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Hong Kong's New Creative Industries: The Example of the Video Games Sector

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Hong Kong Innovation Project

Report No. 11

Hong Kong's New Creative Industries

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1. Introduction

The new entertainment media sectors are growing at a faster pace than most economic sectors. At the same time, the expected global market for parts of the new creative industries like games and animation is considered to be huge. India's NASSCOM estimated the global market for animation to be approaching \$50 billion, while one consultancy, DFC Intelligence, reported that the total global games market (including PC, online and console) would rise from 33 billion in 2007 to 57 billion by 2009.¹ At the same time, investments in virtual worlds, including associated technologies and social networking sites in the U.S. alone have been in the few hundred million dollars range per quarter over the last year.

1.1. Defining the New Creative Industries

From a policy and governmental perspective, the global interest in "creative industries" partly dates back to the UK's interest in defining and promoting this sector as a strategic growth and development initiative (1998).² The UK Department of Culture, Media and Sport (DCMS) defined 13 sectors as creative industries, but these included sectors as wide as software (including business software), antiques and collectibles, computer games, design and architecture. The total contribution to the UK's GDP was \$112.5 billion pounds or 5% of GDP (DCMS 2001). In fact, the percentage that was represented by the newer sectors such as video games was far

¹ Sources: www.nasscom.com.
http://www.gamasutra.com/php-bin/news_index.php?story=15529
http://www.gamasutra.com/php-bin/news_index.php?story=19225

² Other non-standard terms are in use. The term *interactive and digital media* (IDM) was coined by the Government of Singapore to refer primarily to games, and partly animation, but this term is not in wide usage. Another term - new media - tends to refer to the dotcom-influenced Web media, so we will continue to refer to the broader set of creative industries, and the entertainment portions of it.

smaller than the larger sectors (video games being at \$1 billion, versus software at 36.4 billion and design at 26.7 billion), though presumably growing fast. In Asia, while many countries have focused on promoting their creative industries, Singapore has targeted the new creative industries more strategically than most other countries have. In Singapore, the creative industries themselves accounted for 1.9% of GDP (Singapore \$2.98 billion); with the addition of the distribution industries, the percentage rises to 3.2% of GDP (Toh et al 2003). From 1986 to 2000, Singapore's creative industries grew by an average of 17.2% per annum, compared to an average annual GDP growth of 10.5%. The Singapore government has committed funding of Singapore \$500 million from 2006 for five years, to fund sectors such as games and animation in what is termed the interactive and digital media sector.³

It is worth noting that while some of the creative industry sectors were growing fast, they should be viewed not only as industries unto themselves but as possible competitive advantages or complementary industries to existing industries. For instance, special effects are becoming well ensconced in major film budgets, while gaming is integrating with traditional toys and leveraging off the film industry's intellectual property. Finally, as Internet usage becomes more and more virtual world (VW)-based, VWs become targets for corporations interested in appealing to consumers by using VWs as new channels for marketing and interaction. All of this interest in VWs is partly reflective of the previous e-commerce boom that the IT sector went through. The previous affair with digital media and e-commerce resulted in the dotcom boom of the late 1990s, but since the crash in 2001, e-commerce has continued to grow, albeit as part of ordinary corporations' operations. In addition, a not-insignificant trend has been that of users increasing their usage of social media and participation in online gaming.

³ http://www.singaporemediafusion.com/news_releases/article043.html. Accessed 14 February 2009.

Creative industries commonly referred to in Asia include the subsectors, products and media of games, animation (largely three-dimensional), computer graphics, social media, and design (including industrial design). Games can be further broken down to video, console (typically played on a dedicated platform like the Sony Playstation) and computer games. We hereafter referred to this as video games or games. It is useful to paint certain characteristics of these selected creative industries first in broad brush terms – shown in table 1. Generally speaking, the two subsectors most referred to as creative industries in countries as Japan, Korea, Hong Kong, and Singapore, are video games (hereafter referred to as “games”) and animation. Even though animation is not really as technologically-driven as games, it seems to be holding a place as a valid industry for government policy to prospect for economic returns, perhaps because of its close tie in to popular culture and its appeal to younger generations. A third sector of note is that of social media, which is less about entertainment than it is about social networking. Essentially, these sectors each encompass some of the aspects of being technologically-enabled, creative, and “new” or “emergent” – or some combination of the three. They are also consumed in fundamentally different ways and involve different “components”.

Table 1. Characteristics of Selected Subsectors in Hong Kong’s New Creative Industries

	Components	Form of user interaction	User Objective	Purpose for business/consumer
Video Games	IT (gaming technology), content (art and animation)	Active (interaction)	Challenge, socializing (MMORPG)	Product (may be service provider)
Animation	IT (computer graphic rendering), content (digital animation), story scripts	Passive (Narration)	-	Product (may be service provider)
Computer Graphics	IT (computer graphic rendering), content (digital animation)	Passive (narration)	-	Service provider (may develop own intellectual property)
Virtual worlds (emergent) (VWs), Social networking sites (SNSs)	IT (real time rendering technology), content , (VWs), Web 2.0 (SNS)	Active (interaction)	Socializing (friends’ networks)	Platform of user usage, creation (VWs); may complement other Internet offerings (e.g. SNS)
Design	Design as a function	Form (aesthetics) and (user) function	-	Service provider

Animation: Animation has long and deep roots in both film and TV entertainment. However, animation itself has an older, two-dimensional tradition, as well as a newer three-dimensional one. While 3D animation is known for its intensive use of computer processing, 2D animation has also seen significant computerization. There is a large global market for animation, but as has been demonstrated elsewhere, the outsourcing of animation – which most Asian countries’ industry are based on – is restricted to the production stage, while with the exception of Japan’s games and animation (i.e. anime) and Korea’s online games industries, many other countries’ have found it difficult for domestic products to cross cultural barriers.

Games: While the global gaming sector is vibrant, and online games have gained in popularity; while these are a mixture of casual (short term play) and non-casual games, the former often being played “free”. Sales data for the US indicate that computer and console (video game) sales went from US \$7.4 billion in 2006 to 9.5 billion in 2007, of which console games accounted for

6.46 and 8.64 billion respectively. According to an Entertainment Software Association (2008) report, 22% of the most frequent US gamers pay to play online games. Of the total that play online games, only 11% play persistent multiplayer universe games of the sort like the *World of Warcraft* (often labeled as massively multiplayer online role playing games (MMORPGs). Another estimate has it that total online game revenue in the US topped \$860 million in 2008.⁴ This was driven by a user base of about 8 million households which “visit MMORPGs monthly, of which about 3.5 million are “paying to play” in MMORPGs.⁵ Another 9 million visit virtual worlds monthly, of which about 2 million are paying customers.

