14. The Development of Greater China's Games Industry: From Copying to Imitation to Innovation

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Abstract
The People's Republic of China has become the largest digital game software market in the world. Yet, outside the Chinese game industry itself, very little is known about the local development scene. In this chapter, we approach Chinese regions' game industry from both a historical and an analytical perspective, particularly by examining how game developers in the PRC, Taiwan, and Hong Kong came to learn game development through copying, imitation, and gradually moving to innovation. The chapter aims at explaining China's game development history chronologically, starting from the end of the 1980s when Nintendo's products entered China and pirated products overwhelmed the legally bound regular market until the emergence of indie studios in the 2010s.

Keywords: China, game development, outsourcing, rapid prototyping, indie game studios

Introduction

Being worth approximately 40 billion USD in 2020, China is currently the largest digital game market in the world. Chinese game companies have succeeded in bringing games to international audiences throughout the country's rapid development in recent decades. The more widely known global hits such as *Arena of Valor* (TiMi Studios 2016), *Knives Out* (NetEase 2017) or *Genshin Impact* (miHoYo 2020) were preceded by a number of notable games in early 2000s, such as the massively multiplayer online role-playing game (MMORPG) *Perfect World* (Perfect World Games 2005) or *Sunshine*

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Ranch (Rekoo 2008), which became the most popular game on Japanese social networking service (SNS) Mixi.

The chapter investigates, through documented cases of changes in corporate culture and development conventions, how the Chinese game development scene gradually grew into its current strength and stability. Such an approach helps to recognize the diversity of success factors and driving forces along the way. It also demonstrates the ways in which foreign knowledge and expertise from related industries supported the growth of local, game development business culture in Greater China. The historical perspective is valuable for establishing a more nuanced understanding of Chinese games and game development while current popular accounts are typically negative and one-sided (Wirman 2016).

Based on a decade of research on the Chinese game development landscape, Akinori Nakamura (2018) has suggested that China's game industry formation can be divided into five periods: 1) the chaotic period (the end of 1970s to 1997); 2) the formation period (1997–2004); 3) the development period (2005–2009); 4) the expansion period (2010–2014); and 5) the maturing period (2015–present). The first period was characterized by difficulties in establishing game businesses as profitable enterprises due to high circulation of pirated games. The formation period, meanwhile, was characterized by the launch of various online game services. This is the era when Taiwanese companies were venturing into this new form of online entertainment, followed by the companies established in inland China. The enormous success of these companies allowed listing on Nasdaq in 2004, proving that there can be a way to monetize internet services in China besides simple advertising. The third, the development period refers to the emerging interest in online game services from different business sectors after seeing the success of dedicated online game publishers. During this period, various types of game services were put on the market. The fourth period witnessed the boom of browser games and smartphone apps, which allowed numerous venturing companies to join the game sector while some local publishers began to play an active part in the global game business. The fifth and the latest period, starting from 2015, refers to the rise of indie studios.

In this chapter, we introduce a set of case studies to illustrate the game development practices of each period. These case studies draw from semi-structured interviews with company representatives (see Nakamura 2005, 2010, 2016, 2018) from 2004 to 2018 and cover three dedicated outsourcing firms, three in-house development and publishing studios, and two indie studios, focusing on analysing the operational practices of game development studios in the China region. The mainland Chinese market, especially in

the early days, was intertwined with other players in the Greater China regions. The cases represented in this chapter reflect on such circumstances.

Chaotic Period

During the chaotic period of Chinese game development industry (Nakamura 2018) from the 1970s to approximately 1997, the distribution of pirated products was one of the key challenges for game studios in the PRC, Hong Kong, and Taiwan. While companies such as XiaoBawan in China or Xiao Tiancai in Taiwan produced clones of Nintendo Entertainment System hardware (Kagurazaka 2017), another Taiwanese company Funtech Entertainment Corporation developed an original video game console system Super A'Can in 1995 (Dark Watcher n.d.). Reflecting the difficulties of the time, several Taiwanese software development studios that created games for this console ended up bankrupt as the console was swiftly discontinued along with several game titles that were still in development.

