

The dynamics of global visual effects and games development industries: Lessons for Australia's creative industries development policy.

Rachel Parker^a

Stephen Cox^b

Paul Thompson^c

^a QUT Business School, Queensland University of Technology, 2 George Street, Brisbane, Qld, Australia 4000. Email: r.parker@qut.edu.au

^b QUT Business School, Queensland University of Technology, 2 George Street, Brisbane, Qld, Australia 4000. Email: sd.cox@qut.edu.au

^c University of Strathclyde Business School, 16 Richmond Street, Glasgow G1 1XQ, Scotland. Email: p.thompson@strath.ac.uk

All correspondence concerning this manuscript should be addressed to:-

Professor Rachel Parker, QUT Business School, Queensland University of Technology, GPO Box 2434 Brisbane QLD 4001. Australia. Email: r.parker@qut.edu.au; Phone: +61 7 3138 1754; Fax: +61 7 3138 2025

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Abstract.

The paper critiques the focus of creative industries policy on capability development of small and medium sized firms and the provision of regional incentives. It analyses factors affecting the competitiveness and sustainability of the games development industry and visual effects suppliers to feature films. Interviews with participants in these industries highlight the need for policy instruments to take into consideration the structure and organization of global markets and the power of lead multinational corporations. We show that although forms of economic governance in these industries may allow sustainable value capture, they are interrupted by bottlenecks in which ferocious competition among suppliers is confronted by comparatively little competition among the lead firms. We argue that current approaches to creative industries policy aimed at building self-sustaining creative industries are unlikely to be sufficient because of the globalised nature of the industries. Rather, we argue that a more profitable approach is likely to require supporting diversification of the industries as ‘feeders’ into other areas of the economy.

Keywords: digital visual effects, games developers, film industry, industry bottlenecks, economic governance

Introduction

From the 1990s, there has been an increasing tendency for governments to approach cultural policy from an industrial policy perspective, in an attempt to recognise and intensify the economic contribution of these sectors whose value might otherwise be appreciated in intrinsic or artistic terms (Pratt 2005, Hesmondhalgh 2007). The UK established the Creative Industries Taskforce (CITF) in 1997 and development agencies such as United Nations Committee on Trade and Development (UNCTAD) produced a series of reports supporting the notion of cultural industries development (UNCTAD 2008, 2010). There has therefore been a focus on creative industries in the industrial development strategies of a range of countries including Australia (Cunningham 2002), the UK (Chapain and Comunian 2010), throughout Europe and Asia (Kong and O'Connor 2009) and in particular China (Keane, 2009), and the developing world (UNDP 2013).

A focus within creative industries policy been on the development of capabilities of small and medium sized firms to insert into the global value chains of these industries, along with the provision of regional incentives to attract work for those firms. This is particularly the case with the industrialized creative industries of film and video game development, of which digital visual effects and games development are a part. This papers argues that there is a paradox within these policy responses in that while they acknowledge the globalized nature of the industries, they pay insufficient attention to the dynamics of economic governance within these industries. Although the existence of bottlenecks within the industries has been previously described, (e.g., Kerr, 2006), we present some evidence that illustrate some dynamics associated with these bottlenecks. Specifically, we show how the bottlenecks lead to unsustainable practices when bidding for work, disempower SMEs to responds adequately to issues associated with contract variation, and intensify competition among regions for work. Policy responses and instruments geared at increasing the capability of SMEs for the

purposes of developing self-sustaining local creative industries may provide short term benefits but do not address the main problems facing SMEs.

Australia's creative industries' development agenda.

In Australia, cultural policy has been linked to industrial policy for some time (Johanson 2008; O'Regan 1993) and the tensions between the two are well recognised (Caust 2010; Craik et al. 2003). In the 1970s, government provided support for the development of the Australian film industry but with clear ambitions for it to have a strong commercial orientation. In introducing the Australian Film Development Corporation Act to parliament in 1970 the then Prime Minister John Gorton noted that the aim would be to produce box office successes which would ultimately ensure that the industry became self-funding (Dermody & Jacka 1987: 74).

In recent years there has been an intensified rejection of elitist support for the intrinsic value of the arts in favour of commercial objectives (O'Connor et. al. 2009). As Caust (2003; 2014) explains, in the early 1990s the Federal Labor Government delivered a major policy report, *Creative Nation*, in which it made explicit the concept of the arts as industry, reinforcing earlier notions of a self-sufficient industry:

“The strength and creativity of our culture depends on sustainable and self-reliant cultural industries” (Creative Nation: 1994: 81).

The most recent major policy initiative is *Creative Australia*, released by the then federal Labor government in 2013. The report had five major goals and the fourth and fifth related to the connection between culture and the economy, the adoption of new technologies and innovation. The report made an explicit link between creative industries policy and the agenda of supporting the growth of knowledge intensive economic activities or ‘new economy’ industries more broadly (Flew and Cunningham 2010; Potts 2009, Cutler 2010).

