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Combinations and Cultural Content: Catch-up in the Chinese Gaming Industry

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Abstract

In the space of several years, the Chinese games industry to reverse its market share with regards to Korean incumbents in China. We analyze the catch-up process that allowed this to happen by separately analyzing the core constituents of games (design, technology (code), content, and in a broader fashion, elements of the business model) as layered components. At the highest level of aggregation, the Chinese games industry combined content in as a modular constituent with learnt technology and designs that adapted local knowledge and internationally-set designs. Varied aspects of business models were used in order to help create advantages, e.g. with regards to locking in new cultural sources of content upstream of the games industry. All of these combined to produce a highly locally suited product. This adds a cultural goods (or creative industry) nuance to the general understanding of the catch-up process. It also provides a window into how Schumpeterian combination can be developed at economy levels while taking product characteristics into consideration.

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Combinations and Cultural Content: Catch-up in the Chinese Gaming Industry

1. Introduction

Catch-up

Earlier work on the catch-up process detailed how the East Asian economies transformed their manufacturing sectors through a process involving factors as firm-level technological learning, state or foreign investments, and skills development (e.g. Amsden 1992; Hobday 1995; Kim 1997; Amsden and Chu 2003). Recent comparative work situated this in an innovation systems perspective, while maintaining sectoral diversity (Malerba and Nelson 2011).

Even as the ink dries on these studies, we are being confronted with new patterns of development, which may or may not be old wine in new bottles. In this paper, we are primary interested in illustrating how the catch-up process occurs in the new, creative industries (in particular those that are IT-enabled), and whether this sheds new light on theories of innovation and innovation-led catching-up. We will illustrate the types of mechanisms involved in the catch-up process, in particular, the Schumpeterian combinative process broadly writ. In doing so, we hope to bridge the newer thinking on technological evolution as being combinative, with that of the catch-up processes as is commonly known in innovation studies. Our case study is on the Chinese online games industry, which has caught up to Korean imports over the several years since Chinese entrants' came into the picture. Our research sheds light on how the Chinese online games industry achieved its significant status. This paper will show how individual firms have grown and continued to survive by adopting strategies particular to China and to the online games industry.

China recently eclipsed Japan in terms of aggregate GDP, making it the second largest economy in the world. She follows in the footsteps of her Asian neighbors in pursuing and succeeding in rapid industrialization, but creative industries and services are fast moving as well. We know that much of her success comes from some of the same factors as identified in earlier catch-up studies, such as the development of a large skilled, low wage workforce, and policies focused on making China the "workshop of the world". Typically, firms will license foreign technologies. China's advantage has been its domestic market, and it wields this dual weapon well, requiring foreign investments (i.e. joint ventures) coupled with technology sharing agreements, including product and process knowledge. What we do know is that in a variety of sectors and situations, technologies have been acquired, mastered and replicated in China by joint venture partners.

At the same time, we know well how many of these "strategic" industries have come to be, including the government-supported software, the IT and electronics, and generally, the basic manufacturing. The business environment in China also has to be recognized as key factor in driving her industries' growth. The domestic market provides a major opportunity for firms domestic and foreign alike, and the hyper-competitive nature of the market involves price competition driving costs and prices down to the lowest possible levels both domestically and globally.

Much of China's recent industrial progress in manufacturing has been of the low wage, low-skilled sort, though high skilled work is making its way into the picture. This is perhaps unsurprising given the size of the domestic market, making the conditions ripe for exploiting first mover and cost advantages rather than exploring innovatively. However, in selected sectors, from autos to white goods, select Chinese manufacturers have advanced by way of the traditional well tread catch-up path of skills development, technological learning and upgrading (Malerba and Nelson, 2011), and innovation policies are also starting to upgrade a range of industries in China.

Summary of the paper

In this study, we will analyze the character of innovation in the Chinese games industry, and illustrate how this relates to innovation in other industries. Our thesis is that the nature of innovation and progress across some of the newer sectors like the online games industry may vary from other technology industries because some of these newer sectors combine other constituents with technology. Our basic approach is to treat the design, content, programming and even business model as 'layered components' of games and the overall business design process (we use this term to differentiate from the normal use of "component" which tends to be thought of as being subsumed hierarchically to a higher ordering layer or other structure). This approach helps us to understand how these layered components interact with one another. Our main finding is that while certain layered components are critical to the product, it is a combination of certain layers, in particular, the dominance of content (showing its modular nature), the replicability of layers like technology and design, and the variability of the business model layer, which allowed the industry to thrive and overcome the "glass ceiling" of foreign technology and their incumbents. In other words, the paper advances the proposition that to tackle a discussion of catching-up in the Chinese games industry, we need to look at a broader picture than technological learning and catchup that a skills and investment accumulation perspective affords us; we need to develop a combinative view of multiple layered components.

1.1. Catching-Up and the Glass Ceiling

Catch-Up as a Pre-Determined Path

Since the 1990s, the understanding of developing countries' catch-up has developed with the understanding that catch-up has involved learning and a move from imitation to (intermediate stages of incremental innovation) on to more significant product innovation. This has been the case with a variety of industries in Japan, and the four Tiger economies (Hong Kong, Korea, Singapore, and Taiwan).

The point that is generally taken in all of these industries is that the catching-up process either involved catching up in terms of product and process innovation, starting with imitation and inferior quality, moving up incrementally; or involved catching up on a component, as did the Taiwanese and Korean semiconductor industries, which was largely couched in terms of process innovation.

Catch-up and Leapfrogging in the Software and Creative Industries

In recent years, the Indian software industry has also presented a challenge to the orthodoxy by suggesting to observers that India had 'leapfrogged' the pre-determined manufacturing stage of growth (between agricultural and services led growth). This of course turned out to be partially true, as it turned out that the path to IT-enabled services industrialization while involving knowledge work, still required a long term process of industrialization involving discrete steps of process improvement. The Indian industry's success was predicated on MNCs' outsourcing of their work, hence the industry had the opportunity of learning from clients, much as the Asian countries engaged in manufacturing outsourcing did. This calls into question whether the upgrading and catch-up process is any different for other types of knowledge-based work. While the software industry's catchup is arguably beyond a product type of catchup, it is still explainable by a process catchup view.

