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California State University Monterey Bay

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And

How a 2019 Indie-Game Developer Can Meet It

Kailynn Haskell-Harbert

MPA 475

Professor Sammons

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Introduction

The rise of videogame popularity has become apparent over the last twenty years. In 2008 the videogame market withstood economic crises, continuing to grow at a time when tech retailers such as Circuit City were declaring bankruptcy (Wesley 2). Gaming has even surpassed the television market; according to a 2018 report from the investment firm Oppenheimer Funds, “TV revenue fell by 8% last year – the gaming sector’s sales are increasing at an annual rate of 10.7%. Some of the greatest growth is coming from relatively new markets, like China, where game sales are climbing 14% per year” (“Investing”). With the increasing amount of investment into the videogame industry, independent videogame developers, otherwise known as indie developers, are finding increasing success in the videogame market. Even with competition from large game developers, which I will refer to as AAA studios, the market for indie-games is continuing to grow.

Surprisingly, the technologies that make this competition possible are accessible to everyone, with minimal investment required. To make a game in 2019, all that is needed is a computer and an internet connection. In 2015 relative to American households, “78 percent had a desktop or laptop, 75 percent had a handheld computer such as a smartphone or other handheld wireless computer, and 77 percent had a broadband Internet subscription” (Ryan and Lewis). Though these tools are widely accessible to individuals, the development of a game is a highly collaborative process in most cases. For this discussion I address different aspects of development in relation to four departments. The first is the creative department, which contributes the gameplay system concepts and story elements such as scripts, plot, and voice

acting/directing. The second is the audio department, which contributes all aspects of sound in the game: sound effects, music, and sound modification. The third is the visual department, which contributes all visual assets for the game, such as concept art, sprites, backgrounds, and animations. The fourth is the programming department, which implements all of the assets for the game as well as creates the game's systems from the concepts created.

In this paper I will discuss the process of creating an indie-game from the audio departments perspective, and the advantages modern indie-game developers have over 1990s JRPG, (Japanese Role-Playing Game) developers. To do this I will compare contemporary game development practices in relation to the JRPGs *Lunar: Silver Star Story* and *Final Fantasy VII*. I propose that modern indie developers have the capability to create a game that would be considered AAA studio quality by 1999 American standards in a development timeframe of three years. To explore this proposition, I will discuss relevant history, relevant technology, specific modern tools in contrast with what was available from 1999, and my own experience in indie-game development relevant to each of these topics.

What is an “Indie-Game”?

The term indie-game has no uniform definition; so for purpose of argument, when I use the term indie-game I am specifically referring to a game whose development adheres to at least two of the following three qualities during development through its initial release: financial independence, creative independence, and publisher independence (Garda).

For this paper, the term “financial independence” implies that the developers of the game are not receiving any support from outside entities that directly support game development. This includes assets, materials, space, or any monetary support. So, for example, if developers are living at their parents’ house because they did not have a place to live during the development of their game, they would still fall under financially independent as this support was not directly aimed at the game, but rather the wellbeing of the developer.

Creative independence implies that the developers have full control over the creative decisions over their game. They may take suggestions from outside entities, but only if it is completely voluntary. In the example in the previous definition, if the developers were living at their parents house, and their parents were exchanging shelter for creative control over the developers game, the developers would not be creatively independent.

Publisher independence refers to the lack of a publisher. This is a little more ambiguous than one might think, as publishers can get involved after a game is either fully or mostly completed, and, thus, having little to no effect on the creative or financial aspects of the game. To elaborate on the topic of limited publisher involvement I want to cite the example of the indie-game *Bastion*, which was designed and created by Supergiant Games and published by Warner Bros. Interactive Entertainment. Supergiant collaborated with a publisher so they could be allowed to distribute on the Xbox Live Arcade once the game was released, not to get assistance in the production of the game. As one of *Bastion*’s developers put it:

