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Preface

THIS BOOK IS A COLLECTION OF INTERVIEWS AND CONTEXTUALIZING essays that function to bring together and bridge various kinds of expertise about video games. Participants in this project come from a wide range of backgrounds: there are video game designers; current and former chief executive officers (CEOs) and high-ranking executives of video game companies; well-known figures from video games' history; widely respected contemporary artists, authors, and editors; people closely associated with video game culture and related communities; and several professors who study and teach about video games. The basic idea of this book is that people who care about and approach video games from different perspectives would benefit considerably by holding meaningful cross-field and cross-discipline discussion about their shared interests. This book attempts to model and, ideally, further facilitate this kind of dialogue.

I teach a first-year seminar course for undeclared students at a state university entitled the Art, History, and Culture of Video Games and am regularly surprised by the sheer variety of topics across the history of video games that interest students in the class. Of course, video game history, the origins of which date back to the period just after World War II, now encompasses almost seventy years of technological innovations, people playing with those innovations, and people writing about the impact of people playing with those innovations. The volume of commercial games released worldwide in that period is in excess of one hundred thousand titles across more than one hundred platforms.¹ In 2013 the Entertainment Software Association (ESA), which releases an

annual report that tracks changes in gamer demographics and habits, found that 58 percent of Americans play games and that slightly more than half the homes in the country have one (and in most cases two) game consoles. The video game industry has almost tripled its annual revenue in the past decade. What these numbers suggest is that there are a *lot* of people interested in video games and that, in addition to the games themselves, there has been a lot of game-related writing and research produced by a wide variety of expertise.

In my course students are charged with uncovering as much of this material as possible that is relevant to their topic of interest. The hope is that, when undeclared students research multiple approaches to studying video games, they will also discover a potential major. What also happens, though, is that they regularly uncover examples of disconnect between academia and industry, fan communities and developers, designers and players, and so on. As the amount of material written about games has grown, it seems that the disconnects among people with something interesting to say about the medium have multiplied.

There was a time, when video games were a newer medium, that there was a much more collaborative atmosphere among those interested in the medium from across areas of personal and professional expertise. By contrast, what too often happens today is a kind of “siloing” of interests, where scholars talk to scholars, developers talk to developers, and so on, and the benefits of shared knowledge and regular collaboration are not apparent. For the most part, mutual understanding and appreciation across fields have given way to echo chambers and decreased relevance within them.

It is my hope that this book is able to find an audience among those who play games, research games, make games, or otherwise have a strong interest in the medium. While connecting to such a broad audience posed some unique challenges in researching the book, preparing interview questions, and writing the various sections found herein, I have done my best to offer a balanced, accessible approach to the subject areas addressed. Though this is a university press book, I have tried to avoid needlessly heavy citation, esoteric academic jargon, and the kind of methodological nuance that might alienate nonacademic audiences. I believe it is possible for a reader to learn how seemingly disparate ap-

proaches to video games can intersect without needing to become fully conversant in any one of them.

* * *

The interviews in this book were conducted over a span of about fifteen months in 2012 and 2013, during which time a number of individuals were instrumental in making the project come together. First and foremost in this regard are the participants included herein, each of whom was gracious and accommodating to various scheduling needs, logistical considerations, and other concerns surrounding the interviews themselves. In addition, I received help and feedback from a number of colleagues, students, and video game community members while preparing the manuscript. Specifically, Jeff Gillingham, Bradford Allison, Nick Reichart, and Jonathan Stringer were helpful for assisting with research, considering and offering certain ideas, and otherwise encouraging me during the process. Research was funded, in part, with a grant earned through Bloomsburg University of Pennsylvania’s Office of Research and Sponsored programs.

Introduction

VIDEO GAMES HAVE SOME OF THEIR EARLIEST ROOTS IN THE university. Indeed, the first full decade of video game experimentation is bookended on one end by the efforts of pioneering students who hacked multimillion-dollar machinery at schools such as the Massachusetts Institute of Technology (MIT) and Stanford in the late 1950s and early 1960s to create games like *Mouse in the Maze* and *Spacewar* and, on the other end, with work by people such as Don Rawitsch, who created *Oregon Trail* in 1971 at Carleton College and Bill Pitts and Hugh Tuck, who created the first coin-op game (*Galaxy Game*) at Stanford that same year. The origin of a modern-day technology industry, such as the video game industry, in student projects and university research labs is a common narrative of the twentieth century. It is one that informs the recent advocacy for increased funding for science, technology, engineering, and math (STEM) education in the United States, advocacy that suggests there are economic imperatives for investing in the kinds of invention and innovation found in engineering, computer science, math, physics, and other technology-driven areas of the academy. In this story, video games are regularly presented as an example par excellence of how twentieth-century university research might lead to profitability in industry and increased economic power globally for the state.

And though the video game industry has always had a foothold in academia (and vice versa), it is only for the past decade or so that there has been considerable and rapid growth in the nebulous field of “game studies,” an area of research that brings together researchers from a wide variety of fields in the sciences, humanities, and arts to address video

games through scholarly activity. The initial publication of several key journals signaled this emergence (notably the online journal *Game Studies* in 2001 and the Sage-backed *Games and Culture* in 2006), and today there are many degree programs dedicated to game development, analysis, design, history, and research at both specialized colleges like DigiPen and in more traditional universities such as New York University (NYU), the University of Southern California (USC), or the Georgia Institute of Technology. Grant money exists to do research on games in a way that it did not even a decade ago, and gradually the “serious” study of games has become a topic of interest in major online and offline press venues.¹ As the twenty-first century began, there was a palpable academic interest in understanding why people were increasingly enamored with video games and what the consequences of their growing ubiquity might be.

The growing academic interest in video games has, not surprisingly, coincided with the growth of the video game industry itself. Though figures sometimes fluctuate from year to year and from region to region, the general trend for global video game revenues is upward. In the early part of this decade, the video game industry in the United States reached virtual parity with the profits found in the film and music industries, realizing a kind of pop culture milestone that argues for its prominent position in the public imaginary. Both video games and video game players have migrated in interesting ways in the recent past, with gaming becoming increasingly mobile, experiences becoming increasingly persistent, and with more players finding virtual homes in massively multiplayer online (MMO) environments ranging from virtual modern warfare exercises to virtual simulations of life’s other experiences. It is more likely today that new video games will find their way into a classroom than they will into an arcade, that games will require input from more than a player’s fingers and provide feedback to more than their eyes and ears, and that the average “gamer” will be both a creator of games as well as a consumer of them.

None of this is news, of course, to those who have followed the evolution of the industry even a little bit. What might come as news, however, is that many of the luminaries who have led the charge for making games a larger part of our lives have usually done so without directly engaging the resources of the university, where the medium originated. Over time, the initially close connection that existed between the nascent game

industry and the institutions that birthed the medium has been largely severed. Though some academic institutions appoint “designers in residence” or invite various developers to campus to speak to students, the institution’s role has increasingly shifted to one of observer and analyst rather than of participant and progenitor. At the same time, the industry has taken on greater responsibility in training its workers in (what are often studio-specific) best conventions and practices for making modern games. In other words, while there have been dramatic increases in both the number of people making games and the number of people studying them, there has not been much of a corresponding conversation between these areas of expertise, the kind of conversation that might productively inform the work done on games as a whole. This introductory chapter provides a series of three vignettes (“questions,” “communities,” and “competition”) that reflect on this possibility.