Creative industries have been an important industry for policy emphasis in a wide range of developing countries (see Kong and O'Connor 2009). Like the software industry, knowledge-based creative industries have needed to be nurtured through the existence of opportunities, nascent firms with their capabilities.

We know that the upgrading process for certain kinds of creative industries based on the outsourcing pattern, such as animation, is similar to software, in that the simplest types of

animation work are transferred first, e.g. painting work, followed by the rest of the production process (e.g. painting of the key frames) (Tschang and Goldstein 2010). We also know that globally, animation has either been outsourced to multiple countries (e.g. Yoon and Malecki 2010), often spurring that country's own industry (as was the case of Japan). In some cases, countries like China and Brazil have developed their own native animation market first, prior to an outsourcing trajectory.[1]

1.2. The Online Games Industry in China

The notion of catch-up has been synonymous with technological learning, and this term has been applied to a variety of industries and countries, along with the requisite understanding of how innovation systems are transformed to support this learning at economy scales (Niosi and Tschang 2009; Malerba and Nelson 2011). We seek to shed a different light on this catch-up process in this paper, one that is perhaps more consonant with creative industries and with IT-enabled businesses.

To do this, this paper focuses on the massively multiplayer-online game (MMO or online games) industry in China, which over the course of the last several years became a major industry now in its own right. The following table shows the direct revenues in column 2. Unit is in 100million RMB. The online games also pump in extra revenues via related business such broadcasting, advertising, comics, movies, etc. and the extra revenues are shown in column 3.

Table 1. Revenues of online games in China market

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[1] The Chinese software industry has also distinguished itself from the Indian model by producing software first for its domestic market. What can be learnt from all of these is that whether or not a creative or knowledge-intensive industry starts servicing domestic markets or export markets first it is to some degree immaterial to the success of an industry, although it is both possible that the successful performers for the export market may eventually come from the same domestically-focused enterprises evolving to meet the export demands (as was the case of Wipro and Tata Consultancy Services in India), while in other cases, different enterprises and entrepreneurs may take the lead in the export market over the domestic market (as was shown in the case of China (Niosi, J. and F. T. Tschang (2009). "The strategies of Chinese and Indian software multinationals: implications for internationalization theory." Industrial and Corporate Change **18**(2): 269-294.)

	Direct revenue	Extra revenue	Ratio of extra to direct
2002	9.1	119.3	13.11
2003	13.2	148.5	11.25
2004	24.7	250.2	10.13
2005	37.7	282.1	7.48
2006	65.4	333.2	5.09
2007	105.7	401.2	3.80
2008	183.8	478.4	2.60
2009	256.2	554.9	2.17
2010	323.7	631.2	1.95

Changing Fortunes and Three Puzzles

While historically, PC games were popular up to the 1990s, piracy also meant that the game studios were relatively weak and unable to grow. As online games started to proliferate, starting with the first Taiwanese and Korean games, a new breed of company arose that was equally adept at managing IP (via licensing first foreign, then domestic IP) as it was at creating it. As the country's wealth soared, disposable incomes rose, allowing people to participate in new wealth. The Internet also became a preferred means of communication, commerce and entertainment due to a variety of social factors, including the one child family and geographic mobility (with high numbers of educated or ambitious people dislocating themselves from their settings for the capital cities). This made children (and later, young adults) dependent on alternative means of social interaction, namely, those fostered by the Internet. The online games industry became a significant benefactor. Like the PC Bang (cybercafés dedicated to local area network or LAN gaming) in Korea, the cybercafé also became an important "hang out" zone for gamers in China, in fact even more so in its equivalent early stages of growth, since the average home in China was not as connected to broadband as the average Korean home at equivalent stages of MMO growth.

As Chinese online companies went about growing at breakneck pace, they started to erode the Korean companies' market share. As the Table 2 shows, while early on, the number of Chinese

products in the market comprised 2 of the top 15 games, by 2006, the picture had reversed, with Chinese firms creating 9 of the top 15 games. This raises the following question: How did they do it? Was it as simple as the common logic of technological catchup – with a catch-up process based on technological learning increasing technological capability, eventually achieving technological superiority at lower cost, and often at the expense of 'sleeping' incumbents who end up not investing and losing domestic and global market share? There is no evidence that the 'machine' that is the Korean game industry had let up in any way. The Korean industry had grown in both domestic revenue and export (and even today, enjoys unparalleled success and respect). Being partly based on software, games, like software, should in theory be subject to increasing returns to scale and first mover, lock-in advantages. The chief software product makers, be it Microsoft, SAP or Oracle, are still world leaders.

Table 2. China own-made games vs. licensed games during 2003-2008 of the top 15 games, and 2009-2010 of top 10

	2003	2004	2005	2006	2007	2008	2009	2010
China own-made games	2	3	7	6	9	9	6	6
Licensed games	13	12	8	9	6	6	4	4

Source: adapted from surveys by www.17173.com

To some degree, the Chinese market is so large and continually evolving that it is not hard to imagine that for most sectors, some domestic firms will enjoy some advantage in supplying domestic needs. Still, by those standards, the Chinese game industry's 60% market share in 5 years is a worthy puzzle explaining. This is where our approach to focus on the layered components that games are constituted from, comes in. As we will show, the content component that almost all Chinese games share with games, are what they are most differentiated from Korean games on. As we will show, this is their primary competitive advantage. But if it's an advantage, why is it not one that Korean and other firms can take advantage of, by producing in the Chinese market with Chinese talent?

