The Evolution of the Indie Ecosystem

In the beginning...

In the 1970s and early 1980s, it can be argued, all video game companies were independent. Atari and Nintendo were the Lumière brothers and Méliès of their day, inventing the technology and content simultaneously (Murray 2011). But by 2005, when IndieCade was first conceived, the video game industry had become a victim of its own success (Juul 2019). Resembling the film industry of the 1930s, the standard career path was to sign on to the staff of a major studio, where all intellectual property was studio owned. There was little of the talent-driven free agency we see now in films, where creators work on a contract basis and some get a stake in the revenue that their work generates.

Due to the physical nature of CD-ROMs and console games, video game distribution depended on limited shelf space in brick-and-mortar retail stores, giving studios a tight grip on both content and delivery platforms. Console companies, followed by gaming PC companies, were engaged in an ongoing war for improved graphics performance, often at the expense of evolution in other areas, such as gameplay and interface design. This was partly due to the fact that, as gaming technology became more sophisticated, games were more expensive to produce, resulting in a culture of risk aversion with occasional bursts of innovation in software (e.g., *The Sims, Katamari Damacy, Guitar Hero)* and hardware (e.g., PlayStation Move, Nintendo Wii). The skyrocketing costs of software development resulted in a kind of inverse of Moore's Law: the smaller, faster, and cheaper computers became, the longer, more expensive, and more labor-intensive the software development process (Pearce 1997; Jenkins 2006a).

By 2000, "with global annual sales approaching $20 billion and wide public awareness leading up to the PlayStation 2 launch . . . many game developers shared a belief that the video game industry had failed . . . become altogether too large and unwieldy, too dehumanizing of its workers, too anonymous, too narrowly masculine, incapable of creating even modestly interesting video games" (Juul 2019). It was against this backdrop that the move toward a new kind of independence began to take shape. In *The Scratchware Manifesto,* first published anonymously in 2000, developer Greg Costikyan criticized the game industry:

> *Instead of serving creative vision, it suppresses it. Instead of encouraging innovation, it represses it. Instead of taking its cue from our most imaginative minds, it takes its cue from the latest month's PC Data list. Instead of rewarding those who succeed, it penalizes them with development budgets so high and royalties so low that there can be no reward for creators. Instead of ascribing credit to those who deserve it, it seeks to associate success with the corporate machine. It is time for a revolution.* (Costikyan 2000)

This sentiment was by no means exceptional, even from within the industry. In response to a call for the video game equivalent of Sundance by Alex Dunne, editor in chief of *Game Developer* magazine, the Game Developers Conference launched the Independent Game Festival (IGF) in 1999 (Juul 2019). In 2002, the Experimental Gameplay Workshop was introduced at the conference, the same year that saw the inaugural Ludum Dare, the forebear to the modern game jam, where people come together in a compressed time frame to create games. In 2003, Valve launched its Steam online video game distribution platform, whose success was fueled in part by mods—games created from other games—like *Counter-Strike* and *Narbacular Drop,* which became *Portal*. Two years later, Costikyan launched Manifesto Games, a kind of United Artists for game developers. All of these emancipatory moves served to free game creators from the yoke of hegemonic capitalism. At the same time, they also recapitulated some of the same industry problems from which they strived to be free. (Lipkin 2013; O'Donnell 2014; Browne 2015)

Around the same time, the "Casual Revolution" took off (Juul 2010), fueled partly by studios operating outside of the mainstream console industry. In the spirit of perhaps the mother of all casual games, *Tetris*, these games reminded players that simple experiences could be both appealing and addictive, while significantly broadening the audience for games. Players no longer fit into the classic stereotype of teenage boys; older women soon became the fastest-growing gamer demographic (Pearce 2008). It's important to note that this particular flavor of revolution came from *within* the game industry. But there were also simultaneous stirrings in other fields, notably fine arts and academia.

Since then, there have been as many debates on the meaning of "indie" as there have been on the word "game." The simplest definition is the original put forth by the Independent Game Festival when it was founded in 1999: "An indie game is one that was made without funding from a major publisher; in other words, without help from a member of the Entertainment Software Association (ESA)". As broad as this definition might seem, it soon became supplanted by unwritten rules of exclusion from within the larger community. At various points, casual games, artgames, mods, student games, games made by professors, documentary games, and even mobile games did not somehow count as indie (Jenkins 2006a). Meanwhile, many indie games were excluded not because they weren't indie but because they weren't "games."

Some argue that indie has become a stylistic conceit: a euphemism for games broadcasting a low-budget focus on gameplay or narrative innovation through low-fidelity or highly stylized graphics or novel uses of technology (Juul 2014, 2019). To some extent, this is correct. Many people consider thatgamecompany, creators of *Flower* and *Journey*, to be an indie studio even though the company launched with an exclusive three-game deal with Sony. Overall, consumers seem to understand indie more as an ethos than as a business model. However, it's important to understand that indie is a constantly changing concept and more of an ideology than a destination. As activist game designer and scholar Paolo Pedercini of Molleindustria described it in his 2012 IndieCade talk, indie is "not a status but a tension and a direction to pursue" (Pedercini 2012).