I don't know how to measure "indie" but I can confirm that we self-funded *Bastion* out of the living room of a house in San Jose. We wanted the game to be on console as well

as PC and for that reason we needed a publisher -- all XBLA (Xbox Live Arcade) games are published either by Microsoft or a third party, and we decided to go with Warner Bros. because they were the most willing to let us continue development without interruption, and finish the game on our own terms. We're an independent studio. Whether we're "indie" I guess is for other people to decide. (Kasavin)

In short, the publisher had little to no involvement in the games' development but was used solely as a means to get access to the XBLA. Despite the publisher's limited involvement, I would classify *Bastion* as having publisher dependence, as they got a publisher before the game had been released. In other instances, publishers get involved after a game has been released, which is not an uncommon occurrence. The publisher may provide support, "to port the product to another platform or introduce it to the traditional retail process" (Garda). So if a publisher gets involved after a game's release and, has no involvement during development, that finished game would be considered to have publisher independence. However, the involvement of a publisher before a game's full release would establish publisher dependence.

A clear universal definition of the term indie-game does not exist, but using these definitions should better quantify the term for argument's sake. It should be assumed that if a game does not meet two of the financial independence, creative independence, and publisher independence qualifications, it is not considered an indie-game. So now, let us quantify AAA game perception by 1999 standards and discuss how I attempt to meet those standards with modern technology.

AAA Quality: Perception and Brief History

AAA game standards have been changing rapidly with the commercial success and technological progression that has taken place over the history of videogames. With this rapid evolution of consumer standards, it is important to choose a single point in time to define a AAA game. Choosing a single point allows us to more clearly quantify the standards of AAA game, so for my argument of an indie-game studio being capable of AAA quality in 2019, we will define AAA quality by 1999 standards with a game called *Lunar: The Silver Star Story*, while acknowledging the pinnacle of consumer AAA quality in *Final Fantasy VIII*.

During the 1990s the game developer environment was in a state of rapid evolution: personal computers were being created with specific components to accommodate video games; the Sony PlayStation sold over 85 million units (Collins 65); and the world was starting to notice that videogames were not a passing fad. During this decade, technologies improved, and gaming made the shift from the arcades to the home (Collins 38). Japanese companies were finding major success in the gaming industry, selling millions of consoles and games. With the steady increase in popularity, the resources put into game development increased, and Japanese game developers sought to tap into the international marketplace.

The first *Final Fantasy* was released in the United States in 1990, and with it, JRPGs began to find an international audience. By 1994 *Final Fantasy VI* was released to extreme commercial success in Japan and lackluster success overseas (“Final Fantasy III”). In 1997 *Final*

Final Fantasy VII, created by a staff of approximately 100 people (Leone), was released to critical and commercial success overseas, selling over one million copies in North America (Low). The *Final Fantasy* franchise went from having a staff estimated at around 14 people for *Final Fantasy IV* (Asano) to close to 180 people with a budget of around \$16 million US dollars, not adjusted for inflation, for *Final Fantasy VIII* (Hillier). While the *Final Fantasy* series was pushing the envelope with realistic movement and 3D animation, another studio was still refining the 2D style that had been used for over a decade.

At the studios Game Arts, Japan Art Media, and Kadokawa Games, people were hard at work to release *Lunar: Silver Star Story Complete* (which I will refer to as *Lunar* going forward). The game had been released for the gaming console Sega Saturn as *Lunar: Silver Star Story*, but after the release of the PlayStation, developers wanted to remake the game with all of the new technologies they had available with the new console (BoricuaRetroGamer Kasumi77). The result was a game with a little less than an hour of nearly fully hand-drawn animated sequences, a high-quality soundtrack, and a re-written second half of the game. For the sake of this discussion, *Lunar* represents the minimum requirements for the 1999 AAA standard because of the deliberate developer goal of remastering their game to create a quality game that met the consumer AAA standards brought about by the PlayStation. Though the game itself is far less graphically glamorous than *Final Fantasy VIII*, it is still considered by many to be a classic AAA JRPG.

These games are the image of AAA studio quality in 1999, as such, they will be used as the standard for AAA 1999 game quality going forward. With current technology, the indie developer can reach that standard of quality in the comfort of their own home.