Our inquest will have to reconcile this picture with two more phenomena, which we treat as minor puzzles, relating to how Chinese firms have caught up. One is that of how companies built capabilities. In particular, how new companies built their own games seemingly come out of nowhere, with no capabilities, to achieve significant success over incumbents who have all the size and scale advantages.

A second feature is that of how the fortunes of certain Chinese companies have waxed and waned, and different companies have struck out to try different models, sometimes reversing themselves: In the last few years, the leadership (based on which firm is perceived to have the most successful product/business model at the time) has passed from Shanda to The9 to Netease to more recently, Giant. In one model, firms created their own IP, while in another, firms license foreign IP. Some firms have actually not stuck to one model: firms like The9 have moved from licensing IP to creating their own IP. License owners further complicate the situation: Originally The9 held Blizzard's World of Warcraft (WoW) license, but Blizzard shifted this to Netease, contributing to the former' woes even as it added to the latter's fortunes.

1.3. Design and Combination as Possible Windows into Industrial Competition and Evolution

Layered Components: Content, Design and Business Models as Frames

In general, the Chinese game developers' innovation and strategy further distinguished the Chinese online games industry (from the picture given by previous studies of the US or European games industry) along three dimensions. First and foremost, the product has a strong cultural nature that helps in differentiating different products. The nature of innovation in games was previously broadly characterized as involving differentiation in gameplay and content. Countries such as the US, games have drawn content and other inspiration from popular culture including books, movies, and comics(Tschang and Szczypula 2006). Similar to the Japanese case, the Korean online games industry tapped into fantasy as a generic (and ultimately globally saleable) type of content. But not every country has developed its own versions of fantasy, science fiction or alternate realities (e.g. the dystopian futures that figure heavily in Japanese anime and games). Arguably, this is the case in China. Interviewees note the relative popularity of science fiction in China is lower. In the case of China, domestic content has largely centered on a distinct cultural perspective based on Chinese history, mythology, and modes of combat (i.e., kungfu and sword fighting), and this have been key features of Chinese novels and film, games notwithstanding.

Related to this are the cultural preferences and preferences (also reflected in game design that addresses the online gameplay) of the Chinese consumer. Community factors were vital in online games. This is a natural byproduct of online games, but throughout our interviews, it appeared that many Chinese game developers considered community to be more a more vital aspect in their development process than imported products.

Thirdly, the business model pursued by the firms was seen to be quite distinct across firms, and could even be considered to be part of the innovation strategy. This was broadly characterizable to include the revenue model, the proportion of self-developed versus licensed games, and its product strategy.

The design activity (or what we term game design) is actually central to defining a game, and studies of games have illustrated how game design, content and technology (i.e. programming) are the key constituents of games (Aoyama and Izushi 2003; Storz 2008). To simplify matters, we decided to encapsulate four design-related issues in an overall notion of "design" – be it business model design, game design, or the broader "design" that is entailed in bringing new content from other media, as well as the technologies enabling this, into games. As we will show in the section illustrating the data, each of these has central implications for business competitive advantage, as well as specific relevance to the catch-up story that we then 'narrate' with these elements.

Catch-up with China

Past stories of catch-up of developing country firms engaged in direct competition, often to produce more cheaply at lower cost, increase quality while doing so, incrementally innovate, then architecturally innovate)(Hobday 1995; Kim 1997). When China came onto the scene, the strength of its domestic market's huge demand helped to promote almost all of its sectors. This was seen at an early age with personal computers.

Perhaps what makes the gaming industry unique is that Chinese online games are in many cases, especially the high end, offered at equivalent rates to Korean games and other "imports". In this case then, something else has to change in order to attract and "keep" consumers ("players"). Table 3 shows the changes of factors for game players' choices of games.

Table 3. Factors affecting game player choices of online games in China

Factors	2004	2005	2006	2007	2008[†]	2009	2010
Ease of play	6.0 %	5.9 %	33.0 %	23.0 %	28.6% (7)	29.7% (4)	17.8% (6)
Appearance and sound effects	14.2 %	12.0 %	16.0 %	5.0 %	48.5% (1)	52.0% (1)	54.4% (1)
Related activities	5.2 %	6.3 %	9.0 %	6.0 %	22.1% (8)	14.3% (7)	17.2% (7)
Customer service	5.8 %	5.7 %	8.0 %	12.0 %	38.6% (5)	NA	NA
Player Killing	3.3 %	7.0 %	7.0 %	4.0 %	NA	NA	NA
Story line	9.3 %	9.8 %	7.0 %	5.0 %	34.6% (6)	50.7% (2)	31.8% (4)
Feature balancing	11.0 %	9.5 %	6.0 %	9.0 %	42.0% (2)	NA	NA
Chatting, wedding, etc. social activities	5.4 %	5.0 %	4.0 %	12.0 %	NA	29.6% (6)	19.8% (5)
Anti-plug-in (robot playing)	10.6 %	11.0 %	4.0 %	7.0 %	41.1% (4)	NA	NA
Free testing play	8.5 %	6.5 %	4.0 %	5.0 %	NA	NA	NA
Online fluency	8.0 %	9.4 %	4.0 %	12.0 %	NA	29.6%	34.0%

					(5)	(3)	
Attraction of crowds	8.6 %	8.3 %	3.0 %	6.0 %	41.6% (3)	34.8% (3)	39.3% (2)
Guild fighting	3.8 %	3.6 %	2.0 %	7.0 %	NA	NA	6.6% (8)

Source: www.17173.com

[†]The survey was switched from single choice to multiple choices since 2008. The orders are in parentheses.

We will illustrate how all these layered components fit with the emerging design paradigm. This is naturally fitting, since in games, the game's design actually interweaves components. The design of parts of the business model are also sometimes interwoven with the game's design.

2. Methodology

The methodology was to initially sketch out and identify the important aspects and stages of growth of the industry, the key dimensions for making sense of the data, and the important points at which seemingly interesting trends or deviations from expected norms started to emerge.