Computer Graphics: Another use of 3D computer graphics related to 3D animation is that of computer graphics imagery (CGI). This involves generating special effects for the film industry. Special effects have provided an increasing part of the value added to a typical US “Hollywood” blockbuster film. While MMORPGs are one of the original forms of virtual worlds, newer worlds are being created that are less game-like and more “social” (as illustrated in the next paragraph).

Social Media: Another manifestation of computer graphics is seen in “virtual worlds” which are platforms where social media and video game technology are coming together. The area of social media was originally represented by social networking sites (SNS), which were becoming the “de novo” means of networking on the Internet. Facebook was best known for its embracement of Web 2.0 technologies which provided for a user-generated philosophy of development. However, virtual worlds like *Second Life* were taking this a step further by providing a new mode of 3D avatar-based interaction. According to the Gardner Group, virtual worlds were set to

⁴ http://www.salon.com/tech/giga_om/tech_insider/2009/02/15/stop_looking_for_a_wow_killer/ Salon.com. Accessed Feb 16 2009.

⁵ <http://www.parksassociates.com/research/reports/tocs/2008/gaming2.htm>. Salon.com. Accessed Feb 16 2009.

become a pervasive feature on the Internet, with as many as 80% of users having a virtual presence.⁶ At the same time, Gartner acknowledges that there may be a high failure rate of projects.⁷ Whereas virtual world projects were very much in the forefront in Singapore – a large part of it derived from government funding – it appears that there is little or no corresponding activity in HK. It is worth noting that SNS are very much dependent on relationships. In general, it appears that the HK market is too small to sustain a social networking site – judging from the one company that we interviewed, which started out locally, but quickly moved to acquire a larger client base over Asia proper. It is not clear whether they had sufficient expertise to bring their product to the next level.

The General Structure of Creative Industries

There has been a growing academic literature on how the technologically-enabled creative industries are organized (see Tschang (2007) for some sources), but the most relevant information for understanding the trends and structure of the industry is still contained within trade publications and “how to” books. Nevertheless, many of the technologically-enabled creative industries’ key characteristics appear to mirror those of traditional cultural industries.

The critical features of creative industries (with economic and survivability implications for firms) are that the industries are hit-based, and that no one knows which will be a hit (Caves 2000). This issue of predicting hits is even more complex with interactive entertainment, since consumers literally have to interact with the game or other product on a moment by moment basis (Tschang 2005).

⁶ “Gartner Says 80 Percent of Active Internet Users Will Have A “Second Life” in the Virtual World by the End of 2011” April 24 2007 company press release. <http://www.gartner.com/it/page.jsp?id=503861>. Accessed on 2/15/2009.

⁷ “Gartner Says 90 Per Cent of Corporate Virtual World Projects Fail Within 18 Months.” 2008 company press release. <http://www.gartner.com/it/page.jsp?id=670507>. Accessed on 10/28/08.

The value chain for media is essentially segmented into the stages of development and distribution/sales, where development typically includes conceptualization, prototyping, (full) production (involving most of the human resources, especially the artistic), and final testing/debugging (in gaming) or post-production (in animation).

It is worth pointing out that many creative industries, not only traditional ones as writing and art, heavily involve intermediaries in the funding, marketing and distribution of the products. This is in part a segmentation of the value chain – one that allows publishers to be devoted to financing and distribution, and studios to be devoted to development. The role that intermediaries serve in gate keeping, seen in the arts (e.g. Caves 2000), is present to an even greater extent in the newer ones as music and video games, since the complexity and costs of their products require substantial amounts of funding. Intermediaries have significant influence over what products get funded. This is important as intermediaries are not always as thoughtful or creative as the developers themselves, leading to some tensions in the industry, but also to a potential missed opportunities, or conversely, potential opportunities.

While games, being information goods, have increasing economies of scale, they are also increasing in complexity, particularly with regards to content (e.g. art and animation) requirements. This increased complexity leads to an increased cost – both in producing games and 3D animation. This occurs in part because consumers are increasingly expectant of finer gradations of art and gameplay in games (Tschang 2007).

Another feature, one particular to games, is that they consist of multiple types of components. Thus, innovation in gaming typically comes from innovation in the gameplay, but content (e.g. a new story “universe”) with moderate amounts of gameplay innovation can also be used to create a “fresh experience” for games. This has been the experience in the Chinese

gaming industry, where Chinese firms first licensed Korean technology, then imposed Chinese stories and story universes on their products to create a locally-flavored product. This model works during the catching-up phase of industrial maturation, but innovations in gameplay have continued to come out of Korea, and Chinese firms have continued to be imitative in their gameplay. Online games often degenerate into forms of role play or strategy play derived from PC games, or social play (which is more unique to MMORPGs) that are more or less incremental in innovation terms.

1.2. Hong Kong's New Creative Industry Sectors

HK has also had an interest in promoting and growing the creative industries, in part because of the past industrial strengths the territory has cultivated in film, in design (including industrial design and fashion), and even in consumer goods industries such as toys. The film industry has enjoyed a long and storied past, though it had at one point become pigeonholed in HK-based action movies to some degree, and the lower levels of capitalization and “effects” in past years had some observers suggesting that it had fallen far behind Hollywood or other emerging global centers of production (Teo 1997).

HK has existing competencies, and policy interests, in at least four areas relating to the newer creative industries: video games, animation, computer graphics, and design. For the purposes of this study, we have limited ourselves to one narrow subset of this area – that of video games. Generally speaking, both of these tend to be popular long term and recent creative industries within Asia, particularly video games and animation in Japan, Korea, and China, and more recently, Singapore and Hong Kong, and animation in the Philippines (Tschang and Tsang 2008).

Our study is based on the secondary literature as well as a small but broad interview sample of about 12 interviewees (including seven product-creating organizations). This is partly by design and partly a convenience sample (see Appendix for list of firms and institutes interviewed). The interview sample is overweighted in and reflective of at least the larger and most recognized firms in the video games sector – which are relatively small in number. I have also drawn comparisons with information gained from previous interviews of about ten online gaming companies in China. Focusing on the video games sector provides us with a lens into the problems of developing a particular sector.