Regardless of how anyone defines indie, it's undeniable that there is now a full-fledged independent game movement. In fact, according to multiple surveys, close to half of game developers self-identify as indie (Edwards et al. 2014; Legault and Weststar 2016). In a relatively short period, there has been a major move away from the studio-based model that dominated during IndieCade's inception. Despite recent anxieties about the so-called "indiepocalypse," the indie game scene has taken as much of a central stage as the indies of the music and movie industries. As with film and video, we are also witnessing creators move among different modes, genres, and contexts—mods becoming mainstream, artgames being published on consoles, indie games getting acquired by big studios, and so-called Triple-A developers "going indie."

All of these developments—the evolution of the definition of indie, the relationship of indie developers to other stakeholders in the game industry, and changes in economic and funding structures, distribution channels, and creation stories—have all driven the growth of a larger and more dynamic indie ecosystem, which has, in turn, served to propagate the indie game scene. It would be impossible to tell the IndieCade story without taking this larger ecosystem—with which it is inextricably interwoven—into account.

In essence, we are seeing the emergence of an indie history of sorts, of which IndieCade is an integral part. On the journalistic side, accounts of this history tend to focus on the heroic narrative of the lone, white male auteur suffering for his art (Juul 2019). This storyline is typified in documentary films such as *Indie Game: The Movie* (Pajot and Swirsky 2012) and *Surviving Indie* (Cook 2016), as well as in books like Cara Ellison's *Embed with Games: A Year on the Couch with Game Developers* (Ellison 2016). These narratives have been key in raising awareness of indie games and highlighting the accomplishments of influencers in the field, but they have also been criticized for glossing over the larger techno-cultural frameworks in which independent games are made, and for reinforcing stereotypes (Keogh 2015; Juul 2019). Scholars have pointed out that the precarity and paucity of resources available to indies propels them toward "cultural intermediaries" and communal frameworks of mutual support (Bourdieu 1984; Parker, Whitson, and Simon), a category into which IndieCade clearly falls. Interestingly, films that *do* show gamemakers in a community context—such as *GameLoading: Rise of the Indies* (Brady and Francois 2015) or *Game Jam: The Movie* (S. Conditt and Tremp 2018)—depict developers as happier and more satisfied than those focusing on lone-developer narratives. This may be because stories about lone creators fit into classic suffering artist tropes and provide more narrative drama, even if they only represent one facet of the indie gamemaking experience.

Crucially, the story of independence is also one of interdependence. Independent games form a counterpoint to the capitalist mainstream, which values secrecy and proprietary intellectual property. In contrast, indies rely heavily on community for both survival and inspiration, and, more broadly, are entangled in a larger web of interdependencies, which have enabled their craft to become a major force in the video game and media industries. This interdependence is central to the story of IndieCade, which has served a vital role in integrating and amplifying the various contributing factors of the indie ecosystem.

Indie Ecosystem: Contributing Factors

It's much easier to tell a story about individuals than one about systems, and harder still to tell a story about the connection between the two. This book aims to chart the history of IndieCade within the larger evolution of indie games: one of many contributing factors to a radical change in the landscape over the past decade-plus. This collage of interdependent subsystems (Deleuze 1987; Joseph 2013; Parker 2013) operates in a synergistic fashion to create a larger ecosystem in which indie developers circulate. The IndieCade story cannot be told in isolation since its role has largely served to bring together and bolster other parts of this ecosystem. Although IndieCade falls within one of the ten contributing factors below, it also intersects with *all* of them, as well as facilitating intersections *among* them.

Games as Art

"Art" is a subjective term that hovers somewhere between personal taste and cultural cachet. The mid-2000s saw a debate—tellingly, among film industry luminaries—as to whether video games were an art form. In a 2004 *Time* magazine article, Steven Spielberg was quoted during a talk at USC's Game Innovation Lab, saying, "I think the real indicator will be when somebody confesses that they cried at Level 17" (Grossman 2004). Film critic Roger Ebert famously—and repeatedly—asserted that video games as a medium could never be an art form (Ebert 2005). He later admitted to having little exposure and perhaps being unqualified to critique video games, but continued to defend his position nonetheless (Ebert 2010). It's important to note that neither Spielberg nor Ebert provided a clear definition of the word "art" or made a distinction between "art" and "art forms." It seems shortsighted to assess the artistic merits of a medium independently of its content, especially considering that cinema met with similarly dismissive attitudes in its infancy.

The term "artgames" has been widely adopted to describe games whose primary purpose is expression rather than commercial gain (Pearce 2006a; Bittanti and Quaranta 2006; Schrank 2014; Sharp 2015a). These differ from what John Sharp calls "game art" (2015a), or media art practices that use game tropes and technology but are not themselves games—such as Cory Arcangel's widely exhibited *Super Mario Clouds*. While both artgames and game art appear in galleries, museums, and alternative exhibition spaces—in turn bestowing them with cultural cachet—artgames are intrinsically *games*. They are interactive and dynamic (whereas *Super Mario Clouds* is experienced as a passive installation). The position of artgames is not unlike that of video art from the 1970s in that both use a popular medium for artistic ends. In both, the merger of low culture and high art creates an avant-garde confrontation within a unique cultural context. Notably, some video art practices, such as Nam June Paik's video walls—originally created as art installations—have been adopted for a variety of entertainment and commercial uses.

