers, who used the power of innovation to overcome stringent technological limitations. The extent of this achievement, however, is far from obvious on first listening. By examining the NES hardware—the tools of the trade—we

deepen our appreciation for the colorful tapestries woven by Kondo and his peers. But be warned: what follows is but a mere sketch of the “instruments” NES composers had at their disposal. While this outline is sufficient for the music at hand, enthusiasts of later NES music will find it lacking in detail. If your interest in NES music extends beyond the scope of this volume (and I hope it does), please consult the endnotes for additional resources.<sup>57</sup>

Despite differences in style, all NES music is part of the same sonic universe. This underlying similarity is the direct result of a common sound chip.<sup>58</sup> Composers had five channels at their disposal, each of which had its own set of constraints: two pulse-wave channels, one triangle-wave channel, one noise channel, and one delta modulation channel (DMC). It’s helpful to think of these channels in terms of their most typical functions: pulse-wave channels carry the melody, the triangle channel carries the bass, the noise channel carries the percussion, and the DMC supplies pre-recorded samples. Because pre-recorded samples took up lots of memory, they were used sparingly, and not at all in *Super Mario Bros.* For this reason, we focus on the other four channels.<sup>59</sup>

The two pulse-wave channels are identical. Each one offers multiple sounds, as determined by the duty cycle, which refers to the percentage of time a waveform is in the “on” position during one on/off cycle. The NES hardware provided composers with four duty cycles: 12.5%, 25%, 50%, and 75%. Since 25% and 75% produce sounds that are virtually indistinguishable to the human ear, composers effectively had three distinct timbres to choose from. Timbre is a

complicated phenomenon, but in general, a change in duty cycle alters a note's harmonic profile (i.e., the relative prominence of "ghost" notes that sound *above* the note we identify on a staff), and this alteration changes a note's timbre. On the NES, these timbral differences are substantial enough such that each duty cycle (with the exception of 25% and 75%) gives the impression of a different instrument: one channel, three instruments.

In general, the sound becomes smoother as the duty cycle increases—again, a result of the harmonic profile. As I've written elsewhere, Wood Man's theme (Example 2) from *Mega Man 2* (1988) illustrates clearly what these different duty cycles sound like when used as a melody: when the main theme enters after a short introduction, the duty cycle changes to 50%, thus substituting smoothness for the melody's previously hoarse sound.<sup>60</sup>

Regardless of the chosen duty cycle, pulse-wave channels encompassed a pitch range extending from A1 (an octave higher than the lowest note on a standard piano) to beyond the limits of our hearing and allowed for limited volume control—composers could choose from 16 settings, including silence (i.e., 0–15). These channels are by far the most versatile, and account for much of the variety in sound that NES composers achieved.

The triangle channel is far less versatile. Although its range extends one octave lower than that of the pulse-wave channels (i.e., to the lowest note on the piano), the triangle-wave channel offers just one "instrument." In addition, its volume is fixed, meaning it can only be set to "on" or "off." One advantage of the channel is that it sounds quite similar



Example 2. Wood Man's theme from *Mega Man 2*.

to a pulse-wave with a 50% duty cycle. As such, composers could create a relatively blended three-voice sound. Kondo's "Overworld" theme does exactly this, in what amounts to a fairly typical NES arrangement: two pulse waves supported by a triangle wave in the lowest voice. Because of its low range, the triangle channel often plays the bass line; it is the bass guitar of the NES rock band. On occasion, however, composers (including Kondo) would give the melodic line to the triangle wave, while using the pulse waves as accompaniment.<sup>61</sup>

This technique was just one of many that composers used to squeeze more variety out of a limited source. Mixing channels and duty cycles in different combinations could go a long way in expanding the sound palette. With respect to *Super Mario Bros.*, Kondo himself said that, "by changing the way I composed the four songs, the music had a lot of variety. It was like a puzzle for me, so it was a lot of fun."<sup>62</sup> In Kondo's words, "way" refers precisely to these different combinations.

The last channel, the noise channel, offered yet more possibilities to NES composers, and was typically used to simulate percussion. Each of its two modes comes with 16 preset frequencies, for a total of 32 different sounds. The snowy-television-screen sound of the first mode is perfect for mimicking a drum kit, as are the lower frequencies of the second mode. As the second mode's frequency rises, however, it takes on a metallic sheen.<sup>63</sup> In *Super Mario Bros.*, Kondo used the noise channel to enliven the already bright and energetic tunes of the "Overworld" and "Underworld." Noise qua drum kit also adds punch to the "Starman" theme.