Table 2. Creative Inputs and Linkages with the New Creative Industries

	Link to popular culture	Line workers	Linkages with other industries
Video games	Culture provides content	Programming, design, art/animation	Toys (e.g. a game representing a different way of playing the toy)
Animation	Culture provides content	Art/animation, writers	Leverage on IP from other media (e.g. comics)
CGI	Not linked to culture	Computer/Animation	Provide inputs to film industry, skill sets used in games, VWs
Social networking sites/virtual worlds	Usage varies by society	Programming, community management	Uses CG/animation skills, game design (to limited extent)
Design	May be culture-influenced or not	Designers	Strongly linked to products in other sectors

HK Government Industry Support Initiatives

The Hong Kong government has traditionally provided a range of support for the creative industries, and more recently, the new creative sectors like games, animation and computer graphic imagery (CGI). Governmental initiatives can be classified by their dimensions of being educational, research-oriented, and industry-promoting. To support the creative industry sectors, HK developed various centers of competency, including the Hong Kong Design Center, research

and industry collaboration centers (particularly in Polytechnic University), and various university and vocational training programs.

The Hong Kong Design Center was established by the government in 2002 “*to promote good design and establish Hong Kong as a centre of design excellence in Asia*”. This largely involves promotional events, including exhibitions, as well as seminars and workshops. There are programs to connect students and emerging designers with established designers. Other initiatives to support the game industry have come from industry and institutions alike, including the Hong Kong Digital Entertainment Association.

Two of the tertiary institutions that support the industry are the Hong Kong Polytechnic University and the City University of Hong Kong. Amongst other programs, CUHK has for two and three year undergraduate programs in creative media and a Masters of Fine Arts program. The undergraduate intake is about 84 students per year. At the tertiary level, the Hong Kong Polytechnic University (i.e., Poly University) has one of the strongest, if not the strongest, presence in the design and gaming sectors. Poly University has a range of undergraduate and graduate programs in various areas of design and multimedia. It has also established a Multimedia Innovation Centre (MIC) in 1999, as well as research initiatives in game design and research (e.g. PlayLab, formerly known as MERECL or the Multimedia Entrepreneurial Research, Education and Creativity Laboratory), along with programs for "toy design, “public areas” design, and “Asian lifestyles” design. Each of these on the surface appears to be working on the cutting edge - our investigation of MERECL appears to bear this out. MIC’s primary program is a Masters of Science in Multimedia & Entertainment Technology. This one-year degree connects students with both technology and design backgrounds. Students work on industry areas such as the following: Video Games & Online Entertainment, 2D & 3D

Animation, Interactive Entertainment Systems and Digital Video & Special Effects. Notably, this program's two core areas reflects to some degree the same emphasis as Carnegie Mellon University's renowned Center for Entertainment Technology Masters program, which brings arts and technology-trained students together. However, judging from CMU's experience, it may not be an easy proposition to effectively operationalize such a program. Poly U also has a two-year higher diploma in multimedia design and technology for which its intake is 136 per year.

In addition to Poly University and CUHK, two other institutions also carry programs in design, art and animation, and even video game design. These are the Institute of Vocational Education and the Hong Kong Art School. These programs provide certificate and diploma courses for a wide range of skills. One of the issues is that of whether or not the best students are cultivated in such programs, and with numbers as to benefit local industry. It appears from interviews that there is generally no significant lack of talent in HK, and the issue may really be about the ability to employ this talent in organizations, i.e. organizations with sufficient capability to fully employ these creative talents. The Institute for Vocational Education's four year programs in games and animation carry about 260 students over the first two years. These programs mostly focus on basic skills for those not advancing to tertiary education. One issue may be the degree of professional training in the instruction. Generally speaking, educational programs will tend not to have qualified industry professionals teaching – it may indeed be an issue of “those who are doing, not teaching”.

Prospecting Hong Kong's New Creative Industry Sectors

In the sections that follow, we will examine first, the potential markets for Hong Kong's firms, then the industry's basic capabilities, and finally, specific examples of companies and supporting institutions.

2. Hong Kong's Market and Orientation of Firms

HK gaming and other new creative industry firms have a choice of entering various markets. As it stands, most firms start out and continue to service the domestic market. With HK's small population, the revenue prospects are not considerable.

The IDC estimated that the online gaming market in Hong Kong was about US \$30.6 million in 2006 (IDC 2007). Furthermore, 10 software/gaming companies of 30 interviewed reported revenue of about \$20 million from online sales, while 15 of 20 CGI companies reported \$21.6 million in revenue and 12 of 20 comic and animation companies reported \$3.9 million in revenue. In comparison, the Hong Kong GDP was about US \$188.6 billion in 2006. Companies interviewed in that study reported that the highest growth markets were Hong Kong for animation (at 37.4%), digital effects (43.1%) and gaming (37.9%); these being double that of the next largest markets (being either in SE Asia or China).

2.1. Some Dimensions of Markets

One critical issue faced in selling products across regional market boundaries is the market-specificity of the products. That is, unlike electronics and other high tech products which are primarily based on functional uses and specifications, products as games may be highly culturally situated and have appeal to specific cultures, including the culture of the designers. For

instance, despite the great success of individual Japanese designers and games in the US market, most Japanese games are unable to appeal, let alone sell to, the US. This raises the hypothesis that products may be catered to particular markets best by developers steeped in those markets' culture. While games would appear to be an unusual form of media in that they are *interactive*, they are as dependent on how players view the content as they are on the players' interaction with the games. And yet, there is a strong influence of culture in games, which comes in the sorts of gameplay that a culture is comfortable with, in addition to the content (consisting of the "worlds" and "narratives") that the gameplay helps enacts or is embedded within.

The markets for both animation and games can be divided up in different ways. For instance, the dimension of "refinement" is often used as an indicator of whether a video game is of a "triple A" (or "AAA") quality, where quality refers to the production values of the game. Similarly for animation, a Pixar movie has greater refinement, in terms of the production quality (the degree of fineness of the image), the technological enhancements to the animation "effects", and perhaps most importantly, the degree of refinement to the story. It is not at all easy for animation to achieve a regional, let alone global market, judging from regional experiences. For instance, the Philippines' animation industry – one of the largest animation outsourcing providers in the world at one point - has also produced limited domestic content that is largely confined to Philippine audiences. More recent regional animation productions that have been marginal successes thus far include the Singapore-made animated feature *Sing to the Dawn*. On the other hand, the Hong Kong film industry has had considerable success in exporting to regional Asian, and to a limited extent, global markets. Similarly with the greater China and other East Asian film industries, which are enjoying increasing success in regional markets, at least for individual films and directors.