Chinese PC game development during the time was more vibrant, but remained immature in comparison with those in the US, Japan, or Europe. In April 1989, a three-person studio SoftStar launched its first PC game *Richman* (Softstar 1989; also known as Money Taipei), which was a Chinese version of *Monopoly* (Magie and Darrow 1935). The Greater China's first PC role-playing game *Xuanyuan Jian* (DOMO Production 1990) followed a year later. As an example of Chinese studios learning and benefiting from the more advanced regions, a company called Soft World started developing their own game titles in 1991 having imported and localized games developed in North America since 1986. Other notable games from the time include *Apocalypse in Zhongghuancun* (Seasun 1996), which was distributed in the PRC, and *Hooves of Thunder* (Object Software 1996), a horse racing simulation game distributed in North America and Europe. *Fate of the Dragon* (Object Software 2001), a later game by Object Software was published by Eidos Interactive and received numerous recognitions from both Chinese and foreign game media.

While several companies survived the industry's turbulent and highly competitive early environment by flexibly branching out into online game services and later into game apps, many studios merged into bigger firms, changed ownership, or simply went bankrupt. With the exception of a few companies such as Object Software, the majority of companies in this period aimed at supplying software to the Chinese speaking countries. It seems as if the majority of game developers working in the industry at the time did

not fully understand the prevailing quality expectations outside of China. This resulted in the development of games with less technological merit, simple mechanics, and poor graphic quality. Smaller companies in Hong Kong and Taiwan, however, were able to gain advantage by tuning into the local player preferences and survived because of the strong support they gained on their own turf.

Tose Shanghai: Teaching Corporate Values

The challenges that a Japanese game studio Tose faced amid its attempts to expand operations from Japan to the PRC illustrate the game development culture of the chaotic period. Nakamura (2018), after conducting several interview sessions, compiled a historical account of Tose's development in China from 1993 until 2018. Tose was established in 1979 and has been solely devoted to game development since the beginning. Among its dozens of clients were notable names such as Nintendo, Square Enix, and Sega Sammy. What made Tose special at the time was its unique revenue model based on an idea of the company serving as a 'one-stop development service spanning from plan proposals to development and operation primarily for video game software' ("Businesses" n.d.). According to Nakamura (2018), the shortage of human resources proved problematic for Tose in early 1990s, which led to the hiring of three Chinese programmers who completed university education in the PRC. Stunned by overwhelmingly high performance of these personnel, Tose expanded the recruitment of Chinese programmers to six and continued for two to three years; this eventually led the founder and President (current chairman) of Tose to eventually establish a Shanghai branch in November 1993, accompanied the human resource project titled the Zhuge Liang (a reference to a famous military strategist during the Three Kingdom era) with a special emphasis on 'finding good programmers' (Nakamura 2018). Tose Shanghai was one the first game studios in the city and one of the first in the country. Tose ran its operations for 20 years. An additional Hangzhou studio was founded in March 2001 and remains active ("Businesses" n.d.). According to Nakamura, programming was considered the most demanding task and the project succeeded in recruiting five employees: one interpreter, three programmers, and one designer.

However, Nakamura (2018) also points out that the early operation of Tose Shanghai faced challenges resulting from different values between Japanese

managers and Chinese staff. During this time, it was natural to embrace practices by Chinese employees following many state-owned enterprises in the PRC most notably their desire to receive standard remuneration regardless of the outcome of individual performance, and it was natural for a workday to finish at 17:00. These practices were not in line with Tose's working culture. From the employer's perspective, Chinese employees left work daily for reasons that the Japanese deemed unreasonable, such as to meet friends or because they believed that working overtime implied incompetence (Ibid.).

To tackle the emerging issues, Nakamura expounds, Tose dispatched employees from Shanghai to the Kyoto headquarters as trainees. In 1994, four programmers visited Kyoto for six months. Simultaneously, a staff member who engaged in interpreting across the parties understood the importance of aligning Chinese employees' understanding of Japanese business culture. She was appointed as the Deputy General Manager of Tose Shanghai. The lack of face-to-face meetings continued to cause misunderstandings, but over time the training in Japan improved the situation and trainees returned to China sharing company values and passing them on to local employees. It is characteristic of the drastic changes in working attitudes that even during the Chinese New Year's celebrations staff members reportedly voluntarily stayed at work overnight as a result of adopting Tose's Japanese working culture (Nakamura 2018).