We secured interviews with some of the better-known and better-performing firms in three rounds of fieldwork in China – Beijing in May 2006, Shanghai in October 2006 (with The9 and one media park), and Beijing in May 2007. A total of 10 companies were interviewed, and including multiple interviews (especially at Kingsoft) and interviews with government organizations, about 20 interviews were conducted in all. In addition, we have also interviewed five firms and organizations in HK (for six times) and two firms in Taipei, which has helped us to triangulate on an external view of Chinese firms. Adding these up, about 15 firms and 28 interviews were conducted during a total of about five weeks spent in the field.

The sampling of Chinese studios was a convenience sample (based on contacts made through the local government agencies responsible for software in Beijing and games in Shanghai, as well

as personal contacts with venture capitalists and leading Chinese software firms that had games divisions). In the end, we were also able to sample firms that ranged over various dimensions, including types of games being made. We made an effort to concentrate on online games. Online games appear to be one way in which games are becoming dominant. We also collected secondary data on historical performance and characteristics of the top games. In this way, we can reliably trace innovation in the games industry across time and companies.

Table 4. Description of firms interviewed

	Size, types	Beginnings	Games and measures of success (PCU, ranking)	Company's measure of success (no. studio locations/employees)
Large, established integrated studios (developer/licensor and operator)				
1. Kingsoft *	Diversified software co. Founded in 1988. 1300 employees currently. 800 employees are R&D workers.	Started by entrepreneur initially in PC office software. Gradually got into PC games due to his interest and later focused on online games. Focus is on internally developed games.	Hero108 JX online award of the best original online game in 2005 at the ChinaJoy exposition award the best Chinese own-made online game in 2004 Funshion Myth won the most expected online game in 2004	top ten game operator in 2005 award for online game export in 2005 award for supporting the online game industry in 2005 top ten game developer in 2005 top ten Chinese ethnic online game in 2005 most welcome online game in2005
2. The9	Started 1999. IPO in December 2004. "NCTY" on NASDAQ。	Mostly licenses games. Started internal game development.	licensee of WOW (developed by Blizzard) licensee of SUN(developed	Award the best enterprise in 2006 for the digital interactive entertainment industry

			by Webzen)	Award the best online game company in 2006

3. Perfect World	Founded in 2004. 400 employees currently(17% with graduate or PhD degree)	Recent entrant to online environment with multiple products.		
4. Sohu *	Large well-known portal. The online game branch was founded in 2002.	Started by using contracted studio. Just completed first internally-developed game.	Tian Lung Ba Bu	Award top ten best online game developer in 2006 IamAsia award of the highest internet value in 2001

Specialized, medium-sized developers

5. Object software	Founded in 1995. 200 plus employees currently.	One of earliest developers of PC and online games.	Myths & Heroes II -award the best 2D online game in 2004 - award the best online game in 2003	

Smaller companies

6. Oriental Flagship *	Founded in 1994, later became a joint venture	A small group worked on a war game, later focused on real time strategy. Got finance when joint venture was formed with non-game companies.		

7. Feather-Snake *	Small studio founded in November founded in 2004. online game in China and got infusion of VC.	Startup which made first mobile Aims to be service provider (higher up the value chain). Licensed game to Netease???.	Shenyi, award the best mobile game in 2005	
8. Tsinghua TongFang *	Division of large IT company. Founded and IPO in 1997.	Kele8 website with casual games ("H5") - all copied gameplay from West's best products		Award the top 100 Chinese high technology company
9. Infusio	Small co., subsidiary of French firm a mobile games service provider. Founded in August 1998, the first to launch downloadable games for mobile phones.	Brought over from France. Business model based on working with manufacturers to embed software on phones.		
10. Joy China		Started with capital by making Kele8. Made online action game with Chinese content, sold to Shanda.		

* interviewed at least twice longitudinally, based on multiple interviewees.

3. Resolving the Puzzles of Catch-up: Layered Component Combination as a Means of Understanding Change

3.1. History of the Chinese Game Market and Industry

Beginnings of the Industry: the PC Game Era

As pointed out in the introduction, the Chinese games industry began with the rise of its software industry (this being unlike other countries, where game consoles first introduced games to homes). Along with the diffusion of PCs into homes and internet cafes came packaged products such as games. One of our interviewees, Oriental Flagship, was one of the first industry entrants, and amongst the handful of firms, made one of the first PC games, and one of the first war games, in China, in 1994 (other interviewees from Object software and Kingsoft also reported that their firms also had some of the early products).

Kingsoft started out as a software products company from the very beginning, and had success with their desktop PC products, especially their Office suite (including such functions as word processing), and their language translation software. Kingsoft entered the games business in 1994. Like Oriental Flagship, Kingsoft's early PC games were relatively successful, but according to an interviewee, the piracy eventually became so rampant that they could not sustain themselves. Around 2000, profit margins were falling with piracy. It reached a point where most of the PC games sold were pirated, and most smaller companies that tried to make PC games folded their operations. According to one interviewee from Sohu, the piracy was so bad that by 2000, there were really only two domestic firms left making games – Kingsoft and Object software. Even then, Kingsoft was no longer making PC games. Kingsoft quit the PC games business in 2001 (even as they ramped up their online games).[2] As a marketing executive from Kingsoft noted: *Even players who play PC games – many of them use pirated games, so the money those companies can earn is very limited.* Object software was turning to exports as a means of survival. The CTO of Oriental Flagship left in 2000 (but was to return a few years later as online games fervor took shape).

The First MMOs

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[2] While most of the Western literature refers to the piracy of Western products such as Microsoft's Windows and Blizzard's games, a lesser known fact is that most domestic products such as Kingsoft's Office software and many game companies' products, including Kingsoft's and the forerunner of Oriental Flagship, were also pirated.