There are of course various game genres, and also various degrees of innovativeness in games (depending on the component in question). Innovation in content may not involve innovation in gameplay (e.g. games with movie-like qualities), while innovation in gameplay may require less in the way of content (e.g. casual games require less content and can take higher risks in inventing new gameplay).

2.2. HK's Domestic Market for Games: Small Size

The HK market for games exhibits one possible distinction from China's. Due to the intellectual property regime, there appears to be a significant difference: There is more diversity in HK. Console games are a significant market, and some PC games continue to be made and to be sold. However, the profile of companies is different. Of 30 companies surveyed in 2006, online game developers represented the primary business of 30.9%, mobile games 25.5%, PC game developers 12.6%, console game developers 4.4% (IDC 2007). Interviewees from our study also indicated that while in the past, a number of firms focused on mobile phone games, many of these had exited due to the low barriers to entry, smaller market, and more intense price competition. Most of the remaining HK developers now appear to be focused on online games, mirroring a worldwide trend that started several years ago, and that has been catching on in China. The experience of one interviewed firm – M Games – was of this variety. They started out making mobile phone games, but as the market became crowded, they moved into online games.

Unlike many producers working on technological or consumer products, the immaturity of the new creative industry products means that it is more difficult to manage an enterprise for exports, and in fact, the best hope for developers (i.e. development studios) to achieve consumer satisfaction may be to aim for domestic markets. This is not to say that aiming for larger markets such as Greater China cannot be done. Specific firms such as Enlight Software in Hong Kong (which is very successful at making PC strategy simulation games) and Object Software in Beijing have managed to export computer games and online games respectively with reasonable success over the years.

On the other hand, firms that we interviewed have noted the difficulty of achieving market success through a purely domestic strategy. Furthermore, the challenge of achieving success in regional markets was also highlighted in a few interviews, with interviewees commenting to effect that “*HK culture doesn’t sell well.*” This may be due to the localness of certain aspects of cultural content, but the notion of culture in games needs to be unpacked more systematically and carefully. In reality, it may be pointed out that while the challenge of developing innovative games is often considered in the production value, truly innovative games based more on original game play than content.

2.3. Beyond the HK Market: China and Other Markets

The China and Regional Market for Games

In contrast to Hong Kong, the Chinese market has its peculiarities. Two interviewees observed that Chinese games do not have to be that good to make it in the large Chinese market, but this is changing all the time, as Chinese firms are continually upgrading their technological

capabilities. At the same time, the Chinese PC game “market” has all but disappeared. Large scale piracy approaching 90% to 95% or more by some accounts had driven out most domestic (Chinese) developers, and console games are all but non-existent. Mobile games continue to prosper in China, in part because of the larger market, but the biggest single trend has been the growth of the online games sector. This sector now earns \$2 billion USD annually.

Nevertheless, as with Asian entertainment in general, there would appear to be a regional market for digital entertainment like games. The fact that Chinese game developers like *Kingsoft* appear to be having some success in countries like Vietnam and Malaysia suggest this. However, our interviews with Hong Kong firms indicates that this market is actually more difficult.

One of the chief markets that many HK developers have aspired to enter is China, but this market has not been easy to breach for a variety of reasons. One common observation is that many gaming companies produce for local markets, but if this is brought to China, it may not work. Many interviewees believe that local tastes do not run the same way as Chinese tastes. One interviewee brought up the example of a local company making a game based on local celebrities whose names would not be recognized as much in China. One interviewee noted that HK took a long time to make a successful movie industry, and to get into the Chinese market. It will be even more difficult than that for games. The development cycle is 1.5 years, budgets will run into the 10 million HKD range, and tastes may change in the meantime. This is high risk, and it is not clear if venture capitalists (VCs) could put up with this, let alone figure out the return. As such, there are no VCs funding games in HK.

The challenge of entering the Chinese market is to find distribution channels, and handling the cultural differences in content, all of which means partnering with Chinese

companies. One medium-sized studio, G Game, was doing this, but there were also many regulations, and the government's rules have changed a lot.

Bringing Asia to the West

Some interviewees also noted that the “Western” exposure of HK developers means that they can also bring an Asian cultural influence into Western games. Local designs have also tended to be influenced by the West. Thus, both “bridges” can be crossed. Having said that, one interviewee noted that he had often seen HK ‘things’ in the design that did not sell well, even in the West.

The issue may ultimately come down to a fine tuning of what aspects of culture are “bought” by consumers, and how firms may tap into other larger countries’ cultural traditions (e.g. Japan’s and China’s), into HK’s broader cultural tradition (that may already be expected by other countries’ consumers), and to what extent this can be combined. For instance, firms like the medium-sized F Game are attempting to combine Japanese-influenced anime with their own traditions – a highly unusual mix that takes great skill and experience. On the other hand, another company noted that their use of Japanese intellectual property to design an online gaming/website environment did not do as well in Japan as it did in other countries. This may require some combination of knowledge and business acumen in dealing with Japanese side consumers and publishers. Similarly, many interviewees noted the difficulty of dealing with the Chinese business environment (regulatory, consumer, and business competition), but G Game has apparently found a way to work with this, by working with the regulatory agencies and by setting up a development shop in China to “attune” their products to Chinese tastes.

3. Assessing Firms' Capability

Capability is a strong measure of firms' growth in technology industries, including those such as software (e.g. Arora and Gambardella 2005). In video games, while studios have remained small, the notion of a capable organization rests on the abilities of the creative team, involving everything from the top design leadership to the line employees at positions such as programming, art and animation, and level design. One of the problems identified in the smaller firms is that lack of capability at the top design level, and also their ability to produce highly complex products. This was apparent in the "time sharing" of programmer and artist employees with the design role, and the need or willingness to cut corners.

3.1. HK's Capability

The HK new creative industries sector is very small no matter how it is looked at. The sector was estimated in various interviews to be made up of several key game development studios, a few animation studios and CG (special effects) "houses", a number of publishers of games, and dozens of startups and smaller firms (e.g. mobile phone or cellphone games). This runs somewhat counter to the numbers cited in reports, such as the IDC (2007) study commissioned by the China Game Publishers Association (Hong Kong), which reported 260 digital entertainment companies, of which 30% were computer animation and comics, 45% were entertainment software and gaming, and 25% were digital effects. The study noted that 70 of these companies employed 1,260 employees.

Despite the published numbers, our interviewees estimated that there were no more than a handful of good game studios in HK, most of these being in the 10 to 20 employee range in size. There are however dozens of startups if the incubators and other smaller firms are included. There were as many as 40 startups from the Cyberport's initiative to develop innovative startups,

of which some were focused on animation and games. The problem with the smaller firms is that they either do not have the resources or the requisite experience to do a full game, let alone to attract resources to fund one.