Within *Creative Nation* and *Creative Australia* there is a focus on improving technical capabilities and skills of workers and businesses, increasing digital production, and supporting the development of innovative products, all of which are viewed as foundations for greater value capture by SMEs operating within the creative industries. In *Creative Australia*, the emphasis was on ‘creating sustainable and resilient business models’ (*Creative Australia*, 2013: 37) which could only be achieved if creative businesses developed improved business capabilities, rather than relying on their creative content alone as the basis for competitiveness:

Successful creative businesses do not succeed solely on the strength of creative content and services. They also deploy energy and creativity in managing sustainable and competitive businesses (*Creative Australia 2013: 90*).

The discourse around creative industries in the new economy rests on the notion that digitalisation has eroded some of the barriers to distance and opened up possibilities for remote and independent entertainment sectors, potentially creating greater opportunities for SMEs and ‘networks of creative talent’, located outside the traditional cultural centres globally (Flew and Cunningham 2010). *Creative Australia* suggested that the digital age:

will continue to have a substantial impact on the creation of cultural products, their distribution and the capacity of audiences to engage and make them economically sustainable... This is potentially a golden moment for the cultural economy, as the historic obstacles of distance and the size of the local market disappear.

From a policy perspective, there is a rejection of the idea that distance and size are major barriers to the development of sustainable creative businesses in Australia in the contemporary digitalised economy. This merely goes to reinforce the notion that Australia can and should develop a commercially viable creative sector.

Debates concerning the mechanisms for achieving industrial competitiveness in the creative industries need to be moderated by a careful consideration of the structure and organization of global markets in particular industry segments and in particular the power of lead multinational corporations (MNCs). In some industries, and especially those creative industries characterized by high capitalization and industrialization of creative production such as film and console digital games production (Cunningham, 2004, Flew & Cunningham, 2010), the nature of the global industry is such that there is limited opportunity to successfully capture a share of value in global markets sufficient to build a sustainable and profitable local industry, regardless of the success of industrial policy in improving the skills, technology and management capabilities of local firms.

This paper examines these issues in the context of two digital content based entertainment industries in Australia– visual effects for films and games development for both consoles and mobile devices. Both sectors are based in digital production, operate with industrialised as opposed to artisan production processes, and are global industries. Neither sector is reliant on local markets for either production or consumption. By examining the forms of economic coordination in the visual effects and games industry, this paper shows that while Australian games development and VFX firms are participating to a greater extent in global markets, the power asymmetries associated with the organization of the global entertainment industries mean that Australian firms are barely surviving. The paper suggests that the organization of global markets in the film and games industries renders limited opportunities for Australian digital content providers to capture significant value in global markets and to develop a sustainability industry sector in Australia. The paper suggests that public policy initiatives to support the development of the creative industries could be further enriched by an examination of power relations in different global industry segments in an

attempt to identify opportunities for the growth and internationalisation of Australia's creative industries.

Bottlenecks in industrialised creative industries.

Bottlenecks are characterized by industry segments in which there is a relatively low level of competition and the products or services of a particular firm or political economic region that are difficult to replace or replicate play an important role in determining the power of lead firms in these industries. Firms occupying bottleneck positions in which they experience limited competition, while at the same time their suppliers are subject to 'ferocious competition', have significantly greater power in capturing value in global markets (Jacobides *et al.* 2006). Similarly, the global entertainment industries are also characterized by bottlenecks: in the case of feature films, it is the Hollywood studios; the publishers and console manufacturers in console games; and the owners of the online app stores such as Apple in the case of mobile games. An analysis of power relations in global markets has important policy implications, as it exposes the impact of global market structures and power relations on the share of profits captured by Australian industries independently of the skills base and technological capabilities of Australian firms.

The industries

The ABS estimated that there were 84 digital game development firms in Australia in June 2012 (ABS 2013:6). The number of firms had almost doubled between 2007 and 2012, however the industry is populated with much smaller businesses as the number of people working in games development has shrunk by around 60 per cent in the five years to 2012 (ABS 2013: 6). Some of the better known and larger developers in the Australian industry in recent years have been THQ Studio Oz (a foreign multinational corporation), Halfbrick Studios, Big Ant Studios, 2K Martin, Creative Assembly and Team Bondi. Krome Studios closed in 2010, but was until that time the largest employer in the Australian industry with

over 350 employees operating in Melbourne, Adelaide and Brisbane. Other studios to close since the global financial crisis (GFC) include Transmission Games, Fuzzyeyes and Auran. THQ closed its Brisbane and Melbourne Studios in 2011 (Launay, 2012). Team Bondi, KMM and Electronic Arts Studio and Visceral Games have also recently ceased operations (Radd, 2011). Halfbrick is now Australia's largest games developer with 50 employees (Sakuraoka-Gilman, 2011). Australian firms acquire over sixty percent of their revenue from games produced for mobile and web platforms (ABS 2013: 8).