The earliest artgames have been traced to the mid-1980s (Sharp 2015a), but it wasn't until the late 1990s that a generation of art school grads who identified games as their medium of choice built enough momentum to create a movement. Online collections started popping up, including 1998's *Select Parks* by Australian artist/curators Julian Oliver and Rebecca Cannon, and 1999's *Cracking the Maze* by Anne-Marie Schleiner. As curators and art historians took interest in games, they began appearing in digital art exhibitions, such as The Whitney's *BitStreams* and the San Francisco Museum of Modern Art's *010101: Art in Technological Times,* both in 2001. Games even garnered their own exhibitions, such as the Cannon-curated artgame exhibition *Trigger: Game Art* in Melbourne, and the Barbican's *Game On*, which mostly focused on mainstream games (King 2002). Other cultural institutions such as the Walker Art Center in Minneapolis, the Museum of the Moving Image in New York, the Australian Centre for the Moving Image (ACMI), Canada's Banff New Media Institute, ZKM in Germany, and the Ars Electronica Festival in Linz, Austria pioneered bringing games to the art world.

At the same time, a handful of museums and historians, notably New York's Museum of the Moving Image and Stanford University's video game history project (led by Henry Lowood), began collecting and archiving video games. These trends, along with the coming of age of game players, contributed to broader general acceptance and positive perception of video games.

Policy and Public Perception

The advancement of the public perception of games has been no trivial endeavor. Since their inception, video games have faced constant political and legal assault, usually serving as a straw man for concerns about gun violence. Prominent US politicians from all sides have called for government censorship of games, even for a time placing them under the purview of the Bureau of Alcohol, Tobacco, Firearms, and Explosives. With each new mass shooting, American game scholars have found themselves countering disproven anxieties (The Bronfenbrenner Center 2018; Associated Press 2019; Markman 2019), often fanned by the National Rifle Association, that video games cause real-world violence.

The Interactive Digital Software Association (IDSA) formed in 1994 as an advocacy and lobbying group for the video game industry to shield games from censorship. Its impetus and role were similar to those of the Motion Picture Producers and Distributors of America (MPPDA), which formed in 1922 to protect the film industry from censorship. Six months after it formed, the IDSA—later renamed the Entertainment Software Association (ESA)—launched the ESRB rating system which now emblazons all commercial video games. In 1995, the organization launched E3, the Electronic Entertainment Expo, the largest industry convention devoted solely to game software and technology.

To improve the public perception of video games, the ESA enlisted the aid of academia and became the first industry organization to sponsor academic game conferences in the United States, in addition to being an early supporter of IndieCade. Reframing video games as a relevant art form worthy of academic study and public exhibition elevated games' status while placing them in the legal realm of protected free expression. Academics also lent their expertise to this fight by contributing to amicus briefs and other legal documents used to stave off game censorship in a number of court cases.

Generational shifts have also been a factor in the evolving indie ecosystem. Baby boomers both invented and (ironically) fueled anxiety about video games, Generation X grew up playing them, and millennials and Generation Z grew up playing them with their parents. Nevertheless, it wasn't until 2011 that the US Supreme Court protected video games as free speech under the First Amendment. Still, it's a fairly quick turnaround considering that films didn't earn that status in America until 1952 (Jowett 1996)!

Games and Academia

As maligned as it often is, academia has been as crucial to laying the fertile ground for the indie boom as it was to the film industry of the 1960s and 1970s. The early years of game academia reflected the interdisciplinary nature of the field, emerging through domains as varied as games, film and theatre, computer science, literature and humanities, and fine art, sometimes combined with design.

The first group (a category in which I count myself) saw a dearth of innovation and chose to pursue game design within academia to strategically advance the field. In fact, many academic labs were established for the explicit purpose of creating an independent arm for a stagnating industry: for game industry veterans, academic spaces provided a stable base of operations, an enthusiastic community of practice, and a training ground for the next generation of gamemakers. In this way, academia served as a radical intervention from creators who had access to professional technology but none of the trappings of commercial pressures—all within a discourse of critical thinking around genres of play, representation, and inclusive practice. Due to the fact that games did not exist yet as an academic discipline, these individuals tended to embed themselves within established disciplines, often through connecting some of the domains mentioned above.

Schools of cinema seemed like a natural home for game design (after all, they were already in the business of training content creators). In fact, many scholars with film backgrounds consciously modeled their programs on the academic insurgency that took place in their home discipline a half-century earlier. USC's Interactive Media Program, which grew from and alongside cinematic arts, is a prime example. Nevertheless, embedding games within a film department was often met with cultural resistance from the old guard, who saw game design as a low art, or worse, a computational skill.

The Indie Ecosystem: Contributing Factors (Con't)

The third group, computer scientists, tended to have fewer moral objections to games and instead focused on computational innovation—including artificial intelligence, procedural content generation, computer graphics, interface design, tangible media and mixed reality, and virtual reality (VR). Some also came from industry backgrounds, and many helped forge interdisciplinary labs, such as NYU's CAT Lab and Interactive Telecommunication Programs (connecting computing and the Tisch School of the Arts), Carnegie Mellon's Entertainment Technology Center (a joint project of computing and theatre) and later, the Expressive Intelligence Studio at the University of California, Santa Cruz. These settings spawned new practices and initiatives that could not have been achieved without a convergence of domains. For instance, the rebirth of VR that resulted in Oculus Rift was seeded in interdisciplinary work in film and computer science at the University of Southern California.