Despite the rosy picture of the HK market's growth being painted by the IDC study, two of our interviewees felt that the HK game market is not growing. Taiwan's market is in a similar condition. In general, it seemed easier to import Korean games. In the past, a lot of Taiwanese games were outsourced to China, but not anymore. With a few exceptions, HK industry is acting the same as Taiwan, with short term profit-minded thinking being the order of the day. Part of the problem is that companies never knew how much a game can make. Now, the problem is less because G Game and F Game have demonstrated very good artwork and reputation, and has helped set some benchmarks for the likely local (and maybe even regional) markets.

Hardly any of the firms that we interviewed have the resources to fully compete at the highest end of the market. One interviewee (M) noted: "*The HK game industry applies a cookie cutter approach by trying to generate similar games with the same engine but different templates*". This appears to be an attempt to deal with the limited human resources and financial resources. To deal with the risks of product "failure", as well as the ebb and flow of human resources over the project's lifecycle, firms must be able to have at least two, if not multiple, products in development simultaneously.

Many companies that used to work on cellphone games (including one that was interviewed) have abandoned that market as the barriers to entry was too low (and revenue proposition increasingly unclear). It would appear that many of the firms (both large and small) have gravitated towards online games, as this is the only way to capitalize on the Chinese online games market. There are no Chinese firms working on console games, and some HK industry

participants (e.g. the incubator and its incubatees) see potential there, but there are no resources to take this to the level that the advanced console technology has provided for.

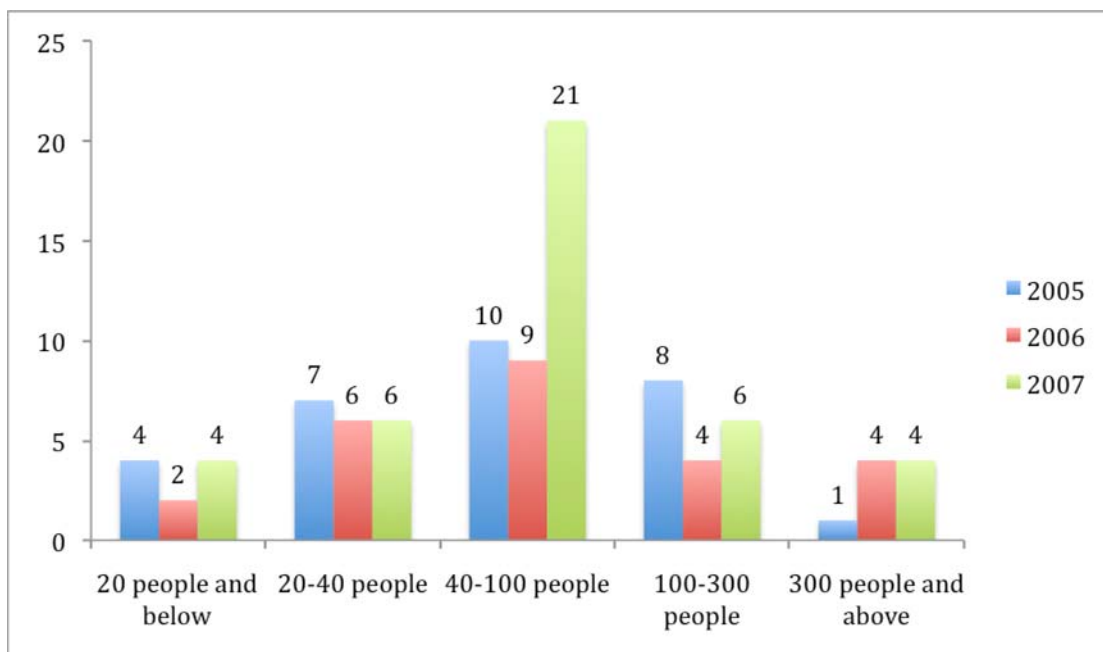
A Comparison with China

Perhaps a greater problem facing HK firms (than the cultural nature of their content) is their low levels of capitalization. None of the firms that we interviewed thought or could afford to think on as large a scale as their Chinese counterparts. This may be due to the limits on Hong Kong firms' capabilities placed by their being in a high cost country, or due to naturally larger financial resources that Chinese firms avail themselves of, or their ability to ramp up to very large levels in short amounts of time. An example of this was Beijing's Perfect World (WanMei), which became a 600 person developer/operator in a short few years of operations. It has been estimated by one industry participant that to build a game capable of competing with the *World of Warcraft*, a company would have had to invest 500 million to one billion US dollars. Online games require companies (and often, the intermediaries) to be product developers, marketers and operators.

In contrast to Hong Kong, China's online game development capability is considerable by almost any measure. Beijing has the largest number of teams of the seven major game producing regions: 41 in 2007, versus 22 in Shanghai, 20 in Guangdong, 13 in Jiangsze, 12 in Fujian, 12 in Chuan Yu and 7 in others. This is not the complete population, as the number of game studios is in the hundreds, and often includes many small studios looking to make a quick return on smaller products – often imitative and poor in quality (due to the smaller capability of those “firms”). Looking at various team sizes of the 41 Beijing teams, we find the median team size to be in the 40 to 100 employee band, and the largest number of teams to be in that same band. In addition, there are 10 teams in the 100 to 300 employee band. It is likely that these

teams include staff dedicated to sales or to operations of the game, since many developers also “operate” the games for themselves. In contrast, China’s PC game industry has been whittled down by piracy to being almost non-existent, with very few, typically smaller, studios attempting to make PC games. Piracy of imported games is still rampant, suggesting that the reduced local production has been taken up by this “slack”.

Table 3: Size of teams in Beijing in 2005-2007 (Source: www.17173.com, 2007)



The increasing size of China’s industry is also reflected in the absolute number of teams. The number of development teams in Beijing went from 27 in 2004 to 41 in 2007, while the number nationally went from 73 in 2004 to 123 in 2006. Nationally, the number of professionals (including non-developers) in the industry grew from 5032 in 2004 to 21034 in 2007.

Chinese firms at the largest levels are both publicly traded and privately owned. It appears that both types of firm have sufficient capitalization to underpin their high growth rates. One way forward is for HK firms is to open up development shops in China. One studio has

successfully done this, marrying their core competencies in programming and design in Hong Kong with a large art and animation group in Shenzhen.