Technology Now and Then

In 1999 the demand for personal computers was very apparent. Following a trend line in a survey done in a national census, it is reasonable to say that roughly 47% of American households had a personal computer (Ryan and Lewis). In this growing marketplace for computers, Microsoft and Apple were fighting over the consumer market. While computer technology continued to improve, AAA game developers were innovating to make use of the technology available in their games. This new technology often came in the form of specialized equipment or software; *Final Fantasy VIII's* motion capture technology and virtual model software were not marketed towards consumers. But in 2015, more than 80% of Americans had computers in their households (Ryan and Lewis), and most of those computers are significantly more powerful than the computers *Final Fantasy VIII* were made on. Through the modern development of cheap powerful hardware and software, computers capable of making AAA quality videogames are becoming increasingly accessible.

The hardware that is available to the modern indie-game developer is more than enough to create a polished product. Computers now offer hard drives with terabytes of space, solid state drive technology, powerful processors and graphics cards, and specialized ports to interact with external hardware, such as preamplifiers, drawing tablets, or video capture cards. The hardware that a game developer needs is available to them at a reasonable consumer price, and much of the software required to create a game is available and affordable as well.

Computer processing power has grown exponentially for over forty years (Roser), and that processing power makes it possible to create complex videogame systems with most modern computers. Software like Audacity, Pro Tools Unreal, Unity, Photoshop, Microsoft Paint, and Steam all make game development possible. These tools range in cost and functionality. Audacity is a digital audio workstation (DAW) that allows audio recording, that anyone can download for free, while Pro Tools is an expensive DAW that allows for much more versatility. Unreal and Unity are both free game engines that anyone can use for their game development with the understanding that if a game sells a certain amount a cost is incurred; in the case of Unreal in its 2019 terms of service, "a 5% royalty on that amount (gross revenue from game sales) after the first \$3,000 per game per calendar quarter" ("UNREAL"). Photoshop is an expensive software that allows for artists to create visual art with computers, allowing creation of game assets, while Microsoft Paint fulfills the same purpose but with less versatility. Lastly, Steam is a massive online market-place where anyone can post games to sell. It is the most used game market place on personal computers (PCs), which are also the largest videogame market ("2018 Video Game Industry Statistics"). This digital distribution platform allows for games to reach the PC gaming market with ease, and with the aid of social interaction or marketing through the internet, an indie-game like *Stardew Valley* can make millions of dollars (Chan).

This mass success would not be possible if this hardware and software were not so accessible. The accessibility of all these factors is a direct result of affordability and availability. The falling prices of powerful technology have resulted in more people having access to that technology. In 1998, the iconic iMac G3 computer sold for roughly \$1,889 adjusted for inflation

(Newman). That \$1,889 price tag for a baseline computer has dropped to \$100 or lower in 2019. At the time of writing this paper, a certified refurbished Dell Optiplex is available for \$87 (Dell Optiplex), and it has significantly more computing ability than the computers in 1999. Though the market for computers has changed drastically since 1999, much of the technology used in modern computers are the same, hard drives, processors RAM, etc.

To completely and properly quantify the dramatic increase of technological capability, one would need to delve into each facet of what makes a computer function, however for the sake of this discussion I will broadly compare the processors of the two computers mentioned to give a general idea of technological advancement in relation to computer processing speed. Even when narrowing down the comparison to a processor, I can't accurately measure exactly how much faster the Dell Optiplex is, but the simplest measurement that I can provide is a comparison in clock speed. Generally, processors are responsible for the transmission speed of electronic devices, which are measured in Hz. So for example, a processor that is capable of 1MHz of transmission means it is capable of one million cycles per second, and a 1 GHz processor is capable of one billion cycles per second. More Hz transmission in a processor generally translates to a faster computer. The 1998 iMacG3 has a 233 MHz processor (Apple iMacG3, Creative) and the Optiplex has a 1.8 GHz processor (Dell Optiplex). So the Optiplex's processor runs, very roughly, 7 times faster using this measurement, at a fraction of the cost.