QUESTIONS

In 1983 object-oriented programming pioneer Alan Kay spoke to a gathering of researchers at an academic conference at Harvard University. What is notable about this speech was that Kay did not speak about what one might expect him to address in most contexts at Harvard (for example, his own recent work in computer science, his thoughts on the challenges of programming in the early 1980s, and so on), but he instead spoke about his vision of the future for the video game industry. In that speech Kay laid out a type of research agenda for advancing the medium; he discussed gaming and treating disability, gaming and enhancing education, gaming and the development of artificial intelligence (AI), and gaming and artistic expression.

Kay, himself a well-known computer scientist who would go on to win a Turing Award, came to the conference that day as a representative of Atari, Inc. He functioned as a type of representative figure for a potential marriage between academic research and the video game industry. Kay’s work at Atari as the company’s chief scientist was to bring his expertise about how new technologies could advance human understanding to bear on how video games might become a significant part of that advancement (and, of course, to evangelize that connection). That

kind of direct engagement and interaction between the game industry and academic research is, today, not a common enough phenomenon.

That conference in May 1983, held by the Harvard University College of Education, was titled “Video Games and Human Development: Research Agenda for the ’80s.” The three-day event brought together researchers from around the country who were considering, at a very early time in the medium’s ascent toward cultural significance, the modes through which video games might become important objects for academic research. The published proceedings of that conference address these areas: “Video Games & Social Behavior,” “Video Games & Cognitive Skills,” “Video Games in Medical Rehabilitation & Learning,” “Video Games & Informal Settings,” “Video Games & Formal Education,” “Video Games & Atari, Inc.,” and “Video Games & Human Development.” At almost all of these panels, there were representatives of video game and technology companies there to help shape the agenda, offer thoughtful feedback, and provoke further dialogue about the application and utility of various research projects.

From a certain perspective, it is humbling to recognize that game studies has been grappling with many of the same questions addressed in this book for at least the past thirty years. It puts current “hot topic” questions about the role of games in education (for example, the institutional backlash to Valve’s “Steam for Schools”) or about whether major publishers value their bottom line more than artistic creativity (for example, much of the popular criticism of employment practices found at large publishers Activision or Electronic Arts) into a historical context. There is evidence in these proceedings that gaming has been dogged with the same questions for decades and that those who are invested in understanding the social and cultural impact of the medium have struggled to find satisfactory answers. That is, in and against multiple periods of growth and change, some perceptions of the industry have gone largely unchanged.

There are also many interesting little moments in these proceedings that suggest things *have* changed in significant ways. For example, in a statement that would seem alien to most major game publishers today, Atari’s vice president and chief scientist, Alan Kay, foregrounded his

remarks about the future of games by suggesting that “children are our main clientele” and then geared most of his speech toward the future of games as a medium for children to learn on. In another now-bizarre interaction, a representative from Apple suggested during a Q&A session about the costs of funding computers for schools, “The term ‘computer literacy’ does not make a great deal of sense to me. You don’t have to go out and teach a kid how to use the TV. It is of interest, he or she should be able to use it and learn on his/her own.” These kinds of statements today come across as anachronistic, relics of an era when digital technology was only beginning to find its way into middle-class homes.²

Despite its many vestiges of a bygone era of game research, the conference also offered extremely compelling questions that have been of increasing importance in contemporary game studies. Questions about gender representation both in the industry and among players were broached. Detailed discussions of design decisions, artificial intelligence, and some early thoughts on what might now be considered platform studies were addressed in ways that are still relevant and accessible. There was interesting research presented on games in noncommercial contexts beyond education, and despite the framing of his company’s products as directed toward adolescent audiences, Alan Kay’s remarks were thoughtful missives on the potential of the medium to function as art through which unique transcendent experiences might occur. He explained, for example, the possibilities of moving past “shoot-’em-up games” and toward games that simulate, from an animal’s perspective, what it would be like to visit a coral reef. He suggested that “a computer is not only a gadget for manipulating numbers. It is a container for a new kind of kinetic art. . . . [I]f we think of the visual arts as the imitation of life, then the computer arts are the imitation of creation itself” (61). This idea, now institutionalized in something like the Smithsonian’s *The Art of Video Games*, was, in 1983, a revolutionary way of thinking about games. But then, as is true now, there is a pervasive impulse to dissociate “shoot-’em-up” fare from games that are “actually” art.³

For another example of persisting issues raised by the conference, consider the introductory remarks by Harvard librarian Inabeth Miller, who warmed the crowd before the keynote by highlighting an award-

winning essay by a ninth grader entitled “Video Games . . . Are They Hip? Or Is It Just Hype?” The essay, which touched on the impact of the arcade craze on the young author and her peers, included the lines:

Children can no longer understand machines that don't gobble money. How sad it is to see Junior vainly trying to stick a quarter in the mixmaster. And what of their minds?

“Junior clean up your room.”

“If I do it in under fifteen minutes do I get a bonus?”

Grisly, ladies and gentlemen, but highly feasible if the youth of America stays this course. (3)

In 1983 we see a measured response to the perceived threat of gamification. Thirty years later, many herald gamification as a promise.

The Harvard conference is not the earliest point in the history of game studies, but it is a significant one because of what it suggests about what an interdisciplinary approach to the field might actually mean. Today, the conferences and publications dedicated to academic game studies are markedly distinct from those dedicated to the game industry's various creative and fiscal interests. What has not changed, though, is that there is both intellectual and economic gain to be made by bringing these camps together. Perhaps conferences are a natural place to rekindle those associations.

COMMUNITIES

One way to think about the contemporary relationship between the game industry, its most invested fan base, and the researchers who study both is to consider the occasions where these groups have an opportunity to congregate.

For example, the largest annual game industry event is the Electronic Entertainment Expo, usually held in Los Angeles. Every year at E3, most of the major game companies (for example, Sony, Microsoft, Nintendo, Electronic Arts) make important announcements about upcoming hardware and software, reveal pricing strategies and release dates, hold both large public press events and small private meetings with select press outlets, and conduct many private business meetings. A large amount of networking, recruiting, and strategizing goes on at E3, and though

members of the general public can purchase exorbitantly priced tickets, for the most part attendees are composed of the press, various industry stakeholders, and exhibitors.

E3 is largely about putting merchandise on physical and virtual store shelves. Most major companies use the expo as a mode through which to raise the profile of their products, hoping to land more release-day orders from big-box chains like Wal-Mart and Target, to encourage preorders through game retailers such as Gamestop, and to bump their stock values by putting together an attractive presentation that demonstrates attention to shifting market trends. They do this by creating attractive and pricey floor displays, promising exclusive demonstrations and interviews to the most influential media outlets, handing out promotional items and hosting free “invite only” parties, and engaging in an all-out public relations blitz. Despite the fact that the event is monitored closely by so many “core” gaming communities (especially online), the audience for E3 is decidedly not the “gamer” but rather the “consumer,” the individual whose game purchasing is likely more informed by retail displays, television commercials, and word of mouth than it is by gaming-press reviews or online message-board debates. It is very much an expo that is put on for people who are financially invested in the industry, who buy and sell studios and intellectual properties, who place product orders and sell advertising, who are looking for industry jobs, and who cover a few stories a year about gaming for major news organizations like CNN or the *Washington Post*.