Data for the VFX industry is more difficult to generate because VFX services are incorporated within the broader definition of post-production. The number of post-production firms in Australia decreased by 27 percent from 497 in 2007 to 361 firms in 2012 (ABS 2013:6). The income generated by this subsector dropped significantly as well, however a proportional drop in expenses was not achieved, thus the sub-sector was estimated to be 'loss-making' in 2011-12, although the data is somewhat unreliable (ABS 2013: 6). Animal Logic is one of the key firms in the Australian VFX industry, contributing effects in films such as *Harry Potter and the Deathly Hallows: Part 2 (2011)* and *X-Men: Days of Future Past (2014)* and television science-fiction series *Farscape: Series 4*. Other firms to be recognised as having played a central role in the industry are [Digital Pictures](#), Deluxe, Fuel VFX, the [Cutting Edge Group](#) (*George of the Jungle 2, 2003*), [Rising Sun Pictures](#) (*Lord of the Rings Trilogy, 2001-2003; Gravity, 2013*), and [Complete Post](#) (*The Dish, 2000*) (Australian Government 2007; IMDB.com, Zachariah 2013).

Method

While the proximal focus of this paper is the Australian context, both games development and digital VFX industries are globalized industries. To understand the implications for Australia required understanding how the lead firms in the industries operate

as global firms coordinating global industries. While the dynamics of the internationalised nature of the games development industry is comparatively well understood, it is less so in the VFX industry. We thus undertook interviews with VFX firms in the UK and Canada, as described below.

Sources of data for VFX industry. We utilized three main data sources for this research. First, we conducted a range of interviews across the visual effects industry. We conducted interviews with the owners or managers of eleven Australian firms that provide VFX services for Australian and Hollywood based feature films. The output of the firms ranged from 16 to 85 feature film credits at the time of the interviews, with between 40% and 93% of those credits associated with international productions. We conducted a further 13 interviews with informants knowledgeable about the film production industry and the Visual Effects Sector (and more generally the post-production sector) within Australia, including representatives of government film financing organizations, owners or managers of private or public VFX training institutions, and other post production service providers. The aim of the Australian interviews was to understand how the nature of the globalized film industry, in particular the Hollywood film production industry, affected Australian VFX firms. The second main source of data were interviews conducted with seven owners or managers of VFX firms in London and five firms in Canada. The respondents currently were owners or managers of mid-sized facilities, but several had worked in large VFX facilities in London or Los Angeles. Access to non-Australian firms was more difficult than was access to Australian firms: The small number of interviews does limit the certainty of the generalizability of the claims, however, the interviewees had extensive experience in the industry that exceeded their current work situation. We also conducted one telephone interview with a VFX producer in Los Angeles who worked exclusively for Hollywood studios on large budget, VFX driven films. We found broad consistency regarding the way the industry operates

across these diverse sources of data. The third source of data was a variety of on-line VFX industry web-sites which report industry news, trends and developments some of which are cited throughout the paper.

Sources of data for the games industry. Two sources of data were used to understand the games industry. First, a variety of on-line gaming magazines and games industry web-sites which report industry news, trends and developments and which are cited throughout the paper. Second, we conducted interviews with owners or managers of 13 Australian game development firms, three of which operated solely in the mobile segment, four only in the console segment, and 6 which operated in both segments. The firms ranged in age from 2 years to 18, with total staff ranging from less than 10 to 150. An additional 20 interviews were conducted with employees currently working in an additional 8 Australian games development firms as designers. Of those 20, 2 had only had mobile experience, 11 only console experience, and 7 had worked in both segments. On average they had 7 years' experience, and ranged from 1 to 20 years' experience in the industry.

Interview procedures. Interviewees were selected from a range of different organizations with the intention of limiting bias by 'using numerous and highly knowledgeable informants who view the focal phenomena from diverse perspectives' (Eisenhardt and Graebner 2007, p. 28). Interviews lasted for between one and 1½ hours and were recorded and fully transcribed. The respondents were chosen purposively, the aim being to identify representatives of industry associations, firms and training institutes heavily engaged with the sector. Interviews were conducted between 2008 and 2010.

Interviews covered the range of issues necessary to map firms' connections within the global industry and the nature of inter-firm transactions and relationships. Our overall objective was to explain the competitiveness of Australian industry in global markets and how global market power relations were affecting the capacity of the Australian industry to

grow and become increasingly profitable. We asked interviewees to describe the nature of contracts and informal connections between firms in the industry; the extent to which firms had power to negotiate to capture additional revenues, and the extent to which firms were able to switch between partners. Finally questions sought to elicit information on the complexity of transactions and ability to codify transactions. Once we achieved a high convergence of responses we ceased interviews (Corbin and Strauss 1990).

Economic governance of the global VFX industry

In many respects, the VFX industry is characterized by relational forms of economic coordination (Adler, 2001; Uzzi, 1997) (as will be shown below), although it is also characterized by elements of distributed hierarchies which affect power relations. The VFX industry does not involve arms-length transactions typical of market based economic coordination, because the VFX industry involves the provision of a service that is difficult to specify in advance, depends on ongoing communication and negotiation between the service provider and customer throughout the process of service provision, and in which the creative and technical input of service providers and their employees are high. It is very difficult for the VFX service providers or their customers (VFX supervisors) to clearly articulate at the start of the project the nature of the VFX images required. Further these capabilities are difficult to replicate by new firms (or substitute firms) in that they depend on prior experience in completing projects within the very limited Hollywood film market and the time consuming development of relationships with Hollywood producers (Johns 2006). These are characteristics of relational forms of economic governance (Gereffi et al., 2005).