Another set of significant changes at Tose Shanghai came in 1996 with a new graduate recruitment system. There were hardly any software development companies in Shanghai despite an abundance of graduates from local universities. Tose, which had started with only five employees in 1993, grew into an employer of more than 100 developers in just a few years. Tose Shanghai was a popular employer, which resulted in high competition among the applicants. Together with the number of employees, the number of projects increased as well (Nakamura 2018).

Tose's struggles in setting a foot in China illustrate the circumstances a foreign venture faced during the early developments of Chinese games industry. After launching a studio in Shanghai, the company's management was compelled to train local employees in every aspect of Japanese work ethics and practices. Apart from dealing with the intricate company policies and regulations, Tose faced managerial issues with inexperienced employees. While there was no shortage of employees, they were fresh graduates with barely any professional experience. Therefore, they required general professional training as well. This also suggests that Tose, as a foreign company, had a role in training the first generation of Chinese game developers.

Formation Period

The 'formation period' of Chinese game development ran from late 1990s to 2005. During this time, even the most influential studios such as Shanda Interactive Entertainment or Tencent were developing games which appeared to be 'copies' or 'imitations' of other games. When Shanda developed its first in-house MMORPG, *The World of Legend* (Shanda 2003), the company was accused of intellectual property infringement of *The Legend of Mir 2* (WeMade 2001) by Korean game company WeMade (Shanda 2004). Similarly, when Tencent launched QQ Game portal in 2003, many considered the overall design of the portal an imitation of Ourgames.com – a casual game portal, which has been in service since 1997 (Dongfang Tiyu 2018). It was a norm for many game studios in the PRC at the time to imitate. Sometimes it even appeared that local companies copied substantial components of works developed by other firms.

Taiwanese game studios, meanwhile, had a significant influence on the development of online game services in the PRC. Even though the first online games in the PRC were made available on a casual game portal Ourgames.com (1997), the first commercially successful monthly subscription online game service was a Taiwanese graphic MMORPG *King of Kings* (Lager Interactive 2000) in 2000. Since then, several online game services followed the trend, all of which were developed and operated by Taiwanese game publishers. Chinese companies then followed this by either providing online game services from Korea (Shanda Network) or games developed in-house (NetEase). By 2005, the companies that capitalized on the surge of popularity of online game service, were able to go public on the NASDAQ stock market, while revenue from online game service became a major source of income for companies like NetEase. Two cases from Taiwan are presented to illustrate the culture and practices of this time, both of which preferred an anonymous treatment.

Taiwan Game Studio A: Emphasizing Project Management

Based on the semi-structured interviews conducted by Nakamura (Interview with a Producer at Company A 2004), Taiwan Game Studio A (further referred to as Studio A) was a game development studio with 60 development staff (30 in Beijing, 30 in Shanghai) in China and approximately 100 in Taiwan. Their case focuses on significant team restructuring as well as project planning. Since the establishment of the company until around 2000, their

game development was based on teams. Initially, the teams consisted of three to five developers, or, in some cases, the games were completed with just one or two developers. Later, the size of the team grew to five to eight developers, with eight to ten teams working simultaneously. But the number of people required during the development process varied. During the planning stage, a few game designers were required. In other words, while game designers were working on the story or game mechanics, many artists lacked meaningful assignments. On the contrast, during the peak time, the number of programmers and artists initially assembled as a team may not have been sufficient while game designers may have had nothing to do, especially after game specifications had already been planned out. This made the game development schedule quite unpredictable. Among the staff at Studio A, the game development division, being internally called R&D (Research & Development) was instead sarcastically referred to as T&D (Try & Delay). But the game development process at the time was generally considered uncontrollable. Being unable to tolerate this situation, Studio A decided to switch from team-based organization to three development groups system, which was initially tried in China in 2000 and then fully implemented in August 2001. The divisions consist of game design, art, and programming. Testing was done by a dedicated group within the company. Sounds and music were outsourced to the dedicated sound production studio in Taiwan. This approach involved flexible staffing that was determined periodically through discussion between project managers. Producers in charge of multiple lines also attended meetings, clarifying how responsibilities could be divided between individuals. With the implementation of the flexible and transparent management, it was possible to allocate 80–90 employees into a single project during its peak development time, while previously the largest team size was about 30 people given the fixed team sizes.