In practical terms, this means that E3 often leaves a lot of “core” gamers and a lot of game researchers searching for relevance where it is not apparent or does not exist. The former audience is left puzzled and perplexed when, for example, Sony spends a half hour of their major E3 press conference promoting something called a *Wonderbook*, a PlayStation hardware-software bundle centered on interactive reading and aimed at the ages five-to-ten crowd, instead of using the time to preview gameplay footage of the newest *Killzone*, *God of War*, or *Uncharted* title. As for researchers, to the extent that they might even pay attention to E3 (and there is little to no evidence that they do), it seems likely that they would see nothing more than hype and marketing about products that are not yet ready to be analyzed. Even though there is a lot to process

about the game industry's philosophies, their understandings of their audiences, and their internal and external communication practices, the event is not one that, on its face, lends itself to an engaging application of pet models of game studies research.

Pet models of game studies research *are* the focus of the biannual Digital Games Research Association conference. DiGRA conferences are meant to bring together what are often disparate and disconnected strands of research on games over a period of several days of panels, lectures, workshops, and other meetings. At any given DiGRA conference, much of the research presented will have been conducted by professors or students with appointments or interest in some form of a game studies program, some will have been presented by individuals in other disciplines who have an interest in game research (for example, English or computer science), a smaller amount will have been done by independent scholars, and a relatively low percentage will be presented by people actively working in the game industry. A quick glance at the 2013 DiGRA conference website, for example, lists a dozen featured speakers. Of these, nine of the speakers are advertised to be faculty or students (most from departments that are structured, at least in part, around the study of games), and the other three are advertised as nonacademically affiliated individuals who are noted for working in or speaking about game design ("DiGRA Conference 2013"). The conference is clearly focused on academic research and is advertised as a conference of interest to an academic audience.

Academic conferences serve some of the same important networking and strategizing functions for academia as an expo like E3 serves for the game industry. Their insular nature is, by many accounts, one that is productive to scholarly debate, to the incubation of and experimenting with new theories and methods, and to the application of research to pedagogy. In other words, the academic conference is a predefined context wherein people can freely talk about the study of games and game-related culture in a space that is specifically set up as one removed from those where games are made or played. They are sites of reflection, analysis, agon, and conceptualization, not sites for hands-on engagement, observation, and practice with the actual texts being discussed. As such, they tend not to attract many presenters who are actively involved

in game design or production, nor do they attract many attendees who are primarily interested in playing video games in social settings (for example, as a way to experience community). These folks are present, but they are in a minority. In other words, there is very little, if any, cosplay at academic conferences, even when those conference are about video games. Those audiences are just not in attendance at these gatherings.

There *is* a considerable amount of cosplay at the Penny Arcade Expo, a gamer-centered convention that is held annually in several locations (PAX Prime in Seattle, PAX East in Boston, and more recently PAX Australia in Melbourne and PAX South in Houston). PAX, the invention of Penny Arcade webcomic-strip creators Jerry Holkins and Mike Krahluk, was created, in part, as an answer of sorts to E3. That is, if E3 is a game-centered conference whose primary audience is the industry itself (and its shareholders), PAX is a game-centered convention where the primary audience is those who self-identify as part of gamer culture: individuals for whom video game playing is a primary hobby or passion, who situate themselves in various video game-based communities, or who are conversant in video games of the past or present.

A consideration of what takes place at PAX further clarifies its audience(s). For example, a central attraction of the convention is the exhibit-hall floor space, where many of the major studios, publishers, and distributors showcase their most recent or upcoming games with large eye-catching displays featuring artwork or characters from the game, multiple large televisions, and lines of players waiting to try out the offering. Like similar displays used at E3 (many of which recycle the same components, in fact), these displays are meant to stoke enthusiasm for a game. Unlike at E3, the people playing these games are generally doing so from the perspective of someone who plays games for fun instead of playing them as part of their job description. This distinction becomes most apparent when observing the kinds of interactions that take place between the people showing the games and the people playing them. At E3 these interactions are often marked by explanation of basic mechanics, emphasis on marketing-friendly features, and details of release strategies; at PAX they are marked instead by discussion of the game's relationship to others in the genre (or in game history more broadly – for example, "What are the game's influences?"), by competitive banter with

others playing the game, and with a more informed exchange of feedback about nuances of game design. In other words, at E3 the assumption is that the person playing the game at any given booth might not be familiar with games in general or might be visiting a booth only to produce a story or make a purchase order decision;⁴ at PAX the assumption is that the booth visitor is well versed in a variety of gameplay styles and, as such, might offer useful comments about the game for consideration by those who created it.

Beyond this main attraction, PAX is also filled with other markers of “game culture.” There are nightly concerts by musicians inspired by games (for example, the *Mega Man*-inspired rock band Protomen), who create music that is based on game music (for example, chiptune artists), or who include game-related references in lyrics, songs, or stage presence (for example, Jonathan Coulton). PAX has rooms where people can meet to play against or with each other in LAN configurations, on classic consoles such as the Sega Genesis and Vectrex, or on vintage arcade machines. Most interesting, perhaps, PAX hosts a variety of panels (proposed by anyone and programmed by the organizers) that cover wide-ranging topics, including the various challenges of game development, tips for better community management, discussion of specific aspects of game culture, live podcast recordings, and sessions that feature game studies researchers talking about concepts as varied as game preservation, the use of games in teaching, gamification, and issues of identity (gender, race, sexuality, class, and the like) as they relate to game culture. Insofar as some of these panels are composed of and attractive to people who play, make, and research games and thus offer an opportunity to look at a mutual topic of concern from various perspectives, they are probably the best analogue to the kind of discussion this book attempts to foster.

COMPETITION

One way to think about the overlapping communities presented in this book is to think about how each was, from its inception, defined and thus problematized in different ways by an ethos of competition. Competition is not in and of itself a negative force in game-centered communities (it

functions contextually), but it has an effect of turning the attention of each community inward, toward concerns of hierarchy, strategy, position, and status.

Competitive behaviors – like PvP (player-versus-player) excursions in *World of Warcraft*, Major League Gaming events, the EVO fighting-game tournament, or other elements of contemporary cooperative, competitive, or communal gaming – have their roots in some of the earliest expressions of the medium, most of which were created specifically for fostering rivalry. The golden age of the arcade might conjure images of packed boardwalk parlors and sweaty dens at the strip mall, but these gatherings were facilitated by the introduction of the concept of the “high score” into video games in the mid-1970s (*Sea Wolf*, *Space Invaders*, and the like). The social interaction that attracted the crowd to physical space was largely one that occurred between disembodied citizens; the arcade was defined by discontinuous (and spasmodic) member interaction. It was a community founded through discreet expressions of competitive mastery by previous visitors to the virtual space of a game (and the physical space of an arcade cabinet). These earlier users set a mark, made a statement, attained momentary ascendancy, and indicated their position in a community of other users, all of whom were also attempting to indicate their place in “Today’s” list of high-scoring community members or perhaps in the list of those who were there for “All-Time.” Walter Benjamin’s *Arcades Project* suggested that the nineteenth-century Paris arcades were a place where art, architecture, and community blurred, took shape, and decayed according to a logic of space and movement. The twentieth-century video game arcade, by comparison, was a place where community became shaped by competition across an incongruous temporality.