This formal account of the NES hardware is helpful in identifying the components of Kondo's ensemble, but it offers little in the way of explaining how composers engaged with that ensemble. What were their aesthetic priorities? And what practical concerns crossed their minds as they put these limited tools to work? My conversation with NES composer Neil Baldwin (*Magician* [1990], *James Bond Jr.* [1991], *The Jungle Book* [1994]) addresses these questions and provides a point of transition between our two "Worlds"—from the "Contexts" that allowed Kondo's project to thrive to the "Music" that emerged from those roots.<sup>64</sup>

### **In Conversation with NES Composer Neil Baldwin**

Schartmann: We often think of composition strictly as a musical process. Yet NES composers had to know a fair bit about technology. In your experience, how did composing for the NES differ from a more traditional compositional process?

Baldwin: Technical invention is a necessary part of composing on limited systems such as the NES. Fundamentally, the NES audio chip is incredibly basic and is barely more than a four-voice tone generator. There are a couple of rudimentary modulation functions built in, but if you wanted more than that, you needed a grasp of how the processor worked at a very low level, and you needed to be able to code functions and routines to exploit and abuse it!



My own compositional style would more often than not be influenced by pursuing more complicated and unique sounds and effects rather than what would be considered a more traditional method: composing a melody and harmony, for example. Once I had an interesting sound, I'd try to create a piece of music that exploited the technical trickery. It wasn't always the case, but certainly a lot of my early music was created this way.

Schartmann: Could you give us an example of something we might take for granted, but which requires considerable work to achieve on the NES?

Baldwin: Anything requiring more than three simultaneous notes was physically impossible on the NES due to its limited number of channels. This meant that you had to employ techniques to trick the listener into believing there was more going on than there actually was. If you had all three voices playing a simple triad, you had no voices left for a melody or bass part. That's when you had to get smart: use one voice and replace the triad with a fast arpeggio, and bingo, you've freed up two voices while maintaining the original intent.

Schartmann: Let's turn to Kondo's original *Super Mario Bros.* score. As an NES composer, how would you summarize his style?

Baldwin: His approach is far more traditional than my own. He combined hummable, infectious melodies and themes with simple harmony and counterpoint. This was more typical of Japanese composers. I think the kind of

approach that I described previously was more typical of European composers. Someone once told me that Japanese listeners found things like the fast arpeggio-style chords of Western NES music brash and unlistenable. I don't know if it's true, but it might explain why it wasn't very prominent in Japanese music.

Schartmann: Many people would describe this music as unsophisticated—simplistic, even. Is this accurate, or is there something innovative going on beneath the surface that is easy to miss?

Baldwin: Kondo's music is far from simplistic. The arrangements could be considered sparse compared to Western-style NES music, but he had an incredible sense of melody and an uncanny knack for creating instantly memorable themes: who can't hum the *Super Mario Bros.* theme?!

Schartmann: But is there more to Kondo's art than a knack for melodies? Is there any technical wizardry in his *Super Mario Bros.* music that goes unnoticed by your average listener?

Baldwin: I don't think he subscribed to the over-the-top technical tricks that I and other Western composers resorted to, but there's a lot of sophistication in his arrangements, very often playing with tempo, meter, and different combinations of channels.

Schartmann: I'd like to tease out an important thread here: what we might call Kondo's bare-bones approach. As you say, Kondo didn't subscribe to the technical tricks of

Western-style NES music, preferring to work within a sparser texture. Yet his music still sounds quite rich. Is it possible that we have two solutions to the same problem? In other words, whereas Western composers became masters of illusion to enrich their sound, Kondo relied on solid three-part counterpoint. After all, J.S. Bach wrote beautiful pieces with just two parts!

Baldwin: I think you hit the nail on the head. It's difficult for me to comment on other composers; after all I don't possess any kind of encyclopedic knowledge of the work of my peers, and I'm wary of overgeneralizing. Kondo was, and is, a more sophisticated composer than I ever was. In many ways, I compensated, or tried to, by falling back on effects and tricks. I think my music was constructed more of riffs, loops, and texture. I improvised on ideas from popular music and translated those elements into something that could be rendered on a system like the NES. You can clearly tell that Kondo's output is informed by a more classical idiom. I think you could also argue that a cleverly written bit of counterpoint and harmony can transcend the medium, whereas the effects-and-tricks approach is often unique to the device or system they're employed to exploit. Having said that, I've heard a few of my old pieces covered by a three-piece punk band!