Taiwan Game Studio B: Making an Intricate System More Transparent

The game development system implemented by Taiwan Game Studio B (further referred to as Studio B) was introduced by Nakamura (2005) as Company E. Studio B had a development base with 80 people in Taiwan and more than 100 people in Shanghai. Nakamura emphasizes the trait of Studio B as detailed milestones system, which was divided into stages starting from Milestone Zero (planning and proposal documentation stage),

Milestone One (referring to the point when a client signed the contract with a detailed specification of the project), and the production stage which consist of pre-production and production phases (Nakamura 2005). Project sizes varied according to the scope of the game specifications and budget sizes provided by the clients. The milestones were set bimonthly and meetings held regularly during different phases of the project. During the meetings, the overall schedule was reviewed and modified if necessary. This system allowed Studio B to have a geographically separated team working together: The Taiwan side being responsible for management, quality control, programming, and art direction and the Shanghai team being responsible for 2D character designs, 3D graphic designs, motion capture, background arts, and other game assets. Depending on the situation, Studio B would allocate creative talents dynamically between projects (Nakamura 2005). In this way, Studio B was able to maintain a clear plan in agreement with the clients even when sudden changes occurred. The system further allowed a smooth addition of new milestones and related budgets.

The cases of Studio A and Studio B suggest that their games were not made by a few charismatic game designers, but resulted from carefully managed and structured development processes. Both companies implemented fully transparent management that proved trustworthy in terms of getting major contracts from clients located in markets such as North America or the PRC. The restructuring and changes in development processes at Studio A exemplifies how studios at the time matured with the industry revisiting its business practices. It also suggests a move towards multi-project environments and the more careful allocation of human resources. Such changes did not happen overnight. Rather, both companies created systems that could withstand Original Equipment Manufacturing-like development by gradually modifying their development styles through trial and error typical to the period.

Development period

In the early 2000s, the online subscription model became one of the vital ways to monetize games. Among others, Giant, one of the most influential online game publishers in China, was established in 2004 by Shi Yuzhu, a famous entrepreneur known for health care products. Virtually all companies that operated in the industry at the time either initiated an online game service division or switched completely to provide online

games only. The case of Perfect World Games is an example of the latter. Having had their first company E-Pie Entertainment & Technology dissolved in 2004, the subsequently founded studio Perfect World Games maintained the technological know-how accumulated by its predecessor. This was then used as a backbone of a world-class online game service *Perfect World*.

The second case of Virtuos represents the expansion of the business ecosystem in the PRC. Taking advantage of relatively inexpensive labour costs, Virtuos was able to become a part of the ecosystem of large-scale game developments for the global game publishers. With the accumulation of know-how throughout their multiple projects, Virtuos gained a reputation for its high-quality output of graphic assets and games. Later, even after the labour cost in China was no longer competitive, clients continued to consider Virtuos as a valuable partner, making it one of the global leaders in the digital entertainment dedicated outsourcing service. This also indicates a dramatic increase in human resource capabilities in China during this period.

Perfect World: Adapting Self-Developed 3D Engine to China's Environment

One of the first Chinese companies that have achieved global success in developing online games is Perfect World Games. By 2014, it had licenced its games to more than 100 countries. According to local market surveys, the company accounted for 21.91 per cent of total exports in the MMORPG sector in 2014 (GPC and CNG 2015). In addition, the company established subsidiaries in the United States, Denmark, Japan, Malaysia, Singapore, and South Korea. The company's global expansion started in 2006 in Taiwan, Hong Kong, and Macau. This was made possible by their self-developed MMORPG *Perfect World*. This case, first introduced by Nakamura (2016), explores how Perfect World Games gained success by continuously working on research and development.

According to Nakamura (2016), Perfect World Games' competitive advantage is based on having game development middleware and a game engine that enables real-time rendering of 3D computer graphics (further abbreviated as 3DCG) while enabling large-scale network services. This is implemented through their proprietary Angelica 3D game engine. This technical foundation was developed in 1997 at the Zulong (in English, Archosaur) studio, a research base established by the Hongen Education

Group. Since the conception of Zulong, the organization has been developing 3DCG real-time rendering technology.