A fourth group emerged from literary and humanities studies; their focus was primarily critical theory and history of games, as well as narrative. IT University of Copenhagen, Georgia Tech, and MIT were among the first universities to host game programs based in these disciplines in the late 1990s. Henry Lowood of Stanford University was also key in advancing video game history as an academic discipline. These scholars were joined by social and behavioral scientists who focused on studying players themselves ("player studies"). Although some were makers, by and large the earliest thinkers in this realm came out of academia. They focused on elevating the discourse and cultural cachet of games, in turn making major contributions to the evolution of game criticism while deepening our understanding of the behavioral side of play.

Finally, the fifth group's origins were based in the arts school context. These individuals were inspired by game-related avant-garde art movements, such as video art, and were trained by luminaries of video, electronic, and so-called "intermedia" arts. This group was distinctive in that, although they were practitioners themselves, they operated as outsiders who eschewed and critiqued the mainstream game industry, even while adopting some of its tropes. Importantly, this group perceived their work as fine arts rather than commercial design, which greatly influenced its direction. Though not the first such creators, artgame practitioners such as Anne-Marie Schleiner, Mary Flanagan, Julian Oliver, Rebecca Cannon, and Eddo Stern drove the emergence of the artgames movement of the early 2000s (Schrank 2014; Sharp 2015).

Crucially, the rise of game academia was fueled by a generation of so-called digital natives, young people who grew up with computational media as a shared cultural reference (Barlow 1996; Prensky 2001). Hungry for a deeper level of analysis and practice, they fueled demand for such programs, which exploded in the mid-2000s. Even as institutional frictions made for a rough ride for many early-game academics, market factors were in their favor. Students flocked to classes and community events, with a subset becoming the next generation of indie developers and game scholars.

The growth of academia had several tangible impacts on the game industry. First, it cultivated creator communities by rewarding risk-taking and innovation. Second, it became a safe harbor for industry refugees who sought an alternative career path to the mainstream industry, providing them with a new framework for their own practice and positioning them to mentor the next wave of gamemakers. Third, it unleashed a new generation of highly trained, critically thinking game designers and scholars who wanted more from their gaming experience and its discourse. Fourth, between faculty and students, it produced a labor pool to support the growth of independent game festivals and exhibitions. Finally, it elevated games from a low form of pop culture (mostly for kids, and bad for them at that) to a legitimate form of artistic expression.

Ironically, the role of academia in the indie ecosystem—beyond student games—has been grossly underrepresented, not only by journalists and documentary filmmakers but also by game scholars themselves (Simon 2013).

Game Journalism and Criticism

Critical writing about games has evolved alongside indie games and enabled their advancement. However, as Nieborg and Sihvonen (2009) have observed, the phrase "game journalism" is fraught. They point out that traditional so-called game journalism has consisted of noncritical reviews operating in a vacuum with respect to the larger media trajectory and even games themselves. Furthermore, the field seems to lack any relationship to generally accepted standards of journalistic practice. Scholars such as Mia Consalvo have noted that game journalism's lack of critique and the presence of commercial ties call into question the veracity of the term "journalism" (Consalvo 2007). Additionally, the demographics of mainstream game journalism tend to reinforce the status quo that many indie developers seek to eschew. This perception has been further exacerbated by industry scandals that beg the question: "Game journalism has ethics?" (Colbert and Hoskinson 2014).

At the same time, the growth of alternative forms of game writing, such as blogs, Let's Plays, and live and prerecorded streaming, have increasingly blurred the line between fans and critics. Twitch celebrities and social media influencers have played a growing role in the discourse alongside academic authors and critics. Importantly, the indie ecosystem *needs* contributions from members of the game criticism community, who often circulate at the boundaries of academia, public intellectualism, professional journalism, and player/user content creation. From blogs and highbrow game journals to academic publications and popular streamers, influential thinkers have elevated game discourse—largely through online channels—by creating a more critical and satisfying environment for both players and creators, who see games as "the medium of the 21st century" (Zimmerman and Chaplin 2013).

Early journals such as *Game Studies Journal* and *Games & Culture*, and more recently, Carnegie Mellon University's book series and subsequent academic journal *Well Played*, represent a paradigm that has helped position games as a cultural force, along with publications such as *Edge* magazine, websites and video series like *Feminist Frequency*, and blogs by academics and non-academics alike, such as *Grand Text Auto* and *Critical Distance*. Video game criticism also intersects with game academia in that it provides an educational path for aspiring game critics as well as a home for academics who write and talk about games.

New Tools

In the nascent game industry of the 1980s, game creators had to code everything from scratch—from graphics rendering to physics to interfaces. There were no game development tools; instead, each studio had to build its own proprietary software from the ground up. The 1990s saw a number of developments that eased the bar on game creation. These included authoring tools such as HyperCard (used to create the first *Myst* game), Macromedia Director, and Adobe Flash, as well as "moddable" first-person shooter game engines like *Doom*, *Quake*, *Half-Life*, *Unreal*, and *ZZT*, the latter of which became popular in the queer modding community (Anthropy 2014). Indies, students, and fine artists alike played with modding in a similar vein as early video artist experimenters such as Nam June Paik, who placed magnets on televisions. Artists like Anne-Marie Schleiner, JODI, Brody Condon, and Julian Oliver hacked game cartridges and exploited glitches (Pearce 2006a; Poremba 2010; Schrank 2014; Sharp 2015a), and modding has been used strategically by numerous others to produce fine art.

By 2000, a sufficient market had emerged to support an entirely new kind of product: game engines decoupled from individual games. Garage Games' Torque, and later Unity, provided low-cost options for video game development with nominal programming skills; Epic Games' Unreal engine continues to cater to indie developers. Over time, additional tools became available, such as RPG Maker and Twine, which increased access to game creation further by removing programming as a required skill. This led to more people with an artistic or literary background creating games.