Schartmann: That reminds me of something Aaron Burke (guitarist of the Minibosses) once said about NES music: "In most Nintendo pieces there's a melody, harmony, bass part, and then sometimes percussion. It's easy to translate to your standard four-piece rock outfit."<sup>65</sup> This ability to

move between mediums speaks to the kind of “transcendence” you’re talking about, which brings me to an interesting point. I’ve often said that NES composers are worth studying for their sheer innovation—their ability to overcome constraints. But this interview leaves me with a very different idea of Koji Kondo—as someone who worked within the medium rather than trying to push its boundaries.

Baldwin: I guess what we’re perhaps highlighting here is that there is “NES music” and “music created on a NES” and the subtle differences between those two terms. I’d say that “NES music” is music of my own style and method, overcoming and exploiting the technical limitations through programmed tricks and techniques. On the other hand, music like Kondo’s (and quite a few other Japanese composers, if I remember correctly) worked within the literal limitations of the PSG, concentrating on minimal but highly effective composition and arranging, hence “music created on a NES.”

Baldwin’s last point—the two different kinds of NES music—brings us back to the Kondo/Beethoven juxtaposition with which we opened. In light of Baldwin’s remarks, that juxtaposition now seems overly reductive. Beethoven and Kondo did indeed work under different conditions, and those differences are not to be underestimated. Yet there’s a sense in which *both* artists broke free from those conditions, not necessarily by pushing the boundaries of their instruments (though Beethoven did that in spades), but

rather by transcending the medium itself. Testament to this are the countless talented individuals worldwide who have offered their own renditions of Kondo's music, without sacrificing its essence. And though I don't want to get into the philosophical implications of separating the music itself from its medium, or even what "the music itself" means, I think it's important to acknowledge the transferability inherent in Kondo's *Super Mario Bros.* score. When Kondo was asked about fan arrangements of his own music, he said that he was "surprised" by them.<sup>66</sup> Surely part of that surprise was a reaction to the talent some of his fans possess. But I can't help but wonder whether Kondo was also surprised by how well his music stood up when stripped of its 8-bit clothes and refashioned in more ways than even he could have imagined.

## Notes

1. For a more complete breakdown of these durations, see Guillaume Laroche, “Analyzing Musical Mario-media: Variations in the Music of *Super Mario* Video Games.” Master’s thesis, McGill University, 2012.
2. David Sheff, *Game Over: How Nintendo Zapped an American Industry, Captured Your Dollars, and Enslaved Your Children* (New York: Random House, 1993), 9.
3. Mirko Ernkvist analyzes the various hypotheses put forth by scholars in “Down Many Times, but Still Playing the Game: Creative Destruction and Industry Crashes in the Early Video Game Industry 1971–1986.” In *History of Insolvency and Bankruptcy from an International Perspective*, eds. Karl Gratzer and Dieter Stiefel (Huddinge: Söderströms högskola, 2008), 161–191.
4. M. E. McQuiddy, “City to Atari: ‘E.T.’ Trash Go Home.” *Alamogordo Daily News*, September 27, 1983.
5. This was already known to some readers, since the same paper ran a piece entitled “Tons of Atari Games Buried: Dump Here Utilized” by M. E. McQuiddy just two days earlier. The question of *what* Atari had buried, however, remained one of the central questions.

## NOTES

6. Steven L. Kent, *The Ultimate History of Video Games* (New York: Three Rivers Press, 2001), 234–235.
7. Ibid., 240.
8. For more on Radar Scope's success in Japan, see Jeff Ryan, *Super Mario: How Nintendo Conquered America*, revised edition (New York: Portfolio, 2012), 14–16.
9. Ibid., 21.
10. “The Last Hurrah” is the title of the penultimate chapter of Brian R. Eddy's *Classic Video Games: The Golden Age, 1971–1984* (Oxford: Shire, 2012), which provides a concise history of arcade games during this period.
11. Ibid., 45.
12. Kent, *The Ultimate History of Video Games*, 185.
13. Ryan, *Super Mario: How Nintendo Conquered America*, 53, for instance, lists 14 consoles made by 11 different companies.
14. For a more detailed account of the 1983 video game crash, see Ryan, *Super Mario: How Nintendo Conquered America*, 45–55; Kent, *The Ultimate History of Video Games*, 219–240.
15. Kent, *The Ultimate History of Video Games*, 235.
16. Nearly every review of the game reveals that this opinion was (and is) widespread in the video game community.
17. Kent, *The Ultimate History of Video Games*, 279–280.
18. “Nintendo's Final Solution.” *Electronic Games* 4, no. 36 (March, 1985), 9.
19. Ryan, *Super Mario: How Nintendo Conquered America*, 60.
20. See Kent, *The Ultimate History of Video Games*, 285–299, for more on this marketing strategy.