In addition to features of relational economic coordination, the VFX industry is characterized by concentration and bottlenecks (Jacobides *et al.* 2006) in that there is a well known high degree of industry concentration in the distribution and exhibition of films (Noam 2009). Bottlenecks are typical of distributed hierarchies, rather than relational forms

of economic coordination. The power of Hollywood studios is extensive at all points of the value chain from writing to distribution. The majors (DreamWorks SKG, Metro-Goldwyn-Mayer Inc, Paramount Pictures, Sony Pictures Entertainment, Walt Disney Co. and Warner Brothers) are all headquartered in Los Angeles. The Hollywood majors have integrated production and distribution operations that enable them to achieve the internal economies of scale necessary for the production of the hallmark blockbuster film (Scott 2004, p. 34). Scott (2004, p. 38) describes the majors as the ‘central organizing agents’ in Hollywood film production networks as a consequence of their control of production and distribution sectors not just in the USA but globally.

There is intense competition among VFX suppliers. Financial barriers to entry in the VFX industry dropped considerably when production shifted from analogue to digital processes, and then from specialised, expensive standalone machines to desktop computers and with the increasing availability of off-the-shelf software through the 1990s. The number of VFX firms grew rapidly, especially in Los Angeles, but also in other regions around the world such as the UK and Canada, and to some extent, Australia. The competition in the industry was therefore intense. The profitability of VFX firms was a major concern from as early as 1998, with many firms going bankrupt or being unprofitable (Feeney *et al.* 1998). By 2002 approximately 100 firms had closed (Kaufman 2013). A further 21 closed by 2013. While the number of closures is much reduced, many of the firms that closed were long standing, award winning facilities that had gone bankrupt.

There are several reasons for the large failure rate that are attributable to the firms themselves: an inability to successfully transition from analogue to digital production; poor management of the business and particularly the internal efficiencies of the firm are two. In a highly competitive environment, such firms are likely to eventually fail. But firm-based deficiencies are not the only cause of the high exit rate. The high competition among firms is

exacerbated by the oligopolistic nature of the film industry (Christopherson 2013). The effects of the bottleneck are seen in the consequences of fixed bid contracting methods, global cyclical bidding practices, and incomplete contracts leading to contract variations for which frequently there are no financial imposts on the majors. Together, these enactments of market power led to the dual outcome of a disproportionate amount of the risk being placed on VFX firms and artificial reduction of prices paid for the services.

The above analysis suggests that there is heavy concentration in the global film production network (the customers) and intense competition amongst VFX service providers (the suppliers). At the same time, the industry is characterized by some features of relational economic coordination. An analysis of these forms of economic coordination provides insights into the kinds of problems faced by the Australian industry operating in these global markets.

Challenges for the Australian industry in capturing value in global markets

The relational nature of VFX economic coordination and the heavy concentration in the distribution and exhibition segment of the value chain provides insights into the particular problems Australia faces in seeking to develop a profitable VFX industry. The first relates to the intangible nature of service delivery, a typical characteristic of industries which develop relational forms of economic coordination (Gereffi *et al.* 2005). VFX is an industry in which it is impossible to clearly specify the service requirements in advance and transactions are highly complex and therefore unclear in their details. This becomes an important site of struggle within the industry. VFX firms are professional service firms, which have not tended to own intellectual property. The existence of bottlenecks in the VFX industry has resulted in unbalanced power between the studios and the VFX suppliers. Three dynamics have emerged that hinder the development of sustainable local industries. They are global cyclical bidding practices, fixed costs bidding, and contract variation.

Global cyclical bidding practices.

Australia, the UK, Canada and many States within the USA offer significant tax incentives to film production companies to both produce films in the region, and to have the VFX work undertaken locally. The studios, however, are not just passive recipients of such economic incentives. While the function of incentives is to promote work within specific regions, from a policy point of view they need also be viewed from the perspective of the studios; that is, as part of a global array of opportunities from which choices are made. As described by a manager of a London VFX facility,

Some of the big studios they have overall strategic objectives in terms of where they want to place their work geographically and they like to not be reliant on particular locales. The visual effects industry in London was a strategic choice for some of the big studios, particularly Warner Brothers. I think they saw a mature market here and probably up until [2008], they were looking at not putting much work in London, putting in enough to keep it going and maybe trying to make it a bit more competitive to bring the cost down here. They're looking to build up other areas to increase global competition. (UK VFX firm)

As this quote indicates, it is in the interests of the majors to provide work to facilities in different regions in part to keep costs down by creating inter-regional competition. All films with a considerable VFX component use multiple facilities to supply the work, with work usually distributed across regions. In conjunction with this distribution are informal cyclical bidding practices that further reduce the costs.

Then typically you submit that bid, the producer will call you up and laughs at you and says what the hell are you doing? This is way too expensive. Everyone else is so much cheaper, you need to halve your price or otherwise ... There's kind of horrendous stuff goes on that you hear about: showing you your competitors' bids and that kind of stuff. So it's pretty cutthroat. This process goes on and then eventually they'll make an award and they'll award some work. (UK VFX firm)

The ability to adopt this practice keeps prices charged by VFX firms low. But due to limited switching possibilities, VFX suppliers are constrained in their responses.

Fixed cost bidding.