Both Garage Games and Unity made overtures to academia early on by offering their products at prices that universities and students could afford—much like lower-cost and easier-to-use film and video technologies (e.g., Super 8 film) opened the door for individuals wishing to work in those mediums. Unity, through a series of clever and strategic moves driven by an underlying ideology to make game creation affordable and accessible, has emerged as the leader in 3-D and 2-D game engines. They offer the cheapest and easiest-to-use tools while supporting cross-platform development between PCs and Macs, as well as emerging technologies such as iOS, Android, and Oculus Rift. This makes it easier for nonprogrammers, be they students or artists, to create games across a wide range of platforms. Today, Unity has been adopted as a standard in mainstream games, along with Unreal, Source (launched with *Counter-Strike: Source*, a game that had itself originally been a mod), and CRYENGINE, to name a few.

"Techtonic" Shifts: Changing Platforms

One of the biggest drivers of innovation in the indie ecosystem has been the shifting terrain of new platforms. The biggest game-changer has been the iPhone. Launched in 2007, the year that IndieCade hosted its first Showcase at E3, the impact of the iOS Software Development Kit was felt immediately; by 2009, IndieCade was awash in iOS submissions. The relative ease of publishing in the App Store, the irresistible creative allure of its unique affordances (such as an accelerometer and GPS), and its eventual integration with Unity resulted in a recipe for indie success. Because it was not exclusively a gaming device, iOS also brought indies to new audiences. Additionally, Apple's direct publishing model was advantageous to developers as it removed the publisher-as-gatekeeper model. As of this writing, games continue to be the top category in the iOS App Store, and Apple has (finally) jumped into the pool with its Apple Arcade subscription service, taking a role in both publishing and funding games. The chart at left below provides a snapshot. While games are on a continued growth curve, with revenue more than doubling between 2012 and 2019, the bulk of that growth is in mobile, while console and PC gaming are on a steady decline.

The second major game-changer in terms of platforms was the rebirth of virtual reality (VR). VR's prior business cycles in the 1980s and 1990s had failed to produce any traction in terms of widespread adoption. At that point in time, the hardware was too expensive and the interface too clunky. One of the things that sets apart the current growth in VR (illustrated by the center chart below) is that it is largely fueled by a shift in focus toward content.

In this regard, Oculus Rift has led the charge by taking steps to assure early adoption by content creators on its platforms, including providing actual funds to developers. This has included partnering with IndieCade for both indie evangelization and content creation and partnering with Unity to make VR content creation more accessible. This has also fed VR's mainstream adoption as developers who cut their teeth on Unity for the early Oculus Rift development kits later published games on Sony VR and other proprietary platforms. New platforms also provide indie developers—who tend to be early adopters—with new creative playgrounds, in addition to diversifying audiences, funding, and publishing models.

Gesture-based and embodied interfaces have also been a major trend. Indies, who were already experimenting with machine vision (video-based motion capture), immediately jumped on Xbox Kinect and PlayStation Move controllers when they came out in 2010. Gesture interfaces such as Leap Motion also became an integral part of VR. Going back to IndieCade's first Festival, which featured Julian Oliver's *levelHead*, indies have consistently been ahead of the curve on mixed and augmented reality (AR), and AR continues to be an area of innovation.

Additionally, the growing affordability and accessibility of Arduino (led mostly by artists) and other types of embedded microcontrollers have fueled innovation in tactile experiences and alternative controllers. Keeping up with these developments can be dizzying, but somehow indies manage to lead the zeitgeist with each new technology that emerges. This is in part because, like art-based experimentation, play-driven innovation eschews traditional problem-solving approaches in favor of an experiential focus. Furthermore, indies—less risk-averse due to a flagrant disregard for marketing agendas—have consistently been ahead-of-market with new developments like pervasive games, VR, and AR.

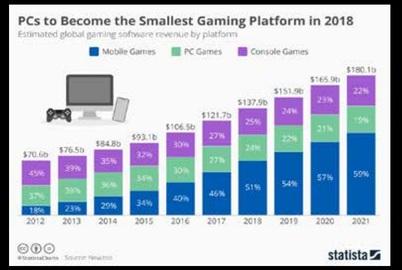
The microcontroller revolution has also been instrumental in what is perhaps the largest and most overlooked sector of the game industry: the explosion in immersive site-based experiences, including immersive theatre and escape rooms. The latter have seen an astronomical jump in popularity. The chart below by Room Escape Artists, one of the few groups that have been tracking this phenomenon, shows growth in escape rooms in the US from zero in 2014 to roughly 1,800 (Spira 2018).

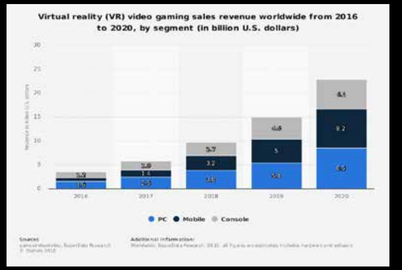
A major factor here is the resurgence of the so-called *Experience Economy* (Pine & Gilmore 1999). The growth of site-specific and immersive experiences also calls into question the role and relevancy of publishers, and generates the need for an entirely new set of funding, economic, and revenue models.