Along with better computers, separate hardware is available and can be used with a standard quality output cable such as USB, which was only just starting to become standard in 1999 (Buchanan). Lastly, the internet allows for anyone to share anything with anyone that has

an internet connection; so free software can be accessed by game developers, which then allowed them to create projects.

Creating a 1999 AAA Title in 2019

Though it does not relate to every indie-game developer, I am currently experiencing what it is like to be developing an indie-game, which has given me valuable first-hand information in regard to 2015 indie-game development. At the time of writing this essay, I am the creative director and lead sound designer at the self-started game development company I co-founded, Skaidan, which includes two other developers. We are currently working on an indie-game entitled *Five Seasons: Val*, a JRPG that adheres to many of the gameplay elements of *Lunar* and *Final Fantasy VIII*. Our development team is currently three people: one artist, one programmer, and one sound designer, though each of us will assist with other people's work if we are capable and able. Going forward, I will relay my personal experience to my proposition that a small indie-game development team can create something of 1999 AAA quality. To properly draw parallels to my proposition, I will discuss our team's capabilities, budget, workflow, challenges, and aesthetic values.

Our team consists of two undergraduate college students, one of which is me, and one freelance visual artist. Our programmer, Skylor Hager, is studying programming at UC Santa Cruz while working on this project. Our lead visual artist, Jordan Williams, is a freelance artist taking community college classes. I am the creative director and lead sound designer and am

currently studying music at CSU Monterey Bay. This group is comprised of specialists, and because of that we can create a high-quality product while doing what we are most familiar with.

The only money we have ever received for game development was a \$500 grant that my university provided to further my research in this endeavor. Because of a lack of funding, we are only able to create game assets with the software and hardware that we already have available; for us, that is Unreal Engine (Unreal) for programming, Photoshop for visual asset creation, Pro Tools for audio asset creation, our relevant external hardware, and our computers. It is worth noting that I will not associate the costs of materials that we bought prior to work on the game as game costs; this is because I consider them under the category of personal expense. This means that any software or hardware that each party bought prior to knowing that they were going to design a game does not explicitly count toward the game's production costs. For example, my computer was a pre-existing personal expense that I used for my day-to-day life prior to game development. Though my computer is very necessary to create a game, it is also very necessary to function as a student, so I would consider it an education or entertainment expense more than a game development expense. This principal applies to anything that members of our development team are using for game development that they did not explicitly purchase for the game's development.

Unlike AAA games, Skaidan came together to create a product out of passion and acknowledgement that we would be acting at a financial loss. It all started with a casual conversation I had with the now lead programmer Skylor Hager. We both had a tremendous amount of passion for videogames, and we decided we wanted to make one ourselves. We

both knew Williams and were familiar with his work, and after he agreed to come onboard we concluded that with our specialized skills we could create a quality game in the modern indie-game market. When starting this project, we started with ideas. We met in person to discuss possible game systems, genre, style, and many other things. After we all had a general idea of what we wanted the game to look like, Hager programmed it using Unreal; Williams created the visuals; and I created the world, story, and sound. It is impossible to overstate how collaborative this process was; early on we were communicating with each other about every single major decision in the design of the game. We all had a say in the creative aspects of each other's work, so I can't rightly say that the music or story is my isolated contribution. We all had a hand in the creation of every aspect of the game.

When we wanted to create something, our team had meetings. We threw ideas at each other and didn't stop until we reached an idea we all liked. We met at least once a week, sometimes more, for roughly 6 hours to show each other what we had done in that time. We also addressed and solved problems that had arisen during that week's workload. We worked with a system of deadlines, and collaborated on every design with a significant amount additional of weight given to the perspective of each specialist. After we came to a consensus on what must be done, we set a deadline for asset submissions and implementation begins after all the assets are submitted. We were geographically dispersed and had all of our meetings and submissions online. This was probably the biggest asset that we had: the ability to collaborate consistently no matter the distance. Even though we were finding much success in the development of our game, it came with challenges.