21. Jeremy Kratz documents the history of Nintendo's much discussed quality assurance policy in "How Nintendo's QA Process Rebuilt the Gaming Industry." *The DoneDone Blog*, September 4, 2014 [<http://www.getdonedone.com/nintendos-qa-process-rebuilt-gaming-industry>].
22. Ryan, *Super Mario: How Nintendo Conquered America*, 64–65; Kent, *The Ultimate History of Video Games*, 279.
23. Jeremy Parish, "Nintendo Gets into the Game." *USGamer.net*, June 21, 2013 [<http://www.usgamer.net/articles/nintendo-gets-into-the-game>].
24. This seal appeared on all NES games from 1985 to 1989. It was then changed to read "Original Nintendo Seal of Quality," and in 2003 was shortened even further to "Original Nintendo Seal." Emphasis added.
25. Howard Phillips, *The Facts on Home Video Games* (Nintendo, 1989).
26. Judd Ethan Ruggill and Ken S. McAllister, *Gaming Matters: Art, Science, Magic, and the Computer Game Medium* (Tuscaloosa, AL: University of Alabama Press, 2011), 70.
27. Legendary game designer Shigeru Miyamoto confirms that this was the case during Nintendo's early arcade days: "When I started at Nintendo, there weren't a lot of people who knew music." See Jamin Brophy-Warren, "A New Game for Super Mario's Maestro: Famed for Ringtone Heard 'Round World, Japan's Kondo Tackles Wii Music Project." *Wall Street Journal Online*, October 24, 2008 [<http://online.wsj.com/articles/SB122481778316565825>].
28. Karen Collins, "Loops and Bloops: Music of the Commodore 64 Games." *Soundscapes: Journal on Media Culture* 8 (February 2006) [[http://www.icce.rug.nl/~soundscapes/VOLUME08/Loops\\_and\\_bloops.shtml](http://www.icce.rug.nl/~soundscapes/VOLUME08/Loops_and_bloops.shtml)].



29. Karen Collins, "In the Loop: Creativity and Constraint in 8-Bit Video Game Audio." *Twentieth-Century Music* 4, no. 2 (September, 2007), 215.
30. At least one capable composer (Hirokazu Tanaka) worked at Nintendo prior to Kondo, but Kondo was the first person hired for that job alone, and it was his *Super Mario Bros.* soundtrack that altered the course of Nintendo's sound development. See Satoru Iwata, "Super Mario Bros. 25th Anniversary: The New Guys, Too!" *Iwata Asks*, 2010 [<http://iwataasks.nintendo.com/interviews/#/wii/mario25th/4/1>].
31. Osamu Inoue, *Nintendo Magic: Winning the Videogame Wars*, trans. Paul Tuttle Starr (New York: Vertical, 2010), 160.
32. Even a cursory listening to Follin's music for *Silver Surfer* will impress anyone familiar with the console's technological constraints, which the composer twisted to sound almost like a live rock band. The music for Stage 2 is especially impressive.
33. GamesRadar. "The 100 Worst Games of All Time." *GamesRadar.com*, June 27, 2014 [<http://www.gamesradar.com/worst-games-all-time>].
34. This team included Shigeru Miyamoto and Takashi Tezuka, both of whom worked on a number of Nintendo's biggest games, including many in the Mario and Zelda series.
35. Nintendo. *Super Mario History: 1985–2010*, 25th Anniversary Booklet (Nintendo, 2010). Emphasis added.
36. In addition to *Donkey Kong*, Mario made an earlier appearance in the 1983 arcade game *Mario Bros.* (1983), in which his brother Luigi appeared for the first time.
37. Kent, *The Ultimate History of Video Games*, 299.
38. Nintendo. *Super Mario Bros.* Video Game (Redmond, WA: Nintendo of America Inc., 1985).