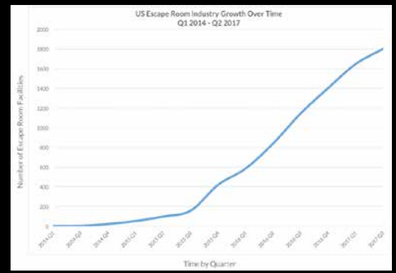
IndieNomics: Publishing & Funding Models

When IndieCade was first envisioned in 2005, publishing deals for indie games were exceptionally rare. The internet was probably the biggest factor in altering this landscape; by 2007, online self-publishing was increasingly common for PC and browser-based games. Since the launch of Steam in 2003, there has been an explosion of self-publishing portals, from Kongregate (2006) to itch.io (2013), as well as mobile platforms like iOS and Android, which use self-publishing models. Many developers have since opted for mobile distribution, which eliminates publisher gatekeeping entirely.

Concerns about piracy meant console companies were consistently behind the curve with online distribution. Microsoft Xbox was the first to the table, launching its Xbox Live Arcade (aka XBLA) and PC-compatible XNA Framework in 2004, followed by PlayStation Network (PSN) in 2006. Online publishing was a game-changer for publishers across all platforms because it meant they could support lower-budget, shorter-play games and take more risks. This is not unlike the function of B movies in Hollywood—low-budget films slated as the opening act in a double-feature or targeted to a matinée crowd comprised mostly of women and children (think casual games). Like downloadable games, online games provided low investment in terms of production and advertising and a possible high payoff due to large potential audiences.







The Indie Ecosystem: Contributing Factors (Con't)

In 2006, as planning for IndieCade was underway, a small team of students from the University of Southern California (USC), aided by professor Tracy Fullerton, landed an unprecedented three-game deal with Sony to form thatgamecompany. This meant they could pursue their artistic aims, reach a broad audience, and potentially have financial success. Although Sony's deal with thatgamecompany is a rare example of a new, untested studio landing a contract with a major publisher, it created an aspiration for many game developers to make a living doing what they loved.

Thatgamecompany's arrangement with Sony was an outlier. Indeed, by definition, indie games must be independently funded. In the US, it has been nigh impossible for indie developers to get the kind of venture funding that is often lavished on other types of tech companies. But as far back as the 1990s, regions with art support infrastructures like the United Kingdom and Australia began supporting artgames and documentary games. Studios like pervasive game pioneers Blast Theory in Britain and Tale of Tales in Belgium (creators of *The Path*) were able to sustain themselves at least in part through government funding. The Australian government was among the first to support artgame exhibitions and edgy art projects like 2004's *Escape from Woomera*, a documentary game about a detention center for illegal immigrants (until controversy later erupted over its government-funded, anti-government message). In the more culturally conservative US, private foundations like the MacArthur and Knight Foundations have played a major role in supporting documentary and activist games, including the Games for Change Festival. Eventually, the US federal government came on board by funding "serious" games through the National Science Foundation, documentary games through the National Endowment for the Humanities, and artgames through the National Endowment for the Arts, a move that also connects back to the Public Perception and Policy dimension of the ecosystem.

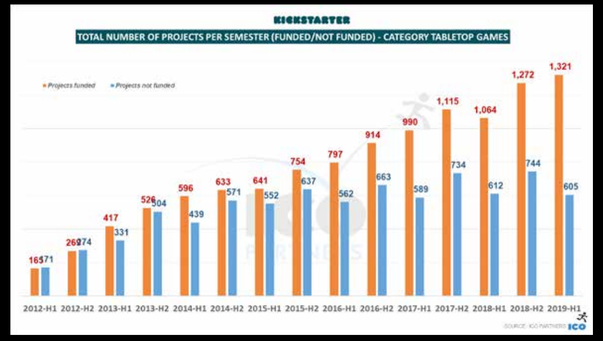
Perhaps the biggest game-changer in the funding landscape has been the emergence of crowdfunding websites. After the launch of Kickstarter in 2009, games quickly became its largest funding category, opening up a new funding avenue for indie developers. Major success stories on the Kickstarter platform include *Double Fine Adventure*, which raised $3,336,371 (nearly 10 times its original goal of $400,000), and alternate reality game (ARG) pioneer Elan Lee and Matthew Inman's wildly successful *Exploding Kittens* card game, which raised $8,782,571 to become Kickstarter's most successful campaign of all time. While these examples are exceptions—both developers have strong fan bases and long track records of success with other games—they created similar hopes to those surrounding thatgamecompany's Sony deal. While crowdfunding sites help with marketing and building a fan base, some have argued that the time-consuming nature of this approach mimics self-inflicted labor abuse found within the mainstream industry (O'Donnell 2014).

The charts at right (Bideaux 2019b) show a few interesting trends. First, note the total increase of video games funding from 2009 to 2018: this represents a 44-fold growth rate. At the same time, the low success rates are clearly out of sync with what I will call the "rate of aspiration," which has risen at a much more rapid rate than actual funding. While game funding campaigns on Kickstarter seem to have peaked around 2015, the number of projects that actually get funded seems to have plateaued in 2013 and remained fairly steady every year since. The dissonance in this aspirational arc maps to talk of the so-called "indiepocalypse," and suggests that, while the number of projects funded had not changed, the relative success rate has decreased due to a major bump in submissions. Notably, a comparable chart shows that board games have a much higher rate of success, and have been undergoing a steady rise over the same period (Bideaux 2019b).