The online game boom changed all this. These Chinese online games market took off during the early 2000s – we denote this as the formation period of the Chinese online games market. A strong impetus was given to online games by the ongoing piracy of non-online games. Korean online games were dominant during this point onwards. One interviewee also noted that early Taiwanese games fundamentally paved the way for growth of the domestic MMO industry by showing how valued these games were by consumers. The first online game success was widely acknowledged to be Shanda's import of the Korean game MU. More than one interviewee noted however that there were other online games predating that. (According to an interviewee), a Taiwanese firm imported two games that became a success. Kingsoft produced one of the first domestic online games, *King of Kings*, made with an imported game engine, and one of the first online games to prove to be sustainable in china market.

It was pointed out by an interviewee that the Chinese company Shanda really showed others that online games could solve the piracy problem and achieve satisfactory profits. Shanda did this by importing the Korean game MIR in year 2001. After Shanda's success, other online games started to proliferate as other companies started to follow their model.

Many companies have copied the MMO form of gameplay, in part because it was deemed a money-winner. At the same time, as casual games became popular, many of our interviewees also reported moving into casual games.

In online games, operators typically serve as the intermediaries to the studios which then focus on development. In China, this led to multiple models, including one in which studios specialized only in production, and another where the studios operated their own games (i.e. were vertically integrated with an operator).

The Catch-Up Puzzle

To address the catch-up process, we need to address how it is that companies were able to move into the industry, and in particular, fairly rapidly (that is, the first two puzzles). To address this, we first look at the origins of some of the firms, and second, at the factors involved in catching-up.

Origins of Firms

The Chinese online game companies come into the market from different origins, largely based on market opportunities perceived by whoever has the finance and some of the technical ability. Web portal operators like Sohu and Netease, software companies like Kingsoft, and specialized game distributor/operators like The9 and Shanda have all entered the online games industry. As with game companies in other countries, friends and acquaintances from universities and workplaces, and spinoffs from other gaming companies, appear to be the origins of the vast bulk of the smaller companies. The startup process of game companies is rather easily facilitated due to the excessive (if not excess) of investment capital. Many companies that we interviewed took advantage of a mix of private sector monies, parent firms' investments and government support.

Two interviewees noted that the startups, sometimes being spinoffs of established firms, are largely imitative in nature. These developers are often seeking to make more than they can as employees, but not necessarily huge amounts. They can do this by making a not very innovative, if derivative, game, that they sell to other portals which may want to have a game in their lineup to satisfy customers. This is not unlike what was seen in the US market. As an interviewee noted: *"In most cases, the small company is just a group they come from (the original company) and they just open a company, but they just develop a similar game compared to the original company. They know they cannot compete but they just want to earn money. For example, they often do not take so much time to develop a similar game, and they just develop a game in very little time and license it to another operations cos. They don't earn very much but some money, but what they earn will be (I think) higher than big companies."*

Venture funding also supported many (three of more) of the smaller studios that we interviewed. The first was the Oriental Flagship, which sought venture funding to develop a game based on its competencies. The company believed that its domain knowledge of the military helped to differentiate it from any would-be competitors. Feather-Snake, while not appearing to have similar depth of experience, still had strong enough technical capabilities to implement a "vision" of a type of game (on top of which they were working on mobile phone games, which were less complex in many ways).

3.2. Catching-up as a Story of Recombining Components

We will now highlight the main issues that we found in our interviews pertaining to the four layered components: those of technology (the programming code), the game's design (consisting of the rules, the game mechanics, and gameplay enacted from both those), the content (consisting of the art, the narrative and the other parts of the context for play), and the

business model (which relates the other components to the manner in which a value proposition is presented, the social nature of play is enabled, and the revenue is generated). The first three layered components are conventional means by which games are deconstructed for analytical purposes, while the four pertains more to online games and games that are subject to cross-media influences and sales (discussed by Jenkins (2006) as "transmedia").

3.2.1. Technology

Some Chinese game studios climbed the technology curve in part by licensing Korean technology, while others did so by starting at the lower end. Kingsoft was an example of a studio that licensed the core technology (the graphics engine) from Korean firms prior to developing their own game engine. The technology component is perhaps the one where game companies' experiences most resembled the traditional catch-up story.

Perfect World was another example of a company that started with simpler products, but which moved into more advanced 3D graphics technology over time. It happens that developing a graphics engine is feasible for an inexperienced but talented programmer.

As a result of the studios' various efforts, Chinese games have improved technologically, first by moving to 2.5D perspective, and more recently, to the advanced and current state of the art – the 3D perspective. In addition, a few companies are trying out different genres of gameplay online, going beyond the standard RPG mode of gameplay. This includes the smaller companies that we have interviewed: Joy China, Oriental Flagship and FeatherSnake.

Chinese games have also slowly started to become differentiated from other imports, both in terms of the content offered, and in terms of the gameplay (being more directly targeted to Chinese consumers' playing styles than imports, which are usually made with their home countries' preferences in mind first). Despite this, according to interviewees, in the mid 2000s, the Chinese games were still behind Korean products in terms of their visual quality and perfection.

3.2.2. Innovating by Content: The Cultural Nature of Content

Its been pointed out that *"Games reflect the values of the society and culture in which they are played because they are part of the fabric of that society itself."* (p. 518, Salen and Zimmerman 2004). Chinese game studios discovered that the easiest way to innovate has been to create alternative content for the same type of gameplay. A number of interviews cited the historical and mythological nature of the Chinese content and its appeal to Chinese games, and in fact, a review of all the recent Chinese online games indicates that an overwhelming number have a basis in Chinese history and mythology. One interviewee pointed out that China actually has a weaker cultural tradition in science fiction – one of the stalwart providers of content to the US video game industry. Of the firms that we interviewed, the strongest claims to Chinese content were made by Kingsoft and Sohu, as well as by Joy China, which based their action fighting game on famous characters from Chinese history and mythology. Oriental Flagship had a different way of developing Chinese content and interpreting Chinese culture. While their game was about recent and near future military forces, they relied on Chinese military doctrine in trying to make the game stand out for allowing "weakness" to defeat "strength". According to the CTO of Oriental Flagship, *It is not easy to copy our product. Besides the game design, military knowledge and background is also required.* THe CTO's experience in the military, and coming from the leading Chinese military academy, helped in him to design the game.