3.2. Other Creative Industries: Computer Graphics Imagery (CGI) and 3D Animation

According to an interviewee, there were four big companies in computer graphics Imagery (CGI) or 3D animation, but most do not own their own intellectual property (IP). These include Imagi (which bought the IP for Astroboy and Teenage Mutant Ninja Turtles) and was already listed on the market, Centro, Digital Magic (which made an animated feature *Yue Fei*, recently) and Menfond (which made a movie *CG 7*). The CGI sector is very different from games. It is very much a “silo.” According to him, there are a lot of incentives that the government could do to bridge gaps. He has visited other countries (most Western), and found that a lot of companies took advantage of government programs. This view was generally shared by developer and non-developer institutions alike. On the other hand, according to another interviewee, CGI firms like Centro (provider of special effects for *Kill Bill*), Menfond and Imagi are all assisting the local movie industry as well. He thinks that it’s too early for HK to go into its own IP creation as the market is young. One company called DCDC made a CG movie called *Dragonblade* three years ago, which one interviewee said had a “bad result”, and that this “scared off” other firms from trying to develop their own intellectual property. There is less of a linkage between film and games at the moment, though U.S. videogame publishers like Electronic Arts have taken an active interest in using Hollywood intellectual property for content in games.

Potential for Game Outsourcing Provision as a Business Strategy

The services potential of certain creative industry products may also be expressed in outsourcing or exports. The ability to provide this capability depends on the degree of maturity of the industries and their firms. Animation has long been mature in the sense that the production stage can be wholly outsourced. For instance, first Japanese, then Korean and Philippine, animation studios have long been doing the production stage of animation for American (and other) TV and film studios. The likelihood of this being a strategy for a small labor market, high cost country like Hong Kong is questionable. The profitability of this as an industry-wide phenomenon is also questionable as it is difficult to sustain a large enterprise for a long period of time. Due to its increasing costs and global turmoil in the global animation marketplace, the Philippine animation industry has failed once before, losing a substantial number of its firms, jobs and business. It is only just now coming back.

There was some question about the potential for outsourcing in games. The D Game case confirms what one interviewee (from MERECL) observed – that outsourcing can make sense as a strategy. However, in order to become outsourcing providers, the enterprises need to be placed in strong partnerships with clients (much as D Game works with a Japanese company), and needs to know exactly what it needs (i.e. have experienced the development), and also can handle the complex integration tasks.

4. Four Case Studies in the Hong Kong New Creative Industries

To highlight the different problems faced by different types of firms, we will highlight four case studies of firms with very different products and problems. This will help present a more overall perspective of the industry and the problems faced. GO Game and F Game are two of the biggest companies. While there are other large game companies, some of them (e.g. Opus) have turned to publishing or distributing games, often those made by developers outside of the country. Apparently, publishing is more lucrative (and easier) than development, as long as the firm has the capital.

(1) M Game - A Smaller Firm

M Game is a small firm that designed various kinds of game software. They were located in the InnoCentre, in small but comfortable offices. They made cross platform (mobile to PC) games as well as a MMO (massively multiplayer, online) game. They used to make mobile games (making in total about 15 such games), but there was too much competition in mobile phone games now, even though the number of studios had shrunk due to the same.

They were started in part because one of the founders had little to do after SARS. They applied to the science park incubator for funding in 2006. They were trying to survive as a business, in part by trying to produce a “half product” for another firm. The interviewee noted that it was very difficult to create a product as the market was quite small. They were also apparently too small to go into regional markets or even the Chinese market directly. They have the capability to develop the software and artistic assets, but they lack a full time game designer, and share tasks to do this. The shortage of such experienced talent and unwillingness of smaller firms to take on specialized personnel such as designers, even though in the US, designers are

considered to be the crux of the project. They tried to imbue some HK specific content and unique ideas in an online game (action part of the game), which may have helped their product to stand out. Even their production of the initial stage of this online game was a bit questionable, as these games usually require huge staffs, and having half a dozen people on it may have involved cutting corners (i.e. less detailed or complex environments).

They require more funding in order to make the game more quickly and to have better quality. The interviewee noted that the graphics in Korea were excellent. M Game's interviewee noted that South Korea had a lot of money for funding companies, even in the early stage. They cooperate with Japanese clients as well as Microsoft's Xbox platform.

(2) F Game– A Niche Computer Game Company (Japanese-Influenced Content)

The second game computer was in a niche market as it was started by aficionados of the Japanese Manga comic tradition who were part of a local community that created their own Manga. They have just under 20 staff. They got into games from this broader perspective of mixed media. They had made one MMO (an action-based MMO like M Game's product). For this type of game, style (artistic/design) is critical. They had a full time designer, reflecting a more mature state than the smaller companies. Having been around for at least several years, they could not avail themselves of the funding available to startups. In fact, they were located in a warehouse type of building. Despite this, they were able to turn out a series of fairly unique products –Japanese-anime inspired games with a slight “non Japanese” (according to the Japanese) feel to it. They have their hearts in it, and clearly stay in this “for the love of the craft”. They have to deal with Japanese publishers, so they tend to get limited visibility, as they cannot make that many sales. In light of this, they are looking at mixed mode media.

Recently, they managed to get funding to do an online game (a direction that many developers in Hong Kong are moving towards). The budget is significant (about one million USD) and they need about 20 developers to staff it. F Game recognizes the need to grow bigger, as they nearly collapsed due to the failure of a game a couple of years ago. If they were bigger, they could have multiple projects going at the same time to insulate themselves from a single failure.

(3) G Game – A Growing, Larger Online Games Company

G Game is an important case to study, as it has shown how a local firm is able to enter if not compete in the China market. They have done this by forming relationships with a leading online game distributor/operator in China, and also by opening a local development arm in China to supplement the resources in HK. They are developing a massively multiplayer online (MMO) game that appeals to Chinese tastes, partly by relying on Chinese staff to work on the details. They have a team size in between the larger sizes seen in Chinese studios and the smaller sized HK studios. This appears to be a minimum necessary to break into the more commercially viable segments of the market. Their game is approved for distribution in China, but there is a regulation that restricts foreign games from entering China. However, the interviewee did not think it was difficult to get government approval. He also noted that it's not easy to cross the threshold from being a "local" game or unique game with content specific to a certain market segment, and to being a larger seller.