From the outset of video games as a commercial enterprise, a number of high-profile lawsuits have signaled the power of competitive, capitalist forces to shape game development and sales. Perhaps the most famous early case entangled the interviewee featured in chapter 1 of this book, Nolan Bushnell. In the spring of 1974, Bushnell was Atari’s president, and his PONG had spent the past couple of years becoming the first megahit in the arcade. That same year he also found himself part of a lawsuit issued by Magnavox and Sanders Associates, the companies that

had been developing Ralph Baer's Odyssey home gaming console since the mid-1960s. The suit surrounded questions of possible patent infringement on the gameplay and design of PONG that were extremely similar to those found in Baer's work. As Marty Goldberg (2007) explained in his essay "Video Game Misconceptions: The Magnavox Odyssey Is Analog and Not Digital":

In 1974 Magnavox and Sanders filed a lawsuit for patent infringement against Seeburg, Bally-Midway and Atari in what would be the very first lawsuit in the industry. During Atari's pretrial hearing with Federal District Court judge John F. Grady, Nolan tried to testify he had never seen the Odyssey and its Tennis game before the advent of PONG. Luckily Magnavox and Sanders were able to produce an attendance log for the *Magnavox Profit Caravan* stop at Burlingame, CA that Nolan signed on May 24th, 1972. The *Caravan* was the very series of traveling product demonstrations that introduced the Odyssey to dealers that Spring. Nolan had no choice but to change his position, and settle out of court by becoming Magnavox's first sub licensee.

Bushnell, commenting on the case in later years, would regularly argue that although he had seen the prototype, he found the gameplay to be crude, unintuitive, and erratic. He suggested that PONG was significantly different because of the refinements it offered in gameplay and control over Baer's "Brown Box" prototype. Baer, in a 2013 interview with the video game website Polygon, remarked that "[Bushnell] has been telling the same nonsensical stories for 40 years. . . . [H]e just cannot let go of them because they affect his legacy. As for how I feel about that? Life's too short to hold grudges" (Campbell). Though the industry has changed dramatically in the ensuing decades following PONG, much of this intercompany, interdeveloper, and interstudio rivalry persists, often surrounding copyright and patent issues and almost always concerning profits. In 2012, for example, the website gamepolitics.com tracked more than a dozen ongoing lawsuits contesting rights to and usage of game-related technology from every major video game hardware developer.

Competition also shapes research on video games, albeit in slightly different ways. The use of certain terms, for example, can attract or repel people to the content of a manuscript such as this book. Misunderstanding of a key term can drive someone to take on a project under false pretenses, pursue the wrong degree, or speak to an audience on issues in a mode that diverges from audience expectations. For those who work

with and study games, this is a present conundrum. For example, this text is part of a new series that takes the title Digital Game Studies. However, it purports to address subjects that, at various points, might fall into a variety of closely related (yet sometimes distinct) field-defining terms, including *game studies*, *digital game studies*, *video game studies*, *critical game studies*, *ludology*, *critical ludology*, *digital ludology*, and so on. Associated with these "umbrella" terms are distinct and sometimes overlapping subareas of research in the humanities, including video game criticism, video game analysis, video game history, the rhetoric of video games, the philosophy of video games, the psychology of video games, games and pedagogy, and others. Furthermore, there are, of course, many career fields related to games that may or may not match up to these subjects or areas and all of which may be institutionalized (in classrooms, in textbooks, and elsewhere) in academe. These include video game journalism, video game design, video game programming, video game art, video game sound, game hardware development, and so on.

Though these terms offer a lot of overlap and potential for collaboration, they also risk becoming arbitrary dividing lines in what, in chapter 11, Ian Bogost calls the "gold rush" of game research, research on which people's careers, institutions' profile, and grant funding might rest and for which there exists competition. There are, as in the game industry, material concerns for researchers that are rooted in definitional exercises about their practices.

The relative recent growth of game-related areas of academic research and training is, on the one hand, a good problem to have. It suggests an interest and awareness of the cultural impact of the medium, and, like other disciplines tied to particular media before it (for example, film studies, television studies, and the like), it is evolving at a rate that is quicker than the slow pace of the academy is able to accommodate. The result is, in part, the creation of specialized universities entirely related to games (usually seen as "technical schools" for the industry) and the majority of the most well-developed game-related programs existing at newer, smaller private universities (Game studies has a way to go before it reaches the ubiquity of film studies.) On the other hand, such rapid growth and expansion are a more serious problem for creating a sense of focus, for understanding the relationships between these often

polysemous terms, and for communicating the connections between academic research, industry considerations, and player interests. There is a messiness here that, while perhaps necessary and inevitable, is also an obstacle to those looking to get involved in a meaningful way with these various fields, subfields, and so on. To the extent that competition functions as a constitutive component of academia, it exacerbates these obstacles.

MODELING CONVERSATIONS

As indicated in the preface, the interviews in this book attempt to model the kinds of cross-field discussions that might help better frame and more astutely answer questions about video games, thus encouraging communities interested in the medium to further collaborate. Formal interviews are, of course, a kind of “staged” conversation, one in which both interlocutors are aware that their dialogue will extend beyond those present and become artifacts for public scrutiny. So while the included interviews are generally more formal than conversations that might occur more organically, they are nonetheless useful models for a number of reasons that bear elaboration.

First and foremost, agreeing to participate in an interview demonstrates a kind of openness and eagerness to share one’s ideas with a larger audience. This basic attitude is an important starting place for fostering meaningful cross-field dialogue. Those selected for inclusion in this particular collection are individuals who ostensibly share a strong collaborative interest and see benefit in bridging disciplinary divides and the “siloiing” effect that occurs among those interested in games, and so the way that they answer (and ask) questions should be considered in this context.

The interview is also a useful mechanism for pushing toward elaboration or clarification, two more important processes in cross-field dialogue. In many of the chapters that follow, those interviewed are confronted with critiques, concerns, and questions that they might not encounter regularly within their own area of professional interest. Sometimes, like when Casey Hudson addresses academic and public criticism of some of his studio’s design choices in chapter 10, this engagement

prompts new ideas and compelling reflection; other times, like when Bushnell reacts to Neil Postman’s views on education in chapter 1 or Chris Grant weighs in on the value of college in chapter 7, it leads to a more immediate clarification of boundaries.

In any case, a collection of interviews that brings together individuals who may be of interest to different audiences is an attempt to foster wider collaboration, to bring more people with similar interests to the table. It is very likely that some readers will pick this book up seeking fresh insights from well-known scholars, others will want to read reflections on gaming history from those who shaped it, and still others will be interested in a link between one of the sections or chapters and their own specific interest in video games. All of those audiences should find what they are looking for, but the accessibility of the interview format and the curation of collaborative-minded participants are intended as an invitation to also consider new perspectives on games.