A more classical form of culture is the historical novel. As one interviewee noted:*"This is also probably where our games set themselves apart from the foreign counterparts, because Chinese history is a very important part of our heritage and culture. Besides being a main factor for penetrating the China market, it is also a point of attraction."* Sohu illustrates this well. They went after a particularly unexploited but well known Chinese novel set in historical times, and built the game around it.

Since many Chinese game studios were producing products with the same content, the question is raised as to whether the resulting mimicry would make the games market too homogenous. At one level, each game is sufficiently different to attract a different audience. As one interviewee noted:*"well, it is more a matter of individual perspective; different individuals can have different interpretations of the same facts; some of them can be more humorous while some will be more serious. Some may follow the facts closely while others might setup fictitious elements along with the history."* Products "*can vary quite vastly, that is, the gameplay may be totally different."*

The taste for cultural content cannot be underestimated, as one interviewee pointed out:
"Games from Korea or US may use Taiwan as a test area to learn about (Chinese) consumer's tastes and the business model. It is costly to launch in china without any prior knowledge."

Netease and Sohu got a lot of credibility from reusing "classics" from Chinese literature. The cultural nature of the content is also a powerful factor when Chinese products move overseas. As Kingsoft notes: *We started in Vietnam in 2005 and were very successful. There are only 55 million people in Vietnam but the peak concurrent users was 128,000 – which is even bigger than the same game in China. This game is in Vietnamese. This game is based on Chinese history. Vietnam was very interesting – in our hotel, the TV shows and also the drama were all Chinese plays, but translated into Vietnamese. I think in China, these were very old plays from 1980s and 1990s.*

3.2.3. Design

The design process in computer games is often considered to be the part of the development work that is most definitive of what the product becomes. Despite this, the design process as highlighted in our interviews appears not to be any different from those of processes found conventionally elsewhere. Designers in China move between studios, but do not necessarily enjoy the "star" status that top designers have in the US and elsewhere. Nevertheless, studios like Kingsoft have noted that they need strong designers. Kingsoft made a clear distinction between the advantage they had in developing for the local market, versus imports such as the *World of Warcraft*, even though their development expertise was not as high as the US's: *"We have a cultural advantage (for the Chinese market) and we also know the circumstances in the China environment. For example, our game does not have high configuration requirements, but the US games do. In China for example, you can only see WOW in the big cities, not in the second level cities".* Thus, this sort of local knowledge extends from the content to the design and business model.

A Kingsoft interviewee remarked on their taking their time, with a casual, online game under development requiring a significantly longer development cycle that its previous online games. In fact, Kingsoft rejected one version of the game after large parts of it were developed, expressly in order to "perfect" it.

Making continued hits is generally a challenge in the games industry. Kingsoft had successes with earlier games like their JX1, JX2 and JX3, which provided a sound basis for them to develop further games. Other recent cases of single hits defining companies include Tencent, which quickly rose to the top with a game The Westward Journey that become a hit, in the process defining a new genre of casual online games.

Designers act as users during the design process, designing what they would find to be enjoyable. Furthermore, as one designer put it, their ability to access and play other games helps them to design better. As a Kingsoft interviewee noted of their casual online game: *They are all very experienced in this industry – all our management including the president are game players and know what they would like.* This suggests that design is as much a user-led process of innovation as any.

The Casual Trend

One strong social trend that appeared to be happening in China was the onset of "casual" gaming. This usually refers to either a casual genre of game (involving shorter times of play), but in China, casual also referred to any style of gameplay that was not overly challenging or competitive. This style of "casual" gaming was less about fighting than about friendship, community play and the like. The first occurrence of casual games was discussed in our first round of interviews in 2006, with companies such as Kingsoft, and THTF discussing their casual projects at that time.

While early Korean games had set the stage for strong combat component in online games, game developers were increasingly recognizing the desire of many Chinese consumers for alternative modes of gameplay. The actual idea of casual games may also have been initiated from Korea according to one interviewee, as games like Maple Story which have a huge following in Asia blend "cute" characters and game worlds (partly following from a particular Japanese style of anime) with a "casual" focus on gameplay.

The casual nature of Netease's Fantasy Westward Journey was one of the earliest and oft cited examples of Chinese casual games, and was cited in a number of our interviews. According to an interviewee from another company, this was not really a refined game, but being based on a successful myth, the "Monkey King", which enjoyed a resurgent appeal in popular culture including television series, was a natural fit with gaming. This appealed to gamers due to its "casual" nature, which was more about "journeying" with friends than about strictly achieving objectives.

As a result of the success of Netease's Fantasy Westward Journey, Kingsoft and other companies are developing for this emergent "genre" of "casual" online games. However, the high cost and

risky nature of game development is such that even incremental innovations such as Kingsoft's casual game required significant time to get right.

Other companies that we interviewed also consider games from other genres as "casual" to be games. The action fighting game by Joy China was one example of a game genre "redefined" to be as much about casual as anything it normally stood for.

The casual games that Tsinghua Tongfang (THTF) focused on are what traditionally passes for casual games, these being games with shorter times of play that can be ended in a short sitting of a few minutes to half an hour.

The Social Nature of Gameplay

The kinds of design-related features that interviewees noted to be significant differentiators of Chinese products include the manner of social engagement. Traditionally, innovation in games such as PC games involves changing the gameplay through the game design (i.e., the design of the rules and properties of objects in the game).