(4) D Game Assets – An Outsourcing Provider for Animation in Games

D Game Assets, located in Cyberport, is a subsidiary of an Internet company started by a private individual, and of which PCCW is the biggest shareholder. Another sister company T Games does outsourcing for games, is located on the next floor. D Game Assets started as a web

design company, and has since moved to Flash animation, 3D animation and game development (mostly the art). They provide four services. They often work with their sister company O Technology, which provides the technology. D Game Assets has 30 people, and with T Games and a Japanese toy company's subsidiary, they have 120 people. O Technology has another 20 employees globally.

Like other successful firms, they have focused somewhat on IP, having formed a joint venture with a well known Japanese toy company, Sanrio, to develop all digital projects for the *Hello Kitty* franchise. They also mix different Sanrio characters into their digital products. They are making the art assets for a *Hello Kitty* massively multiplayer game (Sanrio Digital does the design, and the programming is outsourced to Taiwan). They did the design for new Hello Kitty services, but these are not games. They (with Sanrio) target Asia, US, and have offices in Korea, Singapore, Japan and Europe. Surprisingly, 70% of users come from the US, 30% from SE Asia, and hardly any from Japan (though it was noted in the interview that this could be due to insufficient promotion in the Japanese market by Sanrio). One of the main online games markets in Asia, and even within the world, is China. The strategy of D Game Assets is to try to link up with IP owners. At the same time, they provide services to survive, and get services from other sister companies as well. The business model at D Game Assets is to “*work with Hello Kitty.*” Another example of a “safe IP” model was Imagi which acquired or licensed the rights to *Teenage Mutant Ninja Turtles*, *Astroboy* and *Gatchaman*.

A Chasm?

The development of intellectual property and creativity needed for it is not a problem, as enough HK firms have demonstrated the creative capability to do so (G Games, F Games, M Games, and the Cyberport incubatees adopt this approach). The issue is the need to couple this

with production values. There appears to be a gap between those startups with creative ideas and those with sufficient experience and the resources (if at all) to create a fully fleshed out product.

For firms that have already gained some accomplishments, success is never guaranteed in a hits-based industry. Almost all the “successful” firms are still too small to survive a single crisis (e.g. product failure). One firm that had been in operation for some time and was next closest to succeeding nearly went out of business when one of their games “failed” in the marketplace. Thus, there may also be a need to either support the already accomplished studios. However, the type of support needed by firms needs to be customized and rationalized for their purposes. The government’s earlier guarantees to the banking sector to support the film industry during its crisis period was not met with great enthusiasm by the banks.

Table 4. Competitive Advantages/Disadvantages of Various Firms in the Industry/Sample

	Larger, mature companies		Smaller companies	
	Firedog	GameOne	Mocha	Incubatees
Innovative IP	Niche	Incremental	incremental	Some feasible ideas but little implementation ability
Production expertise	Substantial, higher quality artwork	Substantial. Much of artwork now done in China	Moderate (taking shortcuts to produce games)	Insufficient resources to implement or even prototype ideas
Production value	Adequate	-	low	(production outsourced to other countries)
Other	Financial resources barely sufficient	Sufficient quality to enter Chinese market	Too small to make a major game	Founders from traditional media industries - too inexperienced to make games; insufficient resources.

A number of other issues were raised during our interviews, including the challenges that HK firms face. This is evident from the table, where more mature firms face problems in scaling up financially and resource-wise to tackle the larger projects. It should be noted that this is a general problem in all industries, especially service ones. There is still some scope for innovative but smaller-scale products (e.g. casual games) in the area of gameplay, and this might not even

need substantial resources, but the policies have to be in place to recognize these different types of games. No mention of the lower cost/complexity casual games was made in most of our interviews, even though this is a worldwide trend at the moment.

Skills: While others said that there was sufficient skills in HK, at least for programming, Dreamcortex noted that is “tricky” to find qualified people in HK. Programming skills and design are limited. To create a large scale game, HK has the ability, but the whole project generally cannot be done in HK due to the limited human resources. As long as firms are too resource-limited to accept or train people in specialized positions such as game designers, and tries to multitask, it may continue in this state. Production expertise is also critical, but overlooked as a source of competitive advantage. There was a significant level of concern with the quality of incubatees in the Cyberport incubator. A general concern was with their lack of experience or resources to create a fully functional product in what is essentially a competitive, mature market. More will be detailed on this in section 4.

Intellectual Property: The majority of firms interviewed were developing their own intellectual property. Game developers generally agreed with the importance of IP (or it was at least implicit in their actions), but this is less clear for animation. IP serves another critical role for attracting investment. Having said this, mature firms that were interviewed suggested that the ‘window’ for funding new concepts was past, and that investors generally wanted to see a half finished (i.e. at least prototyped) product.

Finance: There is general agreement that venture capital in HK is not familiar enough with games or NEM in general to fund their development. This is not surprising since the same is true of the US and other markets. In China, money has made its way into the sector through various channels, including private individuals, “investments” at the city or government level, and even software firms and firms in other sectors. The larger firms in HK have somewhere between barely sufficient to sufficient resources, causing them to just survive from product to product. The firms occasionally derive resources from local and foreign publishers, but publishers often only pay for the development costs and a smaller fixed percentage, so the firms will find it difficult to grow unless they have a breakout hit that they managed to negotiate favorable terms.

4. The ‘Innovation System’ and the Role for Future Policy

While the functional computer gaming and animation sectors in the US, China and other countries can be argued to be independent of other actors such as the government or universities, there are basic roles such as the feeding of talent into the industry and ‘provision’ of founders that universities do provide. The HK government has set up two more advanced initiatives to support or grow the media industry – the incubator at Cyberport and the HK Polytechnic initiative MERECL.

Cyberport Incubator

After running for a few years, the Cyberport was in danger of shutting down its incubator, but the government extended its funding until January of 2012. They have admitted their last batch of less than 10 companies. The companies being incubated include major types of game genres, animation, edutainment, tools and technology. Less than one third are game companies.

There are no more mobile phone game companies as the entry barriers were too low and too many firms tried to enter the business, with bad consequences for most of them (this point was reinforced in other interviews).

The Cyberport itself has been the subject of criticism from various sectors of society, but the incubator can be argued to have been run as well as it could have been, at least on paper, so it is essential to learn what can be improved on such programs. There is a possible advantage to locating all startups in a separate “media” hub or at least under a separate umbrella from all science and technology, as even though media has a strong underlying technology basis, it has very different characteristics of content and consumption patterns.