The rest of this book is divided into three broad sections – history, economy, and culture – that are meant to encompass a fairly wide cross-section of academic, industry, and player interests in video games. These divisions are shaped both by the expertise of the various individuals who are interviewed in each section and by many of the themes they discuss. In truth, one will find some discussion of economic models in the section on culture, some discussion of the culture found in contemporary game communities in the section on history, and so on. The concluding chapter brings these sometimes displaced and disparate ideas back into perspective while suggesting what might be garnered from the emergent themes found in the preceding chapters.

Each section of the book is preceded by an introductory essay that explains the connections between and the context informing the relevant interviews therein. Each interview is then preceded by a very brief biographical overview of the interviewee and an orientation to the relationship between their expertise and the topics covered in detail in the interview. The interviews are, of course, the focus of the book and where the type of cross-disciplinary and cross-profession conversations alluded to above are posited, pondered, and, on the most interesting pages, modeled. They are presented as they took place (with appropriate editing for readability), so any apparent jumps in logic or breaks in flow across the

topics covered in each interview are the fault not of the interviewees but rather of the interviewer. The questions in each chapter were driven by a confluence of research about the careers and work of the individuals interviewed; by academic scholarship that, directly or indirectly, referred to each participant's expertise; and, in some cases, by issues raised in a previous interview.

Finally, while this introduction has emphasized the overarching purpose for and structure of the book, each section and each interview stands alone as a considered study of the topics presented. The choice of participants was driven in large part by a deliberation over who might be able to speak with authority on topics that are of growing relevance across different communities interested in video games, and there is significant insight into contemporary video games, their study, and their culture offered in each chapter.

SECTION ONE

Games and History

FOR A MEDIUM WHOSE EVOLUTION HAS BEEN LARGELY DEFINED by continued breakthroughs in interactive technologies, it seems odd to think that video games have now been popular for close to fifty years or that many of the medium's best-loved eras and artifacts are now as ancient as eight-track cassettes and dot-matrix printers; the golden age of the arcade took place more than thirty-five years ago, and the Nintendo Entertainment System was first released thirty years ago. Atari was founded more than forty years ago, and the earliest video games date back to a global post-World War II boom in technological innovation in the mid-1940s.¹

By comparison, fifty years after Thomas Edison's theater showed the first commercial film in the late nineteenth century, the film industry had already produced both *Citizen Kane* (1941) and *Casablanca* (1944), two films that to this day rank atop the American Film Institute's "Top 100 Films" list as two of the three best films ever made. On the other hand, film studies as a recognized academic discipline had not yet emerged by the 1940s (either for formal university training in film creation or for critical film analysis), but game studies in some form or fashion has been associated with games for much of its history.

I have written elsewhere (Heineman, "Public Memory") about the contemporary function of nostalgia in video games; invoking the past is a potentially contentious act that has consequences for group and individual identities and, because of this, often drives consumer habits, marketing choices, and certain industry trends. In part because of the functions of advocating for a particular public memory, writers from

various backgrounds have been historicizing, canonizing, and reflecting on various developers, specific games and game series, and other components of the video game industry for much of the time that video games themselves have existed.²

The interviews in this section of the book all address, in various ways, what it means to think about video game history. There are two interviews with individuals who are often associated with some of those earliest successes for the industry (Nolan Bushnell and Eugene Jarvis), one person charged with preserving that history through a perspective more closely associated with an art museum curator (Chris Melissinos), and one person who has spent a lot of time thinking about the unique historiographical questions and material constraints of doing video game history as an academic (Henry Lowood). Each of them is grappling with large questions: How and why should we preserve artifacts of gaming's past? What lessons from that past are worth learning for the present? What is the best way to evaluate a medium that is so closely tied to rapid technological change? Most important, there is a common concern here: Does video game history matter at all? If so, what parts of it are important and why?

THE HISTORY OF VIDEO GAME HISTORY

Approaches to writing about video game history have taken several forms that can be loosely organized into three categories: popular histories, generally written by and for the “average gamer” or “general public”; industry histories, produced and curated in the interest of image management or profitability (or both) by those who make and publish games; and academic and institutional histories, which consider game history from specific methodological and theoretical approaches for interested scholarly audiences and educational purposes. Understanding the differences and relationships between these categories of historical approaches to video games is useful for considering the interviews that follow in this portion of the book.

Popular Histories

Prior to the growth of retrogaming-related content on the World Wide Web in the early part of the twenty-first century, much of the writing about older games and industry history that occurred was found in magazines that had features or columns dedicated to such content. For example, *Electronic Gaming Monthly* published its inaugural “Best 100 Games of All Time” list to coincide with its one hundredth issue in 1997, and *PC Gamer* published its July 2000 issue with a bundled compact disc of full games dating back to the mid-1980s in a “Classic Games Collection.” This emphasis has continued in the years since in publications such as the British magazine *Retro Gamer* (published initially in 2004) and in long-running features such as *Game Informer*'s “Classic GI” (which ended in 2009).

More substantive, long-form works about video game history have been published since at least the 1980s. One of the best-known early works is Scott Cohen's *Zap! The Rise and Fall of Atari*, which was published in 1984 and, as the title suggests, provides insight into the company's meteoric rise and the eventual market crash that would forever change Atari and those who were associated with the company. Around the same time that *EGM* and *PC Gamer* released their definitive lists of classics mentioned above, Steve L. Kent authored both *The Ultimate History of Video Games, from “Pong” to “Pokémon” and Beyond: The Story behind the Craze That Touched Our Lives and Changed the World* (2001) and *The First Quarter: A 25-Year History of Video Games* (2000), Rusel DeMaria and Johnny L. Wilson collaborated on *High Score! The Illustrated History of Electronic Games* (2002), and Van Burnham published *Supercade: A Visual History of the Videogame Age, 1971–1984* (2001). Coinciding with all of this was a growing online interest in retrogaming (for example, AtariAge.com launched in 1998), the creation of the Classic Gaming Expo in 1999, and the production of the G4TV show *Icons* in 2002.

It is difficult to characterize these turn-of-the-millennium histories as a homogeneous collective, as they vary considerably in depth, tone, and focus. More significant, it seems, is the temporal proximity of their publication to one another; they launched what has since become some-

thing of a popular genre of game history books, video series, and various physical and digital features that cover almost all corners of game history. Though work in video game history existed prior to the twenty-first century, it has existed *in earnest* for the past fifteen years.

Increasingly, the best examples of “popular game history” have focused on a specific game, series, studio, platform, or era. Books such as David Kushner’s *Masters of Doom: How Two Guys Created an Empire and Transformed Pop Culture* (2003), which chronicles the history of the game’s development at iD studios, and Jordan Mechner’s recent books that chronicle his journals from the time he spent developing *Karateka* and *Prince of Persia* (2012) are examples of studies that provide significant depth on a specific topic. Though they are published by MIT Press, the books in the Platform Studies series offer histories of various gaming or game-related hardware that are very accessible to the nonacademic reader. Other examples of note would include Kurt Kalata’s (2011) tome on classic graphical adventure games and Blake Harris’s (2014) recent book on the 1990s console wars.