Not having money to support ourselves made putting time into this project very difficult. The grant given to me from my university allowed us to continue working through the academic semester and keep to our plans and ambitions. We all had some way to provide for ourselves while spending countless hours on this project. Because this is a passion project with no plausible sign of financial return, we worked with what we had and spent as little money as possible on game development. With the assistance of my university I was allowed to get software that made the creation of a fully orchestrated soundtrack possible, but other than that, every tool to help us develop our game was purchased from our personal funds.

We were also dedicating our time to the study of our respective specialties, so much of what we were doing was improvised. None of us had ever worked on a videogame project of this scale before. Because of this, it was a challenge to anticipate the problems that would occur, and we addressed issues more reactively, as opposed to anticipating them, which cost us a lot of valuable time. For instance, animation had been a large problem for our game. Both Hager and I valued animation in our product tremendously, but Williams had little experience with animation and struggled to create quality products in a timely fashion. This problem caused us to redesign major aspects of the game multiple times, which was not time efficient but led to some unique ideas as a result. One of the mantras I shared with the team was to lean on the “less is more” approach, meaning that if there was a way to get the same impact with less resources, go that direction. In this instance, the “less is more” approach came in the form of Williams learning animation techniques that minimized his workload while not sacrificing quality. Our initial instinct was to bring an additional animator onboard, but that proved not to be sustainable. In the end, the lesson was understanding how much time and work needed to

be put into animation, and even with that new-found understanding we still tested the limits of what was possible. We trusted each other, and that trust continued to push us forward. Our trust helped us not be afraid of setbacks or mistakes, though they were avoided as much as possible. Williams's challenge with animation was closely related to a challenge that all Skaidan members dealt with: going outside of our specialties. For example, Hager was doing level design and I was writing scripts. When we went outside of our specialties, we needed to put in significantly more time to create a quality product because of the mistakes made from inexperience. I can only speak for myself, but I felt inadequate and frustrated when I created something I knew was not to our game's standard. I needed to research and practice until the end product had met our team's standards, which was very tedious and difficult. This challenge persisted, but it was necessary to create the game we wanted to create. These challenges were not easy to work with, and even though they existed, we still were, and continue to be, capable of creating a 1999 AAA JRPG title.

Meeting the Standard

After a few months into game development it became obvious how much work needed to go into this project to get the quality we wanted. It was clear that we could not create the realistic 3D visual images that *Final Fantasy VIII* featured, but we could reach the 2D visual aesthetic of *Lunar*. We also could not create the huge amounts of game assets that *Final Fantasy VIII* did, but we could create the amount of assets featured in *Lunar*. Lastly, we found that the sound design in *Final Fantasy VIII* was not only doable, but with modern technology we could

create more realistic sounding music and sound design. We could also create in-game systems as complex as *Final Fantasy VIII*.

The visuals of our game, *Five Seasons: Val*, were originally going to be 3D, but after some experimentation, our team found the amount of resources needed to put that in our game was beyond what we were willing to do. From a programming perspective, we would have had to incorporate level design and visual assets that took much more work to create and bug test. Williams also had little experience creating 3D visuals, so he would have had to spend a considerable amount of time learning how to create 3D assets. Hager struggled to program systems and create hit boxes due to a lack of time. Though we maintained some of the 3D logic that had already been programmed, we reverted to a primary 2D style.

Next came visual asset creation for the game that had been programmed. Through an immense amount of experimentation, we settled on a visual aesthetic. The result was informed mostly by William's style and maximizing quality assets with minimum time put in. We knew that we had to stylistically make our lack of resources as non-apparent as possible. We took inspiration from *Lunar's* visuals, which consist mostly of sprites that are assembled on a 2D environment from an isometric perspective. In game development all visual assets are created on the basis of where the player perspective, or camera, is. The camera determines the angles that visual assets need to be drawn from, and the dimensions determine if 3D models are necessary/usable. The only major difference between our game's visual implementation systems and that of *Lunar* is that our game was created in a 3D environment, so we are capable of using 3D assets if we wanted to. This allowed us to use stock 3D effects and have the option to create 3D assets if we decided that is necessary. With modern technology, our game could

meet *Lunar*'s quality 2D aesthetic while also being able to make use of 3D visuals. Though the perception of quality is based on individual taste, I will try to quantify our visual asset quality in comparison to *Lunar*.