As with many incubators, the Cyberport has focused on training, office space, strategic advice (often pulling in the existing industry players as advisees) and the facilitation of business partnerships for its incubatees. The incubator is/has incubated 47 “digital entertainment” companies. The incubator provides a maximum of two years of rent-free space via Cyberport rather than via the government-supported incubator-cum-training program, which is fully subsidized. Within a year, they had “graduates”. They found about 300 K/year/company. They put up 25% for training and manpower covers about 50%. Most of these firms have less than five people each.

The incubator focuses on console games (now), and works with Sony to try to improve support. They negotiated with Sony to get developer kits that the incubatees could use. These have a limited supply, and come with training etc. Sony sends its own people over to train on design, programming and production. A similar program also existed for Microsoft’s Xbox before, and HK was second behind Taiwan in terms of Xbox incubation. The firms on average

are very small, but they outsource a lot of the components – e.g. art assets are done in Europe. (They cannot outsource to China because China does not sell console games).

The incubatees retain the story and design functions. They are new and creative – many with original IP. A lot of the firms have graduated, but most have graduated and some (most?) have found their own investment. While the focus on IP is an important thing that the incubator seems to have “gotten right,” the fact that they have not yet succeeded is worrisome, as this may be due to a lack of production experience, as well as resources. In short, the other resource constraints are hurting the startups.

Many of the incubatees were from the conventional (film and CGI) industry. The average company founder’s profile is said to be that of a more mature industry participant, who wanted to start a company. Most are “very creative”, and are from traditional media. Most try to write their own game concepts and go through a lot of cycles of presentations and rounds of publicity, including with foreign publishers (facilitated by the incubator). While some of the ideas may have been feasible (according to one interviewee), the problem is fully implementing the idea in the resource-constrained HK environment. Interviewees from outside of the Cyberport incubator have concerns with the ability of these firms to take their ideas forward. One interviewee labeled one of the companies as creating an animated feature “*with no hope.*”

The incubator appears to be suffering from a lack of experience – in the incubatees themselves and possibly even in the management of the incubator. For one, their attempts to stay at the technological leading edge, e.g. by attracting first Microsoft, then Sony, to provide development kits for the incubatees, as well as training and business connections, did not recognize the stark realities – that most incubatees need much more investment, on the order of a

million USD at a minimum, to begin development of a concept seriously enough to get further investors to rationalize making further investments.

Thus, given how the incubator has performed, it appears that it may be going through learning cycles itself, along with its incubatees. Incubatees have to seek government co-funding or private funding for late stages. One of the problems is that the private sector is unfamiliar with the products and industries. At the same time, most incubates do not have the requisite experience. Judging from the general experiences of the videogames industry, it would appear that on the job experience and numerous “fail cycles” are needed to create the learning needed for successful companies or their founders. Although it is asserted that they are going through these learning cycles in “presentations”, in videogames, as with media like film, the understanding is that “no one knows” (Caves 2000). Typically, the developer knows best, but even then, must prototype intensely in order for the product to advance in sophistication over time. For instance, of the three major existing Hong Kong gaming companies (outside of the incubator) that have succeeded (two of which we interviewed), two have failed at games before, and niche product strategies (where they are the “experts”) are common to them.

MERECL (Institute) (now known as PlayLab)

MERECL was jointly formed by the ITF and the School of Design at the Poly University. Formerly at the Cyberport, they have moved to the InnoCentre. There are about 80 to 95 people working there. Resident employees are funded by the Poly U and the ITF, and cooperate with foreign companies. Their work is mainly on games or game-related technologies. The lab is for graduate students to do applied research and training, but they also hire graduates and industry people. The center focuses on commercial but not industrial work, and has garnered praise from

its North American partners. Their research projects are fairly innovative, but one of the problems with academically-influenced research is that the industry is almost never able to fully utilize it in its intended fashion. However, without local industry capability to hire, the trained researchers can and have moved to China to undertake work, thus defeating one of the stated aims – to train personnel for the local industry. One issue that may need to be solved is that advanced gaming industries such as the US's, most commercial games are not derived from academic research. Thus, the model for how a research-based gaming technology lab relates to commercial needs to be rethought.

5. Conclusions

The general feeling in HK is that real estate has been a prime target of private investment, and that further, technology firms and industrialization are not considered to be part of a substantive policy strategy for economic growth. With the prevailing conservative attitudes, it should be no wonder that the business environment thus far has been perceived to be stacked against local firms. It has also been observed that the current slate of policies, while useful, are generally not geared to help already existing companies that have already “survived” and that are in some cases starting to break out.

Citing the resource limitations of the gaming industry, many interviewees held up examples of other governments' strong support of their industries - South Korea and Singapore being two of them. The general feeling is that more resources could definitely help the industry – both large and small firms.

One frustration is that current policies such as those in the Cyberport are geared to helping weaker, inexperienced entrepreneurs (especially in relation to their “targeted” industries) to start up. Having said that, there may still be a need for such creative personnel who may become would be entrepreneurs. For these, there may be a need to provide opportunities to think creatively and learn through smaller scale projects, and less for “big” projects such as console games. This will allow them to become engaged in multiple “learning” cycles. The casual games business and smaller versions of what could be eventually be larger projects, offer possible avenues. Programs designed to build up talent in such areas do exist in Singapore as well. There is no equivalent of a fully-fledged media incubator in Singapore as the Cyberport’s, but many of the pieces do exist. For instance, there is co-funding for development at early stages, and there are “development” aids such as funding to license game engines (i.e. the core software for running a game). Some of the lessons from these other programs can be learnt. The Singapore government has also embarked on a more ambitious target to create an animation sector, but this is less than vibrant at the moment. The largest investor has been Lucas Films.

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Appendix. List of Firms and Institutes Interviewed
(Interviewees from non-game or related sectors not represented)

Table. Interview Sample and Their Characteristics

	Subsector	Characteristics	products	Market
Game studios				
M Game	Game	Small (less than 10)	Online games	HK
F Game	Game	Medium (about 20)	PC games	Japan, Taiwan (limited), HK
G Game	Game	Medium-large (about 10 developers in HK, plus sales; entire art team in China (est. at 15-20))	Online games	HK, China
Other				
D Game Assets (animation assets)	Game	Medium (about 30 locally)	Content for online games etc.	Outsourcing provider (content to (Japanese, etc.)
Z Site (Social Networking Company)	Internet (Social networking)	Small (3-4)	Social networking site	Service provider (HK, Asia)
MERECL Institute	Gaming technology	Medium (about 80-95)		Publicly funded R&D services provider (US)
P Incubator	Support institution for games, animation	47 “graduated” incubatees		Local startups
P (P Incubator) Incubatee	Social media	Medium	Demonstrate social enterprise applications	HK