Industry Histories

Coinciding with the boom in retrospective popular histories at the turn of the century, the video game industry itself has presented its own past in some very specific ways. Most notably, it has chosen to canonize some of its titles in various rereleases. The advent of optical drive technology helped usher in a deluge of “classic” game compilations starting in the mid-1990s and continuing today (though digital distribution has begun to replace this approach). *Wikipedia*, for example, lists more than two hundred published compilations of games, many of them coming from arcade stalwarts such as Namco, Midway, Taito, Sega, and Capcom. These compilations often offer descriptive texts about the specific games or developers, feature audio and video interviews and features, showcase production and concept art, and otherwise present games from the 1970s–1990s as historical artifacts.³

Beyond rereleasing games, the industry has increasingly made efforts to publish their own histories in encyclopedias, art books, or other print materials. For example, there are recent licensed books such as *The*

Sky: The Art of “Final Fantasy” (Amano, 2013), *The History of “Sonic the Hedgehog”* (Pétronille and Audureau, 2013), and the *Official Complete Works* of the Mega Man/Mega Man X franchises (Capcom, 2009). In another recent example, in 2011 Nintendo collaborated with the comic book publisher Dark Horse Comics to publish the 276-page *Legend of Zelda* history *Hyrule Historia* (Goombs et al.), which chronicles the series’ development and offers many details and images related to various *Zelda* games, Nintendo developers, and physical memorabilia associated with the franchise.

Hyrule Historia is an especially good example of the kinds of histories that the industry itself typically produces in that it highlights “positives” associated with a particular company or property (commercial or critical successes, long-running franchises, and more) and ignores or de-emphasizes comparative “negatives” (commercial or critical failures, litigation histories, and the like). *Hyrule Historia*, for example, purports to chronicle every game in the *Legend of Zelda* franchise but deliberately eschews mention of the three *Zelda* titles that Nintendo licensed to Philips to produce for their CD-i console in the early 1990s (*Link: The Face of Evil*, *Zelda: The Wand of Ghaleon*, and *Zelda’s Adventure*). These games are considered non-canon by Nintendo and are largely derided by fans of the other games in the series, but they nonetheless are part of the series’ history.

Academic and Institutional Histories

Much of the peer-reviewed work about video game history has been published in journals associated with the field of game studies. For example, in 2013 the Sage journal *Games and Culture* featured scholarship that addressed topics such as the original VCS game *Adventure* (Lessard, 2013), emulation (Murphy, 2013), and a “genealogy” of *Second Life* (Veerapen, 2013); in the past they have tackled game preservation (Barwick, Dearnley, and Muir, 2011), the presentation of history itself in computer games (Schut, 2007), and hardware histories (O’Donnell, 2010). In another example, the December 2013 special issue of *Game Studies* features essays affiliated with the “History of Games” conference held in Montreal the previous June; the issue features essays on subjects as wide ranging as

the role of hobbyists in game preservation, the history of gender representations in video games, and the origins of Japanese video games in the 1970s.

In the editor's introduction to that issue of *Game Studies*, Aarseth (2013) suggests, "What has been lacking is not the writing of game history, but the *institutionalization* of the study of computer game history in the shape of enduring structures: archives, museums, journals, conferences and international networks." There are, however, some well-known, ongoing efforts to create many of these things. Stanford University, for example, has a rich and well-cataloged collection of video game-related hardware, software, video and print materials, and more (much of which has been highlighted on Henry Lowood's "How They Got Game" website). The Library of Congress also has a large collection of games and game-related resources included in their Moving Image Materials collection. Increasingly, other university and public libraries are archiving and lending both older and newer video games in a fashion similar to how they treat video and audio media.

As will be addressed in chapter 2, the Smithsonian's *Art of Video Games* exhibit offered a recent and prominent example of video game history being recognized by a major public institution, but there are also other examples of video games finding their way into museums. For several years the Videogame History Museum has been touring conventions and trade shows and raising funds for a permanent home; its founders have more than twenty thousand unique items they hope to move into exhibition. Outside of the United States, there are museums such as Tokyo's new Huis Ten Bosch Game Museum, which opened in 2014, and Rome's video game museum Vigamus, both of which feature curations of older and newer hardware and software as well as exclusive and rare pieces from both private collectors and game studios.

THE FUTURE OF VIDEO GAME HISTORY

There are some looming concerns for those who are interested in video game history moving forward. Most urgent, perhaps, is preserving both experiences and memories of the medium's earliest history (from the 1940s to the 1970s), as much of the original hardware and software de-

teriorates or becomes harder to find and as the people who created the industry age and die. Poor documentation of early game creation and those involved, poor archiving of original production materials, and increasingly obsolete storage formats compound the historian's task, but a recent uptick in interest for publishing and reading video game history and for archiving and experiencing its most obscure components offers hope that these obstacles can be largely overcome in the near future.

Another concern of note is the rise of digital-only content; increasingly, video games do not have physical releases, or, even when they do, they are augmented with downloadable patches and add-on content. Most of this media is accessible only behind some kind of digital rights management barrier (for example, access to a service such as Steam or Xbox Live), and much of it can become unavailable when licensing rights change (for example, *Outrun Online Arcade* was removed from the PlayStation Network and Xbox Live when Sega's contract with Ferrari expired in 2011). For someone interested in preserving contemporary games for future historical research, the impact of services that provide licensing of games and the growing ubiquity of DRM will increasingly become areas of challenge.

Beyond these issues, contemporary video game historians are potentially tasked with identifying and documenting significant events that might occur within the tremendous volume of ephemeral virtual worlds. There is also the need to address a rich history of video game subcultures that exist(ed) both before and since the rise of the Internet, very little of which has been substantively historicized. There is still a large need for industry histories that are not produced by the industry itself. For example, compared to what exists for other entertainment forms, there is a relative dearth of biographies or case studies focused on specific game designers, directors, artists, and studios. There is almost nothing on the history of underrepresented groups in gaming history, nor has there been much written about the history of game journalism, game advertising, or game merchandising. To facilitate this kind of work, there needs to be increased public support for and training in methods of historical media research, in library sciences, and in digital curating. There is evidence that such support and training exist and are on the rise globally, but the long-term success and viability of video game history and preservation

will be at least partly dependent on the quality of the work being done in these areas in the near future.

SUMMARY

This section of the book addresses questions about video game history, an area of growing interest to professional historians, game-industry content developers, and some enthusiast gamers. Specifically, it engages several carefully selected individuals about their perspectives on video game history itself, the archiving and presentation of that history, and the future challenges of doing historical work related to video games. They are responding, in large part, to the idea that doing work to preserve video games and their history for future publics is a pressing task in the wake of the medium's growing popularity, its aging early hardware and software, and its transition to more ephemeral online contexts. These interviews meet that urgency with a compelling mix of expertise, perspective, and strategy.

Nolan Bushnell

LEARNING FROM THE PAST

NOLAN BUSHNELL IS THE PERSON MOST OFTEN ASSOCIATED with the origins of video games as a commercial enterprise. His list of “firsts” in the industry reads like an outline for the study of early gaming history: he created both the first commercial arcade game (*Computer Space*) and the first commercially successful one (*Pong*); he was a founding partner of the first wildly successful video game company, Atari; and he was instrumental in developing and curating content for arcades in both its “golden age” and in its “Chuck E. Cheese era,” named for the gaming-themed chain of family restaurants that he created. Though video games’ earliest beginnings would predate the launch of Atari by almost thirty years, their migration out of university computer laboratories and student unions coincided with Bushnell’s emergence as a shrewd evangelist of their potential to capture both a wider audience’s attention and, importantly, their coins.