Figure 1

Lunar: The Silver Star Story Screenshot

As seen in Fig. 1, the sprites in *Lunar* are not very detailed but are extremely colorful. *Lunar* is made in a visual style called "pixel art" which minimizes an image's size and detail while still producing functional and easily identifiable images. This art style is closely associated with older videogames and is often replicated in contemporary game development, even though it is now possible to create much more detailed images without compromise. This games' pixel art

serves its purpose beautifully within the confines of the game. Comparing Fig. 1 to Fig. 2, it is clear that our game shares some visual aesthetics with *Lunar* and is similar enough to make an intuitive qualitative comparison. In terms of quality, which I will quantify as a mixture of function and visual appeal, they are comparable. It is appropriate to compare these two styles due to their shared focus on visual quality with little detail; this is distinct from the style of the development team of *Final Fantasy VIII*, which put a tremendous amount of resources in to making the most realistic images that they were capable of making. This departure from realism is key to my argument of our game's visual quality; our game's visual art is representative and is built on an aesthetic value founded in minimalistic detail, which heavily borrows from ink wash painting techniques from Japan and China.



Figure 2

Screenshot of *Five Seasons: Val*



Figure 3

Jan Zaremba, Portrait Of My Self. (2010)

Fig. 3 depicts a contemporary artist's work in ink wash painting. Ink wash painting is generally light on color and usually relies on shading to give its images detail. This is extremely functional solution to creating high quality visuals with minimal detail. In the case of *Lunar* the visuals were all done in pixel art, which allows for greater amounts of asset creation while also being detailed enough to function and be perceived as high quality visuals. This ink wash technique serves the same functional design purpose as pixel art; it just has a very different look. In relation to the examples provided, I believe that *Five Seasons: Val* provides a quality representation of its aesthetic and style.

The in-game systems of *Five Seasons: Val* are comparable to *Final Fantasy VIII*'s. Hager programmed our game systems in Unreal Engine, and he did it with little issue. The in-game systems in *Final Fantasy VIII* include movement, menus, dialogue boxes, physics, lighting, sound

implementation, and much more. All of these were successfully created and implemented in the timeframe of a year for *Five Seasons: Val*. As of the writing of this paper, the in-game systems of *Five Seasons: Val* are not finished, but taking the results that we have now after a year of development, it is safe to say that programming to the same standard as *Final Fantasy VIII* is possible within a three-year development period.

The major difference between our game's programming capability and *Final Fantasy VIII*'s is quantity and scale. Creating a mostly bug-free in-game world for a player takes a lot of time and resources, and there is a direct correlation between how much bug fixing, or quality assurance (QA), needs to occur and the quantity of systems that need testing. This correlation between content and bugs means that creating high-quality assets and systems in Unreal Engine is not an issue, but creating a *large amount* of high-quality assets and systems is. The main limiting factor is time; with one programmer we simply did not have the time to create a large amount of quality assets and systems.

The sound of *Five Seasons: Val* is equal to, if not in some ways better, than *Final Fantasy VIII*'s. In a promotional short documentary, the developers of *Final Fantasy VIII* compare the game's systems to life or realism (The RetroFreak), so it is safe to say that realism was a goal in their design choices, which extends to sound. Most of the game's sound is very unrealistic by today's standards; there is almost no compensation for how space effects sound and much of the sound in the game has little resemblance to audio in reality. For example, when something is hit in *Final Fantasy VIII* a sound occurs specific to the attack, which often consists of synthesized sound waves that act closer to representations rather than replications. Another example is the game's sound for a guitar during a concert in-game, which sounds like it is being

played on a 1990s keyboard with a “guitar” setting. Using modern technology, indie-game developers can create much more replicative sound than *Final Fantasy VIII*.