Online games are generally social in nature, and this social nature differentiates them from other games. As is pointed out in by now standard texts on game development, the social nature of online games involves modes of gameplay based on the different ways in which social interaction is achieved, as for instance, is done via "teamwork". One interviewee noted that *"(players) cooperate to fight bosses, or they chat with each other. Also, they may play in the same internet café. In China, many people, e.g. several friends, got to the same café and play on the same team."*

THTF also tried later to create a new model for not only selling its casual games, they integrated the game with a social platform, and moved to a 'friends helping friends' model known as Kele8.

Innovating across genres

While many companies subscribed to conventional genres, some companies that we interviewed also attempted to blend genres. For instance, another company which we interviewed was Feather-Snake, a company which developed online RPG-type games for mobile or handsets or cell phones. Feather-Snake was the first in China to build an "online" or player-

to-player mobile game, which won an award for 2005's best game, awarded by a mobile magazine and mobile game website. This led to an infusion of venture capital from a real estate company for development purposes. Their initial goal was to grow into a service provider (where the mobile content industry has a different structure where the food chain consists of content providers (including the studios), service providers (of which there were 1200 in China at the time, and finally, telecom operators)). At that time, the interviewee estimated that there were about 20 known mobile gaming companies doing online games at the time out of about 400 game developers. A second interview showed that the mobile content space had been dramatically reshaped in the year since. The company had shrunk by half, but in the process, had emerged leaner and unscathed.

3.2.4. Business Models as Competitive Advantage: Virtual and Real Platforms

While the notion of a business model can be fairly comprehensive, extending into the operation of a firm, its value proposition and its means for reaching customers, we adopt a version of it here limited to what we observe in our data. The term business model is used to partly because it not only describes how online games are developed and "service" customers, but it also helps illustrate how the game product is "experienced" and leveraged on for additional and even varied experiences. The term is also used to encompass conceptions typically associated with strategy, such as the make or buy (in our case, the develop or license IP) decision.

The table shows some of the key business characteristics encountered.

Table 5. Online Business Model-like Features of Companies (used for situating games to market)

	Online business model or characteristics (unique)	Other differentiators of business model
1. Kingsoft	Early mover, has diverse studios (self-developed) across a range of games	Catered to low end of market
2. The9	Highly successful from licensing WOW, starting self-developed	Capitalized on players' familiarity with Warcraft franchise
3. Sohu	Initial funded and carried a studio's game, then early success with self-developed game	As a portal, redirected traffic to its games

4. Perfect World	Produced engine that can create "factory" like productivity (speeds up product cycle)	Organized real world events to promote the game
5. Object software	Focused on exports, then became developer-operator, now focusing on development only	Competency in game design and development. Wide product scope including PC games, TV games, online games for business, entertainment and education.
6. Oriental Flagship	Startup developing own IP for later marketing	Highly niched game (contrarian strategy)
7. Feather-Snake	Capitalizing on early mover status (first game of its sort). Powerful intermediaries changed the sector, and their business model changed to one working with other service providers.	Low barriers to entry
8. Tsinghua TongFang	Tried to be fullest portal possible for casual games (revenues not assured)	Seeking new entertainment models that incorporate casual games but go beyond them
9. Infusio	Games were brought over from France/Europe	Seeking to place "tracking" software on cell phones
10. Joy China	Innovative in combination of Chinese content with action style	Selling game to operator (Shanda)

In particular, commonly mentioned business model-related features observed in our interviews are those of the platform, the revenue model (free to play vs. pay to play being the two dominant variants), content sourcing strategies and cross-media channels:

The platform, consisting of anything from web portal to a game portal, turns out to be an important advertising and revenue generating base for many of the online game companies that we interviewed, especially those targeting a larger proportion of the market. While some successful game operators like Shanda and Netease have game specific portals of their own, Internet portals like Sohu could rededicate their portal to support their products. Meanwhile, smaller ones that we interviewed like Feather Snake signed contracts with other portals. In Kingsoft's case, they were a software company which had produced a successful language translation software and a version of Office. The company utilized the public's recognition of

this through their website to bring in players to their games. In a different manner, Perfect World links other media to games to promote games at real world events, bringing books into games etc.

We have shown how the platform as a function of the business model has been developed as an outreach instrument for developing the base of players for a company's products. The key issue then is, what of all the other attendant aspects of a company's business that are game-related but not internal to the game?

Licensing vs. Internal Development: Whether to license (the right to operate) a foreign firm's game is one of the first decisions a company has to make. Licensing from overseas was a major business strategy used by most of the larger Chinese online game companies. This may be because of the need to move into the market fast, but is also be due to the quality of Korean games.

Licensing is a double edged sword, as the company that "lives" by the license, can also suffer by it (e.g. from choosing the wrong license, or by failing to find a viable replacement). One interviewee noted that the ability to license involves the ability to choose the "right" game at the right time. The ability to pick products is crucial, since the local reception to foreign made products could be unpredictable. While Shanda was one of the early successes of the industry, it had fallen on hard times as it could not find a replacement product with as much cache as the rest. The9 found itself on the opposite side of the cycle (for awhile). Being in financial distress, the company bet its remaining cash for the World of Warcraft license – which in turn turned around its fortunes. The hits-nature of the industry is evident in these examples.

The high flying licensors' experience also indicates that licensing is not a stable model, as shown by The9, which eventually lost its rights to the World of Warcraft. In fact, many of the major companies that became successful through licensing - Shanda (MIR), The9(WoW) ended up partly afoul of their licensors, and eventually hit periods of decline. Ultimately, since companies relying on high flying licenses for unusual profits are in a seller's market, they face a great deal of uncertainty, and will have to exercise control over their futures. This is what The9 was doing when we interviewed them – before they lost the WoW license, they were already developing their own internal games. This is not to say that the licensing strategy does not have its place, as these companies were unlikely to have become as established and well resourced in the first place without their successes from the licensed games.