The typical process for bidding for VFX involves stating a fixed fee for the services to be provided. As the nature of VFX work is complex and cannot be exactly specified a priori, it is difficult to develop accurate quotes. There is no doubt that some facilities are better at costing work than others, but fixed price bidding rests on an assumption of codifiable specifications for the completed work. Where the services cannot be codified, fixed bid pricing results in the supplier absorbing the risk of non-completion.

The risk also changed in the billing from an hourly basis to a fixed price bid where the risk transferred to the professional service provider. (Australian VFX firm).

Such risk would usually be incorporated into a higher bid price; but due to high competition and informal cyclical bidding, bid prices are, arguably, artificially reduced. Facilities under-cost in order to attract some work to at least pay for existing core staff and overheads.

Pricing jobs below actual cost for short-term survival also has the side effect of establishing even lower price points that clients expect on future jobs. Visual Effects Society (2013, p.10)

Contract variation.

Strongly related to the process of fixed price bidding is the problem around variation in contracts. Due to the inability to specify what is required in the finished work, producers will request changes to work completed. This leads to several related outcomes:

Facilities are not always paid for changes or overages, and are afraid of losing the client for future work; clients are frequently asking for small changes, or promising “we’ll

make up for it next time,” and delaying turnovers but not accepting responsibility for them. Visual Effects Society (2013, p.12)

The effect of this is that the risk lies with the VFX firm rather than the producer if work is unable to be completed within budget. This has led to a tension between the VFX firm and VFX producer:

‘Contract variation management has globally I think been a challenge for a lot of people. How you manage the client, especially clients who can leverage the intangible nature of delivery. What classifies as completed delivery? (Australian VFX firm)’

The impact of contract variation ultimately is relational rather than legal, because contract terms are typically expressed generally providing little recourse for VFX firms who feel that the work they are being required to undertake exceeds that which was initially agreed upon. Even if legal recourse was available, VFX firms would be in a difficult position to respond because of the need to acquire repeat work.

It’s as per the story board. The story board is a very general kind of thing, huge amount of room for interpretation. So really it doesn’t really become a contractual issue. It’s more about managing relations between the client and facility (London VFX firm). So you’re put in a situation where if I really piss this guy off now I’m not going to work on any of this films ever again and he could go on to work with a big budget film (London VFX firm).

A key problem for the VFX firm is therefore deciding how to charge for an undefined service and when to stop in response to the demands of the producer/client. This problem has intensified as a consequence of globalisation in which technology has created ‘endless creative opportunities’, which are difficult to value. Whereas traditional post-production involved clear steps that could be valued and costed, VFX merges a range of activities in which

you've got this chaotic technology environmentAnd you just sort of keep going around in this sort of strange whirlpool. As I said, until the producer actually says we have to stop this now and deliver. But as I said, trying to organize that chaos, trying to charge for that chaos is something we're grappling with at the moment. (Australian VFX firm)

A major issue for the service firm is how to cost variations which the director or producer request when they are not happy visually with the look of an effect. This further indicates the strength of Hollywood in the relational value chain of visual effects characterized by intangible service delivery in which service firms struggle to capture the value they create in Hollywood films. Despite the growth of budgets allocated to VFX two key problems remain for VFX firms. The first is the high expectations of clients regarding what is achievable as visual effects in given time and cost constraints. The difficulty is that clients are often unaware of the time it takes to complete complex shots.

Their perception is sometimes that these things, because they've seen it in the Day After Tomorrow or whatever, can be done fairly straightforwardly. And when you tell them well that shot cost \$2m on its own, they look at you in a fairly surprised manner (London VFX firm).

In summary, VFX firms operating in the Hollywood global film production network are required to form close relations with Hollywood VFX supervisors and producers in order to facilitate complex information exchange regarding the nature of the VFX images and services, which reflects some elements of relational forms of economic coordination (Gereffi *et al.* 2005). However, their relational interactions are moderated by the bottleneck position of Hollywood media conglomerates and therefore characterized by unequal power relations. As such, VFX struggle to capture value in these negotiations.

Economic Governance of the Console Games industry

The console games market has traditionally held the highest share of sales in the games industry, estimated at 36% in 2011 for home consoles, with an additional 13% for hand-held devices (IDATE, 2012; cited in De Prato, Feijoo, & Simon, 2014). In this industry, the console manufacturers and games publishers are positioned in the central regional locations of the USA, Japan and Europe and clearly have dominated the industry (Johns 2006, Kerr 2006). There is a trend to industry concentration amongst publishers who play an important role in connecting games developers to global markets (Johns 2006, Kerr 2006, Martin and Deuze 2009). Games developers create software titles that are played on specific console platforms. Platforms include handheld devices (such as Nintendo 3DS or Sony Vita) or consoles (such as Xbox One, Sony PS4 or Nintendo WiiU). Nintendo is regarded as the most successful manufacturer of consoles and handheld devices having sold 85 million Wiis and 145 million DS handhelds, which is estimated to be double its nearest competitor in both the console and handheld markets (Sony Computer Entertainment Inc 2010, Thorsen 2010, Nintendo 2011). As with the VFX industry, the console games industry is characterized by features of relational economic coordination, in which repeated information exchange between developers and publishers/console manufacturers occurs throughout the development process and repeat business (rather than arms length transactions) is the norm (Johns 2006, Kerr 2006).