Using Pro Tools and Unreal, we were able to create realistic sounds for almost any situation. Most of the time I could find a high-quality recorded sound from online libraries such as freesound.org. In the case of a sword slashing against leather armor, for example, I would get sounds of a sword swinging, a sound of metal sliding against a soft material, and mix them together to create the sound needed in the game. Sometimes I needed to make sounds from scratch if the required sound was either not from a real thing, or if the thing that needed sound was very specific and unique. When that need arose I manufactured the sound in Pro Tools via digital signal manipulation, synthesizers, and recording. Pro Tools allowed me an enormous amount of control over the sounds that I imported: a control that was only limited by my plugins, knowledge, and skill. For example, I wanted to create the sound of a gigantic creature breathing, so I recorded myself doing deep guttural breathing, layered several tracks to give a sense of depth and size, and then applied EQ, reverb, and pitch shifting to achieve the result I wanted.

It is difficult to classify fictional things as realistic, but a videogame player always has an expectation of how something will sound after they see it, and if what they see is not found in the natural world, they simply associate it with something that is. Though it is true that perspective on sound being fit for a game is mostly a matter of opinion, the amount of resources, technology, and tools at my disposal are much more advanced than what Squaresoft had in 1999. Along with sound design, technology also gives me much more control over the music that I can create.

What is AAA Quality Music?

The music in both *Lunar* and *Final Fantasy VIII* is largely done with similar sound sources: synthetic instruments mixed and arranged into CD quality audio. However, two songs, “Liberi Fatali” and “Eyes On Me” feature live orchestra musicians and vocalists. *Final Fantasy* composer Nobuo Uematsu felt like he could create a true classical sound starting from *Final Fantasy VIII*. An interviewer asked him, “You made a lot of classical music that didn’t sound classical on the SNES, so when did you feel like the sound chips evolved enough to create a true classical sound?” to which Uematsu responded:

The first time I was able to have the kind of orchestral music I wanted [to] actually play in the game was from about *Final Fantasy VIII*. For the opening and ending, I actually got an orchestra and choir involved, and was able to record them live. So, it was from around that time. (Dwyer)

This statement gives the perspective of Uematsu’s aesthetic values in his composition choices and his value in putting live musicians in his orchestral compositions “Liberi Fatali” and “Eyes On Me.”

These two songs have significantly higher production value than the rest of the game’s music, however as it is the highest point in the game’s musical production it is important to acknowledge it when addressing our 1999 AAA musical standard. In this context I define AAA musical quality as a functional and well mixed and mastered product, completely independent

of the quality of the composition of the score. To discuss capabilities of the modern indie developer I will describe a metaphorical ideal process that an indie developer could do to meet the quality of “Liberi Fatali” and relate it to my work on the piece “Forest Theme.”