The first published game utilizing the platform was a real-time strategy game called *Freedom and Glory* (Zulong 2001). The game was done in full 3D making it arguably the most technically advanced game made in China at the time when other titles were typically developed in either 2D or using pre-rendered 3D graphics. Company's technology could not, however, withstand the technical level already reached by the companies in North America or Europe where severe competition among 3D engines existed already in 2001. Albeit inferior to global competitors, E-Pie continued to develop its own game engine, and in 2002 a first-person shooter *Great Qin Warriors* (Archosaur Studio and E-Pie 2002) was released and followed by several other 3D action shooting games (Nakamura 2016). With products being pirated, the sales performance of E-Pie was limited. Thus, E-Pie was eventually dissolved while the Angelica 3D game engine itself was inherited by Perfect: the online game service established by the Hongen Education Group.

Nakamura stresses the strengths of the Angelica 3D game engine, particularly its scalability by simplifying the calculation process according to the hardware specifications as well as a real-time cheat prevention system. These features were added after the technology was inherited from E-pie. The engine was heavily modified to meet the local needs at a time (Nakamura 2016), when low-spec PCs were prevalent both at home and even at internet cafés, and cheating was quite the norm among Chinese online game players. Perfect World Games thus succeeded in developing high quality online games by adapting their 3D engine originally developed for non-online PC games to run a MMORPG service in China. Due to a steady investment into research and development, once inferior technology reached the level of its international competitors. Afterwards, the development pipeline quickly expanded to support multiple projects at the same time and new engines were introduced to support different types of projects. Perfect World Games' technical advancements were particularly well received in Japan (4Gamer 2006). The media highly praised character customization features since such a system was unusual for MMORPG at the time.

The company's positive attitude towards swift research-based reactions to changing needs can also be seen in human resources management. Lu Xiaoyin, the art director of E-Pie, was promoted to various roles in the company eventually becoming the COO in 2017 and the CEO in 2018. While Lu Xiaoyin's career signals the company's focus on R&D, it also reaffirms its emphasis on leveraging existing resources in general.

Virtuos: Education and Production System for Outsourcing

The rapid expansion of Chinese game industry in the past decade covers not only the companies that were directly involved in providing game products and/or services to customers, but also those that specialized in providing business-to-business (B2B) services. Outsourcing has become particularly common as the size of the video game projects have grown over time particularly for AAA titles. To satisfy these demands, many outsourcing firms entered the market. For example, several people who had gained experience at Ubisoft Shanghai later left the company to establish an outsourcing studio. Nakamura (2018) conducted interviews several times at Virtuos and compiled it in his book on the history of China's Game Industry.

Virtuos was founded in 2004 by Gilles Langourieux, who joined Ubisoft in 1995 as global business manager. From 1997 to 2000, Langourieux established the Ubisoft Shanghai Development Studio and Beijing Sales Office, which was responsible for Ubisoft's online business strategy. Witnessing the rise in development costs, Virtuos was established with the belief that outsourcing would play an important role in the value chain of digital game development in the global industrial ecosystem.

Nakamura (2018) gives a detailed account of the humble beginning of Virtuos. The company initially achieved profitability by doing contract work for Ubisoft. In 2008, when the number of staff in the studio increased to about 300 to 400, a new studio was founded in Chengdu. In 2010, the company formed a business alliance with Grafit Studio, a company specializing in concept art, and obtained about a dozen dedicated teams within the company. In 2011, Sparx, a long-established major computer graphics studio in Vietnam joined Virtuos. Since then, Sparx played a major role in the production of 3DCG assets for Hollywood movies in addition to the production of game assets. At the end of 2017, Virtuos consisted of 11 studios with a total of 1300 people.

According to Nakamura, Virtuos emphasized the development of human resources. From early on, the management team of Virtuos visited various technical colleges, art colleges, and vocational schools to discover future talent. Furthermore, Virtuos developed an extensive three-month-long training programme, which finally led to the establishment of Virtuos Academy in 2010 (Nakamura 2018).

As for the organizational competency, Virtuos constantly raised the overall skill set of employees by getting more complex and bigger projects. Types of projects were balanced to allow equal development of a variety of skills and new hardware licences were actively obtained to gain new skills.

As one of the few developers in China, Virtuos gained access to PlayStation 2 development, for instance. As a result of such efforts were a multi-platform game *Monster Jam: Path of Destruction* (Virtuos 2010) and one of the first Chinese Kinect games. Taking advantage of Shanghai's position as a growing hub for competent 3D graphic designers, Virtuos became involved in the creation of 3D graphic assets for AAA titles developed by major publishers, including Ubisoft, Activision Blizzard, Electronic Arts, Naughty Dog, Square Enix, and Capcom, according to the official website.