Recent work has shown that the console games industry is heavily and increasingly concentrated in the hands of a small number of console manufacturers and associated publishers and that the vast bulk of product is developed either in-house by console manufacturers or commissioned by publishers who have become increasingly dominant in the industry. Industry concentration increased from the 1990s as game production costs escalated and firms sought economies of scale through acquisitions of successful independent

developers (Consalvo 2006, Johns 2006, Kerr 2006, Martin and Deuze 2009). In that sense, the games industry is characterized by bottlenecks, which are typical of distributed hierarchical forms of economic governance. As with the VFX industry, the forms of economic coordination in the console games market explain the kinds of problems faced by the Australian industry in global markets.

Challenges for the Australian industry in capturing value in global markets

Games development is characterized by relational forms of economic coordination, as explained above, and this is mostly because games development is typically associated with a licence in which the game is required to capture the licence holder's vision relating to characters, environment or 'back story' and has to fit with the timelines linked to cinematic release, which involves significant time pressure for the developers. It is these relational characteristics of the industry that create problems for the development firms. Publishers control final approval of the game product and publishers sometimes require changes to the concept of a game, even after significant resource investment has been committed by developers (Australian console games developer). Publishers incur significant expense for unpopular games, as publishers are required to pay royalties to the manufacturers of consoles and handheld devices for each individual copy of the game produced by the publishers, whether sold or not.

While platform manufacturers have shifted the risk of development of unsuccessful games to the publisher, publishers seek to shift that risk to developers by requiring games to meet minimum Game Score (or review) ratings prior to final payment to the developer. As such, one of the difficulties in the game development business is the uncertainty of how games will evolve during the course of development. The final product can vary greatly from the initial concept stage.

A contract doesn't spell out to a minute detail exactly what the project is and isn't going to have. You can't do that, with the nature of games as it is. You can't say this is definitely going to work, and this is going to be fun, and this is not going to work ahead of time. You just have to try things. (Australian multi-platform games developer).

Some firms indicate that publishers sometimes completely change the concept of a game after a significant amount of investment by the developer in the original concept (Australian console games developer).

There's a huge tendency to underestimate the projects and then there's also huge tendencies for the publisher to want more and more as they go and change their minds along the way (Australian multi-platform games developer).

Other perspectives from the industry indicate a higher degree of asymmetry in the power relations of publishers and developers in managing these complex information exchanges. It was reported that typically developers under-price and sometimes promise what is unachievable. Often there is a lack of detail in the budget (Australian console games developer). The firm explains that the reason why games firms find themselves in financial difficulty is because they have over-committed themselves in order to win a project and the budget is too low and the time schedule is unrealistic. This demonstrates both the complexity of transactions and developers' weak bargaining position.

We will throw together a budget based off a couple of ideas, a couple of paragraphs and that's it, and that's the budget they use. Then the design document gets put together where they start detailing every element of the game and you look at it and go: Hang on a minute, that's not actually achievable to the budget. So then you have to go into negotiations and by then the publishers are like: No, sorry, you've already accepted it (Australian console games developer).

Another firm noted that they had been in

ridiculous situations where we sent off all the work to them (the publisher) and were just not getting approvals for anything.. so you'd be making a whole lot of stuff and you'd just have to keep on ploughing ahead (Australian multi-platform games developer).

Some firms argue that good communication can resolve the situation as a publisher can generally be convinced that if they want additional features, there will have to be compromises on time and cost. Overall, 'people are learning to manage a bit more effectively and people are figuring out to estimate a bit realistically' (Australian console games developer) as a means of dealing with the problems of uncertainty in contract negotiations. This perspective indicates the highly complex nature of information exchange between parties to a development contract and the reliance on communication and trust based relations as a mechanism for managing those complexities (Gereffi *et al.* 2005). However, the analysis above indicates that this communication and negotiation is tainted by power relations in which console manufacturers' and publishers' position as the bottleneck in the global games industry enables them to prevail in negotiations with development firms whose own market segment is highly competitive. The negotiations that surround these complex transactions between developers and publishers are influenced to some extent by the publishers' central role in the coordination of the industry globally. As has been well documented in the literature elsewhere (Johns 2006, Kerr 2006), console manufacturers have a unique position in the market because they control the manufacture of the game and they have formed close relations with a tight network of publishers globally.

... developers are relatively isolated in terms of network connectivity, occupying a more peripheral position than the console manufacturers and publishers, Consequently, they are often in a weak negotiating position and are unable to capture extra value (Johns 2006, p. 169).

In summary, Australian firms developing games for the console market are engaged in complex information exchange between publishers that are suggestive of some elements of

relational forms of economic coordination. However, their relational interactions are moderated by the bottleneck position of publishers and console manufacturers and therefore characterized by unequal power relations. As such, games development firms struggle to capture value in these negotiations.