In contrast to licensing, many Chinese companies are also attempting to develop their own products, although many, with the exception of ones like Kingsoft and Netease, are still not experienced enough to create good games. Kingsoft has emphasized internally developed games since the very beginning, perhaps because of its roots in productivity and other packaged software. Our interviewees noted that another key ability of a company was to be able to obtain more of the full revenue from an own developed content (minus any fees for its IP), as well as to control the lifecycle of the product. The main contribution may be a longer-term contribution to the building of a development capability that puts the company's future in its own hands, and not at the mercy of the next IP developer.

Free to play vs. pay to play: One important aspect of the business model relates to how revenue is generated, i.e. the **revenue model**: more specifically, the original pay-to-play model (where customers pay on a regular basis by the month or on a per period of game time basis), and the newer free-to-play model (where the operator makes money selling virtual items that players need in order to upgrade their play faster). The latter was originally developed in Korea, but was becoming dominant in MMOs by the mid 2000s. Chinese companies were fast to latch on to this, it was acceptable practice for Chinese players to increase their in-game capability by "buying it", whereas in the West, this is considered socially unacceptable.

Hits and Risks

One aspect of the games industry (and creative industries generally) is that a "hit" can accelerate a previously unknown company to being one at the top. This phenomena is observed in the Chinese industry (noted by head of Feather-Snake). The cases of Shanda, The9, and recently Tencent also indicate the same.

Another manner of innovation was in adapting the business itself to penetrate other sectors, while sometimes seeking synergy with the gaming side. Kingsoft's adaptation of its platform to advertise its games was one example of this. Another prime example of this was Shanda, which according to two other interviewees and the industry literature, was continually repositioning itself. After its early successes, it tried to start other media ventures, such as set top boxes, but this failed. The company later returned to games, and tried a variety of ways, including using innovative marketing/revenue generation schemes in cyber cafes. It was one of the first to switch from the pay-to-play to the free-to-play model.

A third example of this mixed product model/business model approach was THTF's business model concept. The CEO of the games division of this well-known conglomerate had developed

traditional online games in an earlier company. On moving to THTF, he acquired a portal in 2003 called Kele8, which they used to underlie their concept of community. Their first attempt was to copy the gameplay of hundreds of casual games, those which could be played in five minutes, and to put them all on the portal. By doing so, he sought to become the site of choice for many players, at a much lower development expense. While this might not be innovative, he explained that most of these games were seeing their first use in China, and the sheer number of games offered in one site was in a way a new kind of business model – effectively being a "factory" model of software production. In a second phase, they tapped into the community-building trend that so many portals and online games were also emphasizing, calling it "friends helping friends". They sought to develop a platform that emphasized shared elements such as learning from one another. Unfortunately, the revenue generated did not match up to expectations, as consumers were less willing to pay for a casual game experience.

3.3. Other Traditional Catch-Up Explanations

In some of the layered components, we can see the hand of traditional explanations for catch-up within the game industry. Another factor that comes out in a significant manner is that of skills.

A Story of Skills

While the layered components tell a story of how Chinese game companies were able to catch up with more or less derivative design and technology, to resolve the puzzle of how these firms were able to catch up so far, as well as to develop their own capabilities, requires us to investigate other factors.

Perfect World, Giant and Sohu are instructive of the new entrants' stories. Seemingly out of nowhere, in a matter of less than a few years, they rapidly advanced and achieved a higher level of game technical performance than the other local incumbents. Their stories are as much to be found in the mobility of talent and project-based nature of the industry (and hence, products). At the time we interviewed Sohu, the company was gradually but steadily building its games presence. Starting out by licensing (or buying) games from other makers, the company started its internal games team by hiring an experienced designer, and built the team around him. Sohu was of course the second largest web portal in China, and was well equipped to market the game.

Perfect World also illustrates what talent can do for a company. Located next to Tsinghua, the top engineering university in the country, the company hired numerous graduates of the university. The company went through multiple products, each time improving each one with more and more compelling content (story and characters), and advanced technology. By 2007, at the time of our interviews, the company had already achieved 3D perspective in its games, and had cross-marketed the game with famed actresses whose likenesses appeared in the game world, and real world events helped build support for the game.

4. Discussion: Catching-up as a Story of Modular, Layered Components

The Nature of Innovation: Incremental, adaptive, combinative or none of the above?

At one level, the Chinese games market could be said to have arisen through unusual circumstances – the online boom came because it circumvented PC piracy, and was stimulated by the entry of Korean games. The market not only caught up, but built a commanding presence by way of licensing foreign content.

At the same time, even as some of the studios that we interviewed struck out to make innovative, genre-splicing games, it appears that many game studios are not being particularly innovative, and are even imitative. The head of one mobile games company said: *"Many Chinese companies are neglecting and forgoing the process of brainstorming, when they start copying. Both PC and mobile companies."*

While our story is largely about how firms grow and survive, what is combined, and in what sequence, is the important point. We have now examined how the four layered components of games are innovated and subsequently "combined", and how this process helps make sense of the Chinese game industry's evolution. In particular, designs were adapted, technology was learnt, and content and designs were incrementally tuned and adapted till the market could bear the new innovations. Content was key in that domestic content was recombined in a more or less straightforward manner. Conventionally, innovative games (design- and content-wise) may be developed by following consumer interests, by following social trends, and by relying on one's own ideas (including cultural content). However, it is also clear that the business model is as much a factor in the success of studios and other game operators as the game's design. Studios are becoming as innovative in business models as they are in the games they are producing.

5. Conclusions

We analyze the catch-up process that allowed this to happen by separately analyzing the core constituents of games (design, technology (code), content, and in a broader fashion, elements of the business model) as layered components. Each of content, design and technology were combined in with different mechanisms, with business model aspects helping create competitive advantages across value chains. All of these combined to produce a highly locally suited product. This case adds a cultural goods (or creative industry) nuance to the general understanding of the catch-up process. It also provides a window into how Schumpeterian combination can be developed at economy levels while taking product characteristics and business models into consideration (Thurberg and Knudsen, 2009).

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