The emergence of the world-class outsourcing studios such as Virtuos led to today's position of Shanghai as a notable global hub for game development. The case of Virtuous, like that of Perfect World Games, illustrates how the time was characterized by high quality game development and significant advancements in both research and human development. These large studios had gained valuable knowledge from their predecessors and now served the fast-growing local MMORPG and PC gaming markets.

Expansion Period

Nakamura (2018) has suggested that the maturing period of Chinese games industry spans from 2009 until 2014. This was the period when browser games, social games as well as smartphone game apps flourished in China, eventually making China the largest game playing population in the digital game market in the world. The human resources in the games industry increased significantly during this time as well.

Rapid Prototyping and Interactive Game Design in China

Rekoo is an example of a company that built its business upon a mix of rapid prototyping and iterative service development integrated with marketing research feedback. Rekoo was founded in Beijing in September 2008. Its first project was a farm management simulation game *Sunshine Ranch* (Rekoo 2008). It was developed in about three months by 20 employees (Nakamura 2016) and released on the Chinese social network services 51.com and Xiaoneiwen (currently called Renrenwen). By November 2009, 'It has been deployed on 17 social networking service (SNS) platforms in China, Russia, and the United States' (日経 xTECH（クロステック）2009).

Rekoo released *Sunshine Ranch* on a Japanese social networking site Mixi in 2009. The game ranked first on that platform for two consecutive

years after its launch (Social Game Info 2011). In Japan, *Sunshine Ranch* is known as one of the most successful social games and, along with *Perfect World*, one of the early examples of a game service from China that became popular in the Japanese market.

The key to any of Rekoo's achievements was quick decision making and execution by Rekoo's management. After graduating from the Kellogg School of Management at Northwestern University, Patrick Liu, the company's founder, launched a social network service in China in 2004, following the trend in the US and Europe. After the number of registered users had reached ten million, he decided to sell the site in 2006. Learning about Facebook's open platform concept, Liu worked on developing software tools for SNS, but gave up because there was too much competition (Nakamura 2016). In September 2008, he instead decided to develop a game for SNS. Liu swiftly applied for a licence to publish *Sunshine Ranch* on Mixi later introducing constant modifications and various cross-promotion campaigns. By 2012, the number of employees at Rekoo had grown to 560 in China alone, and five games were released in 2011 (Nakamura 2018). This was an interesting case where the software development practices in the IT industry were applied and fully embraced into the digital game industry in China during the expansion period.

Maturing Period

Maturing period was the era when China became one of the largest not in terms of gamers population but also the size of the market. During this period, Globally popular games such as *Arena of Valor* (TiMi Studios 2016), *PUBG Mobile* (Tencent Games 2018), *Mobile Legends: Bang Bang* (Moonton 2016), *Piano Tiles* (Umoni Studio 2014) or Anime style action mobile games *Houkai Impact 3rd* (miHoYo 2016) or *Azur Lane* (Shanghai Manjuu and Xiamen Yongshi 2017) particularly popular in Asian countries were developed by game studios in the PRC. During this time, various indie studios emerged and began to flourish. A major indie studios focused event emerged in 2009 with the Independent Game Festival China. In addition, Unity established its Shanghai office in April 2012, providing an environment where Chinese developers could receive direct support. Under these circumstances, the Chinese Indie Game Alliance was organized in 2015. At the end of July of the same year, the exhibition Indie Play was held. Nakamura (2018) discusses game development practices of several indie studios to represent the latest situations of game development practices in China.

One such studio, NTFusion was founded by a group of graduates from Huazhong University of Technology in 2009. They initially started their business by programming information systems. When their flash game, *Pocket Creature* (NTFusion 2017), reached ten million registered users worldwide (Nakamura 2018), they decided to go into the game business. Development of Pocket Creature for smartphones began in February 2016 with a dozen developers, and the game was released in May 2017. At the time of release, the company was earning two to five million yuan (280,000–700,000 USD) as a monthly sales revenue. By the end of 2017, their monthly income was reaching ten million yuan (1.4 million USD). NTFusion released European and American versions in November 2017, followed by a Korean version in January 2018 and Taiwanese in February 2018, expanding the staff size to about twenty people (Nakamura 2018).