Economic Governance of the Mobile Games Industry

Games for mobile devices platforms are the most recently emerging market in the games industry. Online Apps stores provide the site for the distribution of games for mobile devices and include (Google Play (Android), Apple App Store, Windows Phone 7 Marketplace, BlackBerry App World and Nokia Ovi Store). The intense competition faced by developers in the mobile devices games industry is demonstrated by the high level of applications uploaded to one of the key online Apps stores - an estimated 1000 apps uploaded to the Apple AppStore daily (Slattery 2010). As with both the VFX and console market, there is very heavy concentration in the mobile games industry, although the concentration exists at the point of retail which is heavily controlled by manufacturers of wireless devices. However, unlike VFX and the console market, the relations between the development firm and the major industry players are remote and transactional and do not involve deep communication. However, there remains significant power asymmetry and competing interests between the major retailers (such as Apple) and the games developers:

Well, Apple benefits from a crowded App Store marketplace where developers cut prices to the bone in an attempt to stand out from the crowd. Every single app uploaded to the App Store adds value to every iOS [Apple operating system] device in existence; every single app a customer buys is another reason for them not to migrate away from iOS in the future (Gaywood 2012).

As with the VFX industry and the console games industry, the nature of economic coordination in the mobile devices markets helps to explain the kinds of problems faced by Australian firms in global markets.

Challenges for the Australian industry in capturing value in global markets

Unlike VFX and console games, the wireless games market has some features of a market based or arms-length form of economic coordination, with there being no necessary interaction between the games developers and the games retailers. This differs from the relational forms of economic coordination of the VFX and console games. For example, developers pay Apple an annual fee of \$US99 to gain access to a software development kit and permission to release unlimited titles on the App store. As such, unlike the relationship between publishers and developers in the console market, there is an arms-length or market relationship between developers and device manufacturers/games retailers.

The developer signs a standard agreement in an arms-length transaction. In this environment, the developer has creative control over their product subject to the need to meet Apple's technical requirements. Developers are not subject to the pressures of deadlines that arise in the console/handheld market, particularly when games are released in conjunction with cinematic timelines. However, the development studio does not receive any upfront payments or periodic payments during development. Whereas publishers bear the risk of development in the console market, developers bear that risk in the mobile devices market.

This forms the basis for understanding the key problems faced by development firms in the mobile devices market. Although starting-up in the mobile devices market is easy (as it doesn't depend on having relationships with publishers/console manufacturers as in the console market), making a profit is difficult because each game is competing with tens of thousands of other games. This is the key risk in the games development industry and in the mobile devices market; that risk is held by the development firm.

So you'll have millions and millions of sales but across many, many titles – hundreds of thousands of titles (Australian mobile games developer).

In the console segment of games, the relationship with the consumer market has traditionally been managed by publishers and retailers; the advent of online publishing has been disruptive to the role of retailers with many publishers now directly distributing their own games (De Prato et al., 2014). Publishers provide demos to games magazines and websites to profile their games to the prospective audience (Kerr 2006, p. 46). In the mobile segment of the market, developers rely on word of mouth or marketing in which games are advertised or reviewed in games/ magazines or online website such as pocketgamer.co.uk and toucharcade.com. Further, a game is more likely to be successful if it is picked up by Apple representatives and is mentioned on the Staff Favorites list (Australian mobile games developer). Developers seek to generate interest in a game prior to launch. They post stills on their web pages, make announcements on their Twitter streams and Facebook pages and provide information and working prototypes to reviewers. Very few Australian firms employ marketing managers, with the exception of Halfbrick. Although successful apps have the potential to provide ongoing revenue, as word of mouth is critical to success in the AppStore, games have to be continually maintained and updated to sustain momentum of sales and a continuous revenue stream.

So building up that reputation with the press, with the games press, is the single most important thing that we can do (Australian mobile games developer).

Conclusion

Like other developed and emerging economies, the main aim of Australian industrial policy debates focused on the creative industries has been to develop high-technology and knowledge intensive industry sectors that are competitive in global markets. Much of this literature has suggested the need for policy instruments focused on skills and technology

development for Australian industry or the development of more coordinated policy systems involving key economic actors in negotiated dialogues on industrial development (Bell 1993, Parker 2006, Cutler 2010). However, this paper has shown that a further dimension of analysis, focusing on power relations or forms of economic coordination in global industry segments, is required to fully understand opportunities and constraints on the development of a successful industrial policy strategy for the creative industries.

In the context of the global digital entertainment industries, global markets are governed in ways which render it very difficult for Australian industries to compete, regardless of the level of skill or technological capability possessed by Australian firms. This is because of the high level of concentration in the distribution (VFX) or publishing/manufacturing (console games) or retail (mobile games) segments of the global industry. Table 1 summarises the analysis in this paper, which has shown how these bottlenecks result in highly unequal power relations between MNCs and Australian digital content providers, rendering the relationship akin to a 'hierarchical' relationship. This is despite the relational characteristics of some dimensions of economic coordination in the VFX and console games industry. In the mobile games industry, the key challenge for building Australia's industrial capacity is the difficulty of profiling games in the on-line market controlled by retailers such as Apple. There is massive competition in the development end of the market and retailers do not contribute funds for development (and therefore bear none of the risk), but are guaranteed returns on any successful game. For VFX and console content providers, the key challenge relates to contract negotiation with powerful MNCs who control distribution or publishing/manufacturing.