Bushnell’s enthusiasm for games started early. He was one of the fortunate few who had the opportunity to play *Spacewar!* on the PDP-1 with the game’s creator, Steve Russell, an experience that Bushnell recalls as “mesmerizing.” “I spent every minute I could in that computer lab” (Bushnell in Melissinos and O’Rourke 24). He has been a longtime advocate of games that are centered on repayable, challenging mechanics over those that feature bloat, spectacle, and easy titillation.¹ His influential perspective on game design was succinctly explained in 1971: “All the best games are easy to learn and difficult to master. They should reward the first quarter and the hundredth.” Recently, he has suggested that his “great hope” for such game design principles “is that video game meth-

odology has an ability to communicate with young minds in an amazing way” (Bushnell in Melissinos and O’Rourke 25).

In the twenty-first century, Nolan Bushnell is in a unique position of being able to weigh in on how game history has been preserved, presented, and framed by those who write about it despite, in more and more cases, not having lived it directly. In addition, he is well suited to reflect on what elements of that history are especially important to carry forward into new game designs, game industry decisions, and, with his current focus, educational endeavors that involve games.

Given that Bushnell has spoken and written at length about his own time in the industry, this interview forgoes a recapitulation of that past and instead begins with his insights on the way that this history has been told and, specifically, his understanding of what has been underappreciated and underemphasized. The interview also includes Bushnell’s thoughts on links between classic game design principles and human learning, links that he has emphasized in his own work to create games for lifelong education. He also shares his thoughts on game studies and on retrogaming fan culture.



HEINEMAN: You’ve commented previously about whether or not people have done a good job of thinking about and writing about video game history, and you’ve mentioned that journalists and historians often focus too much on individual programmers at the expense of teams or at the expense of projects. What are your thoughts on the status of recording game history as you’re familiar with it?

BUSHNELL: Well, I think that the general flow of what’s been recorded is pretty accurate. There’s nuances that I disagree with, but nothing really big. I believe one of the areas that is often overlooked is how creativity is a driving force in game development and that, much like any entertainment media, it thrives on “different,” and that the ability to provide “different” and to create games that are new and somewhat revolutionary has been part of the legacy of the game business. We’ve gotten some of the most creative people in the world as a result thereof.

The other issue is that with games, because of their tremendous use of graphics and real-time computations, we’ve actually forced an awful lot of growth in computation, graphics processing, and other things that have been very beneficial to other industries. We’re really driven by the economics of the game business, so now, if you can see molecules and DNA and things like that, an awful lot of that computer power and algorithms were actually created by the game business. That emphasis has not been brought out [in gaming histories].

HEINEMAN: One way to think about the history of the game industry and how it’s been successful economically is by tracing the ways in which it has responded to shifts in spatiality, both in terms of designed game space and in adapting to the spaces where we game (e.g., the arcade, the living room, mobile devices). From your perspective, is the understanding of space something that has driven success?

BUSHNELL: I think so. One of the things that I’m very fascinated with right now is augmented reality. There was artificial reality, which made everybody seasick, and fifteen years ago everybody thought that was going to be the big thing. But, unfortunately, if you make your customers sick, it tends to have limited commercial appeal. It turns out that there’s some interesting things with that. Everyone thought that [the limited appeal] was because of lag time and lack of computing power. But the problems haven’t gotten much better though some of those technical obstacles have been solved. There’s some real interesting things going on in the brain that I don’t think we totally understand in terms of that artificial reality push. Augmented reality, of course, really means that you can now start to have game dynamics in a physical space in which you essentially view the world through the porthole of your cell phone, but it’s matrixed over a square, or a mall, or a physical location, and I think that’s very interesting.

HEINEMAN: There have been attempts to characterize gaming history as an evolution in a medium (for example, as an “art form”). Given your previous answer about the history of games as one of technical innovation, do you think that these classifications (e.g.,

“art,” “entertainment,” “technology”) are useful in informing our cultural understanding of games? Is there a danger in trying to look at them through the lens of another industry or another discipline?

BUSHNELL: No, it’s always important to focus on the interstices or the links. I mean, clearly, game development is an art form. No matter what people say, it is.

Some wonderful music has been created. I don’t know if you’ve ever been to a Video Game Live concert, but they’re fantastic. They have full symphony orchestras and choirs that were used to create the soundtracks for video games. To bring it alive in a cultural, orchestral setting is really cool. The Smithsonian exhibit was wonderfully done. Clearly, there’s some great art that’s been created there.

HEINEMAN: Has your interest in augmented reality manifested itself in a particular project?

BUSHNELL: I’m not working personally on it, but my son is, and he’s got a couple of interesting projects that are in that area. I’m right now primarily focusing on the gamification of learning. How do we use some of the brain science that we have used in making games viral and addictive in some ways to allow people to learn faster and have more fun? In some ways, every minute of boredom in a school robs a student of a certain amount of enthusiasm and curiosity, and I believe that we can, through game dynamics, bring academic subjects alive in a very interesting way.

HEINEMAN: What sparked your interest in that?

BUSHNELL: I have eight children, and it’s very hard to have children without bumping up against the education establishment and seeing the fact that it’s no longer doing a good job.

HEINEMAN: How do you approach design of a game differently when the intent is to use it in an educational setting, as opposed to one made strictly for fun or for commercial purposes?

BUSHNELL: There is some interesting research that was (pretty much) pioneered by a guy named Mihaly Csikszentmihalyi on the concept of flow, and I would recommend you see his TED talk or read his book. The concept is quite simple. It’s what we call the

“Goldilocks Point,” and that is you want a game to be hard enough to be difficult but easy enough that you can succeed, and that by staying right in the middle of those two constructs – not too hard, not too easy, but just right – you put yourself into a state of flow, which is sort of an ultimate happiness. You can do that with educational projects, and, when you do that, all of a sudden the learning becomes stickier. A student can be working on a project for a couple of hours and not blink, whereas most students tune out after fifteen minutes of lecture. We have some games right now that are accomplishing an awful lot of that.

HEINEMAN: Can you point to an example or two of a game that you see as exemplary of what you’d like to see in educational contexts?

BUSHNELL: Go into any of the anti-aging games on our site. If you go into Wordplay, which is our test alpha project for teaching Spanish vocabulary, you’ll see that these are very simple games, but they’re engaging, and they force the student to be an active learner as opposed to a passive recipient, and that is a big difference.

HEINEMAN: Is the application of these design principles any different for creating an educational game versus creating a game that doesn’t have an educational purpose?

BUSHNELL: No, they are the same.

HEINEMAN: Do you see games having utility in a classroom from preschool all the way through to something like a doctoral degree, or is there a particular point at which one finds diminishing returns when using games in education?

BUSHNELL: Oh, I think that it’s pre-K to post-gray. I used *Putt-Putt* and some of the Humongous Entertainment games with my kids, who sort of grew up with those things. I believe that in many ways it was extremely neurogenic.