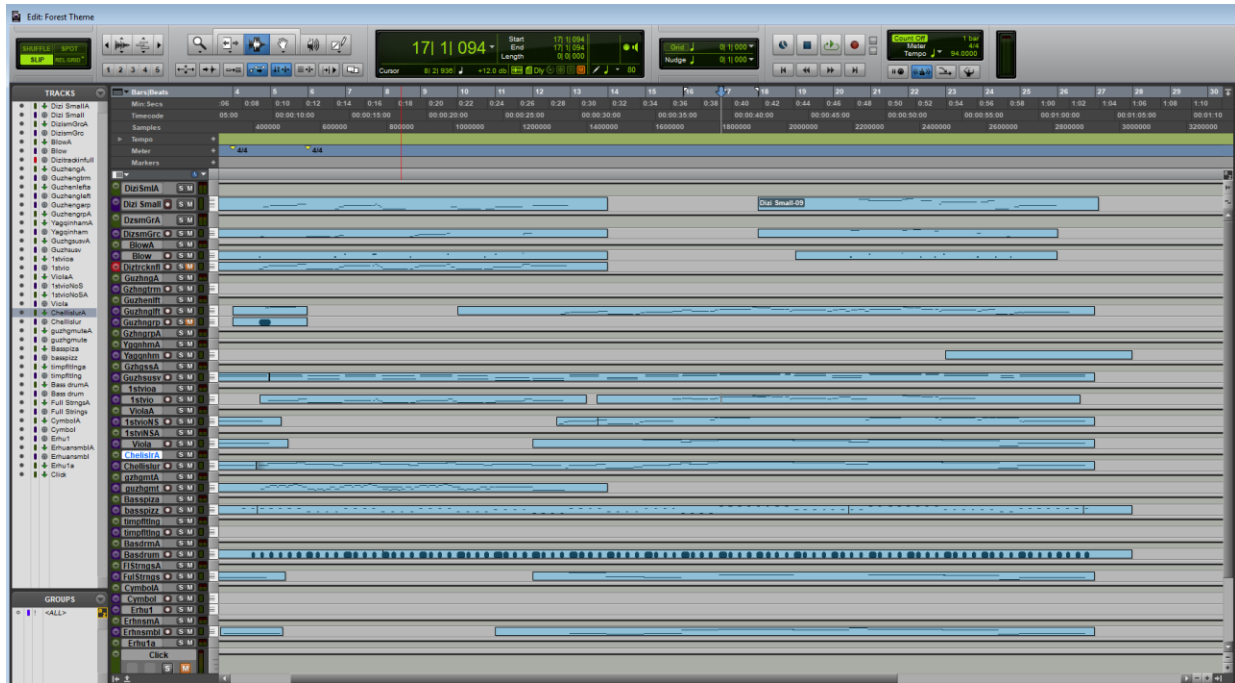


Figure 4

Screenshot of “Forest Theme” Pro Tools timeline.

The first step in creating a piece of similar quality to “Liberi Fatali” is the song-writing and arranging, which I did on free software called MuseScore 2. After that, a recording needs to occur; one would need an audio setup that plugs directly into a computer that allows them to record into a DAW. In my case, this is a Roland Quad Capture running into Pro Tools (Fig. 4). Next, the audio engineer needs a source of sound. For this one can use a sample library, in my case from East West, which allows access to an enormous library of quality instrument and vocal sounds. Other unique performances or aspects of the song that the indie developer can’t do themselves can be acquired through the internet by hiring musicians to perform solos,

acquiring necessary knowledge, etc. Lastly, the audio engineer must mix and master it all together into the finished product.



Figure 5

East West Orchestral Percussion sample player.



Figure 6

East West Silk Sample Payer.

With this approach, an indie developer has the resources to create something of similar production quality to “Liberi Fatali.” “Forest Theme” represents the peak of what I am capable of creating as an indie-game composer while taking an orchestral approach. In “Forest Theme,” I almost exclusively use samples, which make the performances sound more robotic than if it featured live musicians. The audio is also not mastered properly, which is somewhat in relation to my skill, but also is heavily influenced by my lack of Pro Tools plugins. All other quality issues are in relation to my skill as an audio engineer and musician, which I cannot accurately assess. But I can assess the music of other indie-games, and games like *Bastion*, *Braid*, *What Remains of Edith Finch*, and *Celeste* all meet the high musical production standard of *Final Fantasy VIII*.

The conclusion I have reached is that it is still not possible to create a fully human sounding orchestra from a sample library, but this approach can create a high-quality orchestral sound.

Conclusion

Game development has undergone a lot of change since 1999. The popularity of videogames continues to grow, and with that growth in popularity comes an increased amount of corporate possibility. AAA developers continue to make mass profits in the videogame market, and their mass production budgets and access to state-of-the-art technology set the bar for AAA games. Technologies have advanced, and with those advancements came an increased amount of accessibility. Accessibility to modern technology is causing a shift in what the independent game developer can do. Game development tasks that once took a large investment can now can be done with readily available, reasonably priced, and accessible tools. The increase of accessibility is a catalyst for small-game developers to create high quality products. The capabilities of the indie studio now have reached a milestone, and those capabilities are growing. The price tag to create quality videogames is going down, and indie-game development teams are creating works that are inspiring this generation. The small indie-developers are creating quality products that showcase the quality of games that can be produced with a limited budget, products that now surpass 1999 AAA standards. What were once cutting-edge industrial resources are now in the hands of average American consumers, and they are now capable of surpassing the quality of a 1999 AAA studio game.

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