Insert Table 1 here

The consequences of unequal power relations associated with forms of economic coordination in these industry segments is that the profitability of the Australian industry is

highly constrained, regardless of the level of skill or creative and technological capability. In 1998, three former employees and new venture owners in the VFX industry reported:

With mushrooming demand and plummeting costs, one might reasonably expect to find visual effects houses carting money to the bank in bushel baskets. But they are not. If you could get a peek at their books, you would find that many visual effects suppliers are making scant profits or are operating in the red. For many it is a struggle to survive. (Feeney *et al.* 1998, p. 66).

More than ten years later, our data indicate that there is no understood and accepted profit model for this business with most firms continuing to ‘barely survive’:

there is no profit model for this business. It’s a very low profit margin (Canadian VFX firm).

Similar observations can be made about the mobile games industry in which on-line retail stores have become stocked with potential hits hidden amongst a large number of low performing games. As the CEO of *Eye Interactive* and *P4RC* notes, ‘Profitability is elusive for the vast majority of developers,’ (Fieldman 2011).

An analysis of forms of economic governance in global markets provides an important supplement to the existing debate on creative industries development possibilities in Australia by identifying how power relations in global markets affect the possibilities for the development of profitable business models in particular industry segments. The most common regional policy response for industry assistance has been through the provision of tax-based subsidies paid to production companies for VFX and games development work conducted locally. These forms of industry assistance have been heavily critiqued (Christopherson 2006, Christopherson and Rightor 2010). Originally introduced within Canada (Christopherson and Rightor 2010), Australia, New Zealand, The UK, quickly followed suit. Over time, the size of the subsidies has increased, leading to competition

between regions to offer the highest subsidies. However, the tenuous nature of survival of VFX suppliers suggests there has been little apparent effect on the ongoing sustainability of the VFX or games development industries. After examination of the use of subsidies in Canada, Christopherson (2006) concluded,

Evidence from the Canadian ‘success story’ suggests that inter-regional competition has increased the profits of transnational firms rather than building competitive regional industries. (p. 749).

As explained earlier, a strong emphasis in creative industries policy in Australia has been on the development of a sustainable self-sufficient creative sector. *Creative Nation* and *Creative Australia* adopt the view that this can be achieved by ensuring that Australia firms adopt competitive business models and are well supplied by highly skilled creative workers from Australian education institutions. The policy emphasis in *Creative Nation* and *Creative Australia* on creating a self-sustaining creative sector would appear unrealistic given the power differentials in global value chains in the VFX and games industries. The problem for suppliers in general is not one of insufficient capabilities, lack of a skilled workforce or poor business models: the problem is an inability to extract sufficient value from their work due to the vastly uneven power of suppliers in comparison to their customers.

In recent times, the policy debates regarding creative and cultural industries in Australia have moved from being about creative and cultural outputs in their own right, towards recognition of their input into production processes within other sectors of the economy (Cunningham & Higgs 2009). This was a particularly strong focus of *Creative Australia* in which it was stated that the creative sector:

intersects with, and adds value to, many other important areas, from education to manufacturing, tourism and construction (*Creative Australia*: 36).

While our research suggests that the creative industries in Australia experience very significant challenges in developing sustainable business models in global value chains, it has been shown elsewhere that these industries are of value as significant feeders into other areas of the economy (Cunningham & Higgs 2009). Even if the Australian government remains unwilling to support 'art for art sake' (Caust 2003, 2010), it might be willing to continue to support the creative industries because of their value to other industry sectors. It will have to do that with an understanding that they are unlikely to become self-sustaining in and of themselves.

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Table 1: Global value chains in digital entertainment industries: Challenges for Australian industry policy

<u>Industry</u>	<u>Level and nature of concentration</u>	<u>Key characteristics of economic governance</u>	<u>Key challenges for development of Australian industry</u>
<u>VFX</u>	Bottleneck at distribution USA Media conglomerates control finance and distribution markets across a range of media including film, broadcasting, cable and DVD. Intense competition amongst VFX firms in a range of regions globally.	Relational economic governance Trust for completion on time and on budget drive capacity to win work. Difficulty in codifying highly complex transactions regarding nature of VFX images to be supplied. Nature of images supplied evolves during the course of the project.	Cost-cutting to win work Intense global competition and heavy dependence on limited number of customers results in undercutting to win work. Problem is intensified by intangible nature of service provision resulting in under-estimation of costs of completion.
<u>Console</u>	Bottleneck at publishing/manufacturing Console manufacturers and games publishers are concentrated in regional	Relational economic governance Similar characteristics to VFX as games developers scramble	Same as for VFX.

	locations in USA, Japan and Europe. Trend is for further industry concentration amongst publishers.	to capture the complex and difficult to articulate 'vision' of the games publisher. Nature of the game unfolds during the course of development.	
<u>Mobile</u>	Bottleneck at retail Distribution controlled by smartphone platform manufacturers including Apple (iOS), Google (Android). Intense competition amongst developers with 1000 apps uploaded to Apple istore each day.	Market based economic governance Arms length relationship between developer and distributor with access to distribution provided for very low fee and maintenance of limited technical requirements.	Generating revenue Vast bulk of games do not generate profits for the development. The risk of development lies with the development firm whose earnings depend on the games market success.