39. The ending of “I’m so Tired” allegedly includes the following message: “Paul is dead man, miss him, miss him, miss him.”
40. Kent, *The Ultimate History of Video Games*, 187–188.
41. Bill Loguidice and Matt Barton, *Vintage Games: An Insider Look at the History of Grand Theft Auto, Super Mario, and the Most Influential Games of All Time* (Waltham, MA: Focal Press, 2009), 276.
42. As Steven Kent notes, Nintendo’s controller was a significant improvement on previous models and played an important role in their success. See Kent, *The Ultimate History of Video Games*, 278–279.
43. Loguidice and Barton, *Vintage Games: An Insider Look at the History of Grand Theft Auto, Super Mario, and the Most Influential Games of All Time*, 275.
44. Kevin Gifford, “Super Mario Bros.’ 25th: Miyamoto Reveals All.” *1UP.com*, 2010 [<http://www.1up.com/news/super-mario-bros-25th-miyamoto>].
45. See Nintendo, *Super Mario History 1985–2010*. Sketches translated by Kayo Someya.
46. This was confirmed by Miyamoto in Gifford, “Super Mario Bros.’ 25th.”
47. Chris Donlan, “Super Mario Bros.” In *1001 Video Games You Must Play Before You Die*, ed. Tony Mott (New York: Universe, 2010).
48. Nintendo, *Super Mario History 1985–2010*.
49. This section is based largely on two excellent biographical sources: Chris Kohler, “VGL: Koji Kondo Interview,” *Wired*, March 11, 2007 [[http://www.wired.com/gamelife/2007/03/vgl\\_koji\\_kondo](http://www.wired.com/gamelife/2007/03/vgl_koji_kondo)]; and Chris Greening, “Koji Kondo Profile.”

- Game Music Online*, undated [<http://www.vgmonline.net/kojikondo>].
50. Mark MacDonald, “Koji Kondo Interview.” *1UP.com*, May 3, 2005 [<http://www.1up.com/do/feature?pager.offset=5&cId=3140040>].
  51. Kikizo Staff, “Nintendo Interview: Koji Kondo.” *Kikizo*, May 10, 2007 [[http://archive.videogamesdaily.com/features/koji\\_kondo\\_iv\\_p1.asp](http://archive.videogamesdaily.com/features/koji_kondo_iv_p1.asp)].
  52. Kohler, “VGL: Koji Kondo Interview.”
  53. Steven Bloom, *Video Invaders* (New York: Arco, 1982), 21.
  54. Kohler, “VGL: Koji Kondo Interview.”
  55. For a detailed discussion of Beethoven’s compositional process, see Barry Cooper, *Beethoven and the Creative Process* (New York: Oxford University Press, 1990).
  56. Many larger operations employed programmers to translate a composer’s musical ideas into computer code. A composer, of course, still had to be familiar with technological constraints, but we should not hasten to award full credit to the composer at the expense of behind-the-scenes workers.
  57. For a more in-depth look at the technology of NES music, see Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 7–36; Andrew Schartmann, *Maestro Mario: How Nintendo Transformed Video Game Music into an Art* (New York: Thought Catalog, 2013), ch. 2. YouTube is also a good source for succinct tutorials with sound examples (e.g., <http://youtu.be/la3coK5pq5w>).
  58. The Famicom’s hardware allowed for rudimentary wavetable synthesis, resulting in a “smoother” overall sound. This

difference, however, is negligible with respect to the *Super Mario Bros.* soundtrack.

59. Although the DMC factors little in the *Super Mario Bros.* score, it's worth mentioning that Kondo employed the channel to unusual ends, using it to gain modest control over the triangle channel's volume. The specifics of this technique, however, are beyond the purview of this book.
60. See Schartmann, *Maestro Mario: How Nintendo Transformed Video Game Music into an Art*, ch. 2.
61. Kondo's "Castle" theme is a good example of this technique.
62. GlitterBerri [online moniker]. "Special Interview – Koji Kondo." *GlitterBerri.com*, October 26, 2010 [<http://www.glitterberri.com/ocarina-of-time/special-interview-koji-kondo>]. Emphasis added.
63. Quick Man's theme from *Mega Man 2* is an especially salient example of this metallic sound.
64. The academic in me knows that music is inseparable from its historical context. It is therefore hardly surprising that context informs the second part of this book. My facile distinction between the two, however, does serve an organizational purpose—nothing more, nothing less.
65. Ryan Winslett, "The Minibosses on Video Game Rock & Roll." *Bit Creature*. August 2, 2012 [<http://www.bitcreature.com/features/the-minibosses-on-video-game-rock-roll>].
66. Kikizo Staff, "Nintendo Interview: Koji Kondo."
67. Carolyn Gudmundson, "Zelda, Past and Future: An Interview with Koji Kondo and Eiji Aonuma." *GamesRadar.com*, February 13, 2013 [<http://www.gamesradar.com/zelda-past-and-future-interview-koji-kondo-and-eiji-aonuma>].