Increasingly, indie gamemakers (including artists) are finding a path to sustainability through diversification of income sources. This includes a combination of contract work (sometimes with one another), grants, crowdfunding, self-publishing revenue, part- or full-time teaching, day jobs, and large contracts or licensing deals with mainstream publishers. Although far less common, an example of the latter is the *King's Quest* reboot by The Odd Gentlemen, creators of *The Misadventures of P.B. Winterbottom*. By leveraging a variety of revenue streams, it has become at least somewhat feasible for indie developers to maintain sustainable careers—although the financial status of indies remains precarious.

In just the period this book was being completed, a shift occurred in which some new players not previously associated with video game funding emerged, including Google and Apple. The case of Apple is particularly interesting because, although games have been the largest category on iOS, the launch of Apple Arcade in 2019 marked a notable shift in that Apple actually began funding games published on its platform.

While a handful of smaller venture groups, such as The Indie Fund, have sprung up, games have yet to build the kind of "angel investor" culture that has enabled the growth of indie films, which are often funded by doctors, entrepreneurs, and small business owners through increments as small as $5,000 (Sullivan 2016).



Creator Communities

Although often downplayed in the news media, the communal ethos of the indie scene is attributable, at least in part, to economic precarity (Parker 2013; Whitson 2013; O'Donnell 2014; Keogh 2015; Parker, Whitson, and Simon 2017). Some scholars point out that "emancipation" from hegemonic capitalist structures can lead to a culture of self-exploitive labor; this is played out in documentary films opting for the lone-hero narrative (Pajot and Swirsky 2012; O'Donnell 2014). Many developers have found that joining forces is a good strategy for countering the isolation of independence. Underpinning all game creator communities is an ethos of "autodidactic communalism" (Pearce 1997) in which creators share information and knowledge to support one another. This is the antithesis of the highly competitive, corporate ethos of intellectual property.

On one end of this spectrum are coworking spaces and collectives, which are prevalent worldwide and often produce high concentrations of noteworthy work. Such communities and collectives often have ties to academia. For instance, USC's Game Innovation Lab, founded in 2004, evolved out of the USC Game Design Community of 2002, one of the earliest indie game communities in Los Angeles. The community, and later the lab, hosted early play events like new games days, Surrealist game days, collegiate eSports events between university teams, and Playthink salons that invited industry guests to discuss deconstructions of games by students. New York University's Game Center also sprouted its own community, in turn hosting an incubator, weekly playtest sessions that included local indies, and artist residencies.

Others operate independently but may have loose ties to universities. Glitch City is a collective of independent artists and gamemakers that lunched in Culver City, California, the home (at the time) of IndieCade. The collective is home to a number of USC grads, and has produced multiple award-winning and acclaimed works including *Skulls of the Shogun*, *Quadrilateral Cowboy*, *Donut County*, *Infinite O*, and *Threes!* Others include Boston's Indie Game Collective, Austin Game House—which was featured in the film *GameLoading: Rise of the Indies* (Brady and Francois 2015)—Portland Indie Games Squad (PIGSquad), Gamma Space in Toronto (formerly Bento Miso), and All Day Breakfast in Melbourne.

Wider community hubs have included the Hand Eye Society, Dames Making Games in Toronto, and Montreal's Mount Royal Game Society, which have influenced game discourse and creation, especially around issues of inclusiveness. The Canadian-based Feminists in Games, a community of gamemakers and researchers, publishes the peer-review journal *Loading...*, which featured a 2013 special edition on indie games (Simon 2013). The arts-friendlier climate of Europe has produced venues and groups such as the Dutch Game Garden, Copenhagen Game Collective (whose affiliated studios produced *B.U.T.T.O.N.*, *Sportsfriends*, and *Where is my Heart?*) and Watershed, a UK hub that pairs academics and artists to create new works (Crogan 2015). In the US, artist residency programs such as New York's Eyebeam have also provided infrastructure and support. These collectives share resources and labor, and members often work on one another's projects. Even for developers who work alone, collectives can create a sense of camaraderie and support, and provide feedback and playtesting. On a practical level, shared space is also a way to lower overhead costs and accommodate the cyclical nature of game development.

On the other end of the spectrum is the game jam, an ad hoc, time-compressed creators' event where provisional teams form to build game prototypes. Game jams have surfaced as a kind of flash incubator for new ideas, games, and teams as they throw people together in a highly concentrated time frame—from a single day to a couple of weeks—usually with constrained goals. Game jams can be used to brainstorm ideas around a specific topic, bring together people from different backgrounds and disciplines, or introduce developers to a new platform. They sometimes include awards ranging from money to hardware and software to exhibition, and many games that originated in this fashion have made it to the festival circuit.

Game jams exist at a variety of scales, but the largest one internationally is the Global Game Jam, which has existed for about as long as IndieCade. It brings together tens of thousands of people annually from hundreds of locations across the globe for a weekend of intensive game creation. The jam featured in the documentary *Game Jam: The Movie*, which premiered at IndieCade, included as its reward a trip to IndieCade for the jam winners to show their games (Conditt and Tremp 2018).

Festivals, Exhibitions, and Awards

Festivals, exhibitions, and awards have played an increasingly important role in the indie game ecosystem over the past decade. Loosely speaking, there are three different types, which fulfill distinct but synergistic functions.