HEINEMAN: Are you familiar with Neil Postman’s work at all? He wrote a lot about television and its impact on the education system. Have you read any of his work?

BUSHNELL: I have not.

HEINEMAN: He was a student of Marshall McLuhan, if you’re familiar with McLuhan, and his work

BUSHNELL: Right.

HEINEMAN: He argued that television, when it was introduced in the classroom in the form of educational videos, was doing more to harm education by packaging education as entertainment, whereas, beforehand, education wasn't seen as something where kids were meant to necessarily enjoy it.² They were meant to learn, benefit from it, and gain things from it.

BUSHNELL: I violently disagree with that.

HEINEMAN: Do you think there is any risk in packaging education as play, if that's what games do? Is there a point at which students aren't able to make a distinction between the two?

BUSHNELL: I believe that the principle is incorrect. The ideal life is one in which you can't tell the difference between work and play, and that's what I've always tried to focus on. It turns out that if you're playing and you're enjoying something, the only people who think that's a bad idea are the latent Calvinists who believe that without pain, there's no gain. I think that's absolute bullshit, and that a proper education should be fantastic, engaging, and highly enjoyable. Can you build a trashy game and put a label on it that says this is education? Of course you can, but our stuff is teaching ten times faster in the classroom, and kids are enjoying it, so I think that's a win-win.

HEINEMAN: What's the distinction between a "trashy game" that clearly is play and might "parade" as education without providing students with useful learning and something like what you're doing, which is still a game, still play, but does have educational value? What is the difference there? How do you tell?

BUSHNELL: Outcomes. Are you learning something? Is it demonstrable? I'm an engineer, and if you can't measure outcomes, then don't do it. If you're measuring outcomes, it's very easy to tell whether your stuff is working well or whether it's trash. So, the determination of success or failure is outcomes.

HEINEMAN: Expanding on this idea of play a little bit, you've spoken in the past about an element of fun being necessary in order for the game to be worthwhile. You and other well-known designers have also lamented that in the last ten or fifteen years, there seems to be a decrease of "pure fun" in the most mainstream, critically acclaimed, and biggest-selling games.

BUSHNELL: What I believe happens is there's an awful lot of games that are highly repetitive, and I think that repetitiveness in a game context can be okay, but it's not neurogenic and what you really want. The core principle of neurogenesis is different, and I think that by introducing more diversity of your game style and game play, you're actually treating your brain better and giving it a better opportunity to grow. I'm not sure if that's quite answering your question properly, but what I don't like is some of what I call negative social messages that happen in some of the games. I dislike that.

HEINEMAN: Meaning messages about violence or those kinds of things?

BUSHNELL: Yeah, I think *Grand Theft Auto* is a trashy game, and I don't see a lot of social benefit to taking on the role of a mugger and a car thief and a woman beater.

HEINEMAN: Well, then, how do you quantify "fun"? Many people enjoy those games, and they find them to be fun. So even if you believe they are sending negative messages, is there a way to hook that same population of players on games that are teaching them or making them do more productive things?

BUSHNELL: Well, I think that there's *Fifty Shades of Grey* and there's Hemingway, and are we going to be able to excise prurient interest out of a population? I don't think so. But that doesn't mean that we shouldn't always try to illuminate positive aspects and create games that have substance and learning, and some people are going to enjoy them and some people aren't.

HEINEMAN: To what extent do you think the possibilities of games in education are due to the fact that gaming has now been a major industry for forty or fifty years? People who are teaching now grew up playing games that you were designing in the '70s or '80s. Do you think that it's a generational thing? Why do you think now is a good time to start seeing increased gaming in the classroom?

BUSHNELL: Mankind has always been in a contest for "How do we capture imagination?" and the answer is competition. If you have a world full of high-production-value video experiences, whether they be commercials or television or movies or games, and compare those to a teacher with a piece of chalk and blackboard,

they're outgunned in a real way. People expect information to be coming at them at a very, very high rate of speed, and their brains have actually been modified to expect that kind of experience, and so the schools became increasingly antiquated.

When I was going to elementary school, school was the most interesting thing happening in town. The alternative was watching the river flow and the corn grow. That's not what our kids are involved in today. I mean, we didn't have a television set until I was in the fifth grade. So, really, we cannot view the golden age of schools in the '30s, '40s, and '50s as being anything that's useful today. It's just wrong. It's different, it's inappropriate, and all of these things have trained brains to actually be smarter and to be able to take data faster, and for us to not give data faster creates boredom and tune-outs.

HEINEMAN: Fans of games have created communities, conventions, and other activities around contemporary gaming but, increasingly, also around classic gaming. What is your thought on the ways in which that has grown over the past ten or fifteen years, especially the retrogaming scene?

BUSHNELL: Oh, I love it. I've keynoted several conventions of fifty thousand gamers, who've come in with a sleeping bag and their computers and hook up in a convention. I was at one in Bilbao in which, basically, people came and gamed almost 24/7 for a week. What a fantastically engaged environment that was, people coming to conventions in full regalia of their favorite video game hero/heroine. This is fun, it's just fun, and I applaud it all.

HEINEMAN: Is there anything about gaming that you think makes it especially ripe for this kind of activity?

BUSHNELL: Absolutely. Gaming presents a very compelling universe that operates under predictable values and predictable outcomes. So the experience can be very intense and very satisfying in a world that is increasingly chaotic otherwise. All this stuff works really well to create a fan base and people that basically want to emulate their heroes, even though their heroes are constructs. I was at a PAX conference in Seattle a month ago, and I'd say that a third to a half of the attendees were in some kind of costume.

HEINEMAN: How familiar are you with game studies as a discipline, and do you think that it has had positive, negative, or negligible influence on people in the industry? Do you think that there's a good conversation there?

BUSHNELL: I look at it as being really in its infancy, and so the impact has not been huge. But it's growing, and I expect it to continue to grow and become more and more important. It's always good to have academic understandings and underpinnings for two or three reasons. First of all, I think that any industry, any science, any group of technologies start out with an awful lot of anecdotal evidence, and I always think that it's important to have scientific, empirical outcomes to separate myth from reality, and that is the role that the academic community does wonderfully. I'm one of these guys that believes that there is a truth and that we should always be questing it, and, again, there's a lot of difference between belief structures and knowledge structures, and I think that we always want to bias society toward truth structures as opposed to opinion structures.

HEINEMAN: One analogy that I often make for people is to compare the field to film studies and to consider the ways in which film studies, at its inception, taught people either to make films or to study them. Over time, those two foci increasingly came together so that the best filmmakers were those who had also spent a lot of time doing critical film studies work. Do you see that happening in the future for game studies, where it becomes important for people who study game design and programming to also have a healthy dose of the humanities in which they can study gaming's social influence, the politics and economics of games, and so forth?

BUSHNELL: I think that it will come together. I'm always concerned about teaching too much formulaic analysis, i.e., if you have to scare the shit out of somebody every ten minutes in a movie and then you follow it up with a romantic interlude. It leads oftentimes to formulaic movies, which, while they may be successful, don't push the boundaries of creative thought. I would be hesitant to have the world converge so that all future games become a variant of *Bejeweled*.