Some Chinese developers 'went indie' after gaining experience at major local game publishers. For example, the founder of WoodWolf, after working at Tencent and Xunlei, developed an adventure game based on a mystery genre he was passionate about. In 2016, he started to develop a prototype using Unity by himself in his spare time. In March 2017, he invited a former work associate and engineer to the company he had started. Later on, one more programmer and eight freelance artists came on board and joined the project. Their game *Liuyan Zhentan* (Wooden Wolf 2017; Rumor Detective in English) was released in August 2017 (Nakamura 2018).

Conclusion: Over 40 Years of Game Development in China

This chapter has aimed at offering insights into how game development has changed over time in the Greater China region. Although the individual case studies provide little ground for generalization, they together highlight the specific local conditions that game studios faced during the past 40 years. The overall development of the game production system in Greater China, together with case details is presented in Table 14.1. The cases here illustrate how single decisions or individual persons in power have defined wide future trajectories. If it was not for the companies learning from pirated games or foreign outsourcing, development knowledge in Greater China would have taken much longer to learn. Meanwhile, without such external influences, local game development could have gained more unique characteristics and fundamentally more innovative practices, too.

During the early phase, foreign ventures operating in the region had to provide fundamental training for employees. The late 1990s were still an

Table 14.1: Changes in Greater China's game development practices

Period	Changes in Game Development	Case Presented	Related Development in the Industry
Chaotic – Formation	Employee training system integrated	Tose	New foreign ventures in China ('porting' and graphics outsourcing)
	Corporate values and work ethics training integrated		Major studios in PRC being accused of infringing copyrights of other works
	Project management system adopted	Taiwan Game Studio A	Setting example for other companies to adopt new process models
	Transparent and detailed milestones system adopted	Taiwan Game Studio B	
Development	Long-term R&D for core technology established	Perfect World Games	Technological innovation / Success outside of Greater China (Russia, Japan, Vietnam, and others)
	Core technology for customer environment adopted		
	Core technology applied across projects		
	Large-scale outsourcing development	Virtuos	Professional capabilities that enable entering the global game development ecosystem
	Hybrid of teams and hierarchical structure		
Expansion	Existing game mechanics (Farming Simulation) adapted onto a newly created platform (SNS)	Rekoo Media	Rapid game adaptation
	Rapid prototyping and iteration applied	Rekoo Media	Process innovation
Maturing	Small-scale development with focus on game design	Various Indie Studios	Game design innovation

early stage for China's embracement of the market economy system, which can be traced to the reboot of China's modernization plan after the talks given by Deng Xiaoping during his visit in southern China in 1992. Teaching corporate ethics was common in other areas of business, particularly in the manufacturing sector among foreign ventures at the time (Nakamura 2001; Tsang 2004).

The case studies of Taiwanese game studios revealed that some of the companies begun embracing systematic approaches to game development by integrating project management methods into game development. Unfortunately, neither of the companies was able to survive in their original shape; one company faced the change of its ownership, and the other was

acquired by a game company in PRC. The effective methods developed by these companies, however, may have been diffused within the game industry during this transformation.

Long-term research and development of core technology and ability to adapt technology to serve the growing Chinese online game service environment led Perfect World Game to develop 3D MMORPG game engines. These were easily adapted to diverse game playing environments such as Japan, US, Russia, and Vietnam. As for the Virtuos case, it can be assumed that Gilles Langourieux's experience from Ubisoft Shanghai with various struggles with training local talent led to the later emphasis on employee training. In the case of Rekoo, the management philosophy of the owner reflected his experience from the IT industry such as swift decision-making process and incremental software development. The emerging indie studios began to focus on small team development, which allowed them to swiftly react to changes in the industry and in player preferences. The past decade has witnessed a steady growth in the Chinese indie landscape where supporting organizations and support from major technology companies has allowed small enthusiasts to become successful professionals.

To summarize, game development in Greater China has changed based on knowledge gained from various sources, including but not limited to foreign game studios and related, more established industry sectors in China. From a historical point of view, it is possible to explicate different types of factors that influence how and how successfully games are being made. These findings help to suggest new starting points and considerations for studies that focus on current development cultures and practices and to draw a nuanced picture of game development in Greater China.

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