Industry-embedded exhibitions and awards are juried or curated and typically take place within a larger industry-focused event. The Game Developers Conference's Independent Game Festival (IGF) typifies this category. Founded in 1999, the IGF gives indies an opportunity to be seen by both developers and publishers and to win a prestigious award from the mainstream game development community. Interestingly, over its twenty-year history, IGF games have increasingly found themselves winning mainstream Game Developers Choice Awards, which were previously given only to Triple-A games produced by major publishers. Other industry examples include D.I.C.E. (a mainstream award that includes both indie and mainstream games). The Indie MEGABOOTH, which presents at both industry and fan events such as PAX East, is kind of a hybrid of the ecosystem factors of Community and Events, serving not only as a cultural intermediary, but also as an aggregator to create an economy of scale (Parker, Whitson, and Simon 2017). These events typically have a high ticket price and often require professional credentials to attend.

This type of event has also become embedded within broader media festivals and awards. The Slamdance Guerilla Gamemaker Competition, for example, was briefly part of the Slamdance alternative film festival. Fantastic Arcade was originally launched within Fantastic Fest, an Austin-based film festival. The UK's BAFTA Awards—Britain's media-wide equivalent to the Oscars—also includes games in its purview. Sheffield Docfest, a documentary film festival, also has a special section devoted to interactive works, many of which can be classified as games. These events provide an on-ramp to the mainstream and bring awards and press, as well as exposure to publishing and employment opportunities.

Art exhibitions are typically curated in a museum, gallery, or alternative art space by an individual or team with cachet in the art world. These tend to target a fine-arts audience—one that might not be familiar with video games. Often, art exhibitions focus on artgames that are not sellable in the traditional sense and leverage funding through grants or corporate philanthropy to show these works. Early examples include 2000's SHIFT-CTRL: Computers, Games, and Art at the University of California, Irvine (curated by Antoinette LaFarge and Robert Nideffer); the Barbican's Game On and Game On 2.0, which include both mainstream and indie games; and Trigger, an Australian exhibition of artgames. Key exhibits include the Kokoromi Collective's GAMMA events (short for "Games as Art"), launched in 2006 (Zebrowski-Rubin 2010); NYU's annual *No Quarter* exhibitions, which began in 2010; and Babycastles's experimental game exhibition space in New York. IndieCade has also co-curated or co-located with several exhibitions at the Museum of the Moving Image in New York in conjunction with IndieCade East, including 2014's long-running *Indie Essentials: 25 Must-Play Video Games*.

Stand-alone indie game festivals such as IndieCade bridge art and industry by bringing developers directly to audiences, thus spanning the gap between commercial viability and cultural cachet. Festivals of this sort are typically juried and open to the public, unlike industry-embedded events. These festivals can last for a week or a weekend, focus exclusively on games and interactive media, and are untethered to any other type of event.

The mid-2000s saw an explosion of stand-alone game festivals, IndieCade among them. They include ALT+CTRL at the University of California, Irvine in 2004, a one-off festival that I co-organized with Robert Nideffer and Antoinette LaFarge; Games for Change, devoted to activist games, also in 2004; Come Out & Play, a New York-based festival devoted to physical games that launched in 2006; the UK's variant, the Hide & Seek Festival, launched in 2008; and A MAZE. in Berlin, also founded in 2008. Others include BostonFIG (founded 2012); Playpublik, a physical and outdoor game festival in Berlin (founded 2012); Vector Festival in Canada (founded 2013); and the Smithsonian American Art Museum's SAAM Arcade in Washington, DC (founded 2014). Some of these could also be classified as Art Exhibits due to their venues.

Although these three types of exhibitions have distinct cultural roles, it's important to note their mutual influence. Artgames were rarely seen at the Independent Game Festival (IGF) during its first few years, but in 2009, IGF introduced the Nuovo Award to honor quirky, less-commercial indie games and artgames. Over the past few years, games originating at the Independent Game Festival have won awards at the more mainstream Game Developers Choice Awards, advancing the overall visibility of indie games and showing the fluidity of their independence. Other fringe events have similarly blurred the boundaries between more commercial and autonomous events, including alternative game parties such as the Wild/Mild Rumpus event series, Venus Patrol, and alt.ctrl.GDC, launched by John Poulson, a showcase of alternative controllers that takes place as part of the Game Developers Conference.

The influence of festivals and exhibitions has been largely underreported by journalists and understudied by academics. The oversight by game scholars—even those studying indie games—is somewhat baffling since academics often organize these events. The notable exceptions are Parker et al.'s study of the Indie MEGABOOTH (Parker, Whitson, and Simon 2017), and Juul's *Handmade Pixels* (2019), which actually uses festival recognition as a lens for analyzing and defining the properties of indie games. This oversight is due in part to the difficulty of both narrating and quantifying the role and impact of such festivals and exhibitions, the lack of a comprehensive method for assessing them, as well as a lack of both funding and impetus.

Festivals have important characteristics, filling discovery, vetting, and inspirational roles. They are tastemakers that raise the bar on both quality and innovation; provide motivation and spur creativity; serve a market-testing function, reducing risk for publishers who can quickly assess if a game has traction based on festival queues; and bring together individuals and communities to network, collaborate, critique, share, and learn. On a larger scale, festivals, particularly IndieCade, have become a fulcrum for all other components of the indie ecosystem.

Importantly, the rise of indie games cannot be attributed to any one of these factors, but rather, to the complex circuits of interdependencies among them.