POWER RELATIONS AND SME STRATEGIES FOR CAPTURING VALUE IN
GLOBAL PRODUCTION NETWORKS: VFX SERVICE FIRMS IN THE
HOLLYWOOD FILM INDUSTRY

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ABSTRACT
This paper provides insights into the way in which non-lead firms maneuver in global value
chains in the pursuit of a larger share of revenue and how power relations affect these
maneuvers. The paper examines the nature of value capture and power relations in the
global supply of visual effects (VFX) services and the range of strategies VFX firms adopt
to capture higher value in the GVC. We base our analysis on a total of 36 interviews with
informants in the industry in Australia, UK and Canada and a database of VFX credits for
3323 visual products for 640 VFX firms.

Keywords: global value chain, market power, power asymmetry, non-lead firms, enterprise
strategy

JEL codes: O1 - Economic Development < O - Economic Development, Technological
Change, and Growth, L - Industrial Organization, L2 - Firm Objectives, Organization, and
Behavior < L – Industrial Organization
INTRODUCTION

The regional development literature has portrayed flagship TNCs as playing a role in transforming regionally embedded networks of SMEs by linking them to more diverse and higher value-added segments of global markets (ERNST and KIM, 2002; HUMPHREY and SCHMITZ, 2002; SABEL, 2002). However, recent literature has drawn attention to the power inherent in network relations in global markets and in so doing has identified constraints to upgrading amongst SMEs and within regional innovation systems (CHRISTOPHERSON and CLARK, 2007a; JOHNS, 2006; KRISTENSEN and ZEITLIN, 2005; RUTHERFORD and HOLMES, 2006). A substantial body of work has also explored the way in which lead multinational enterprises (MNEs) are able to maneuver within global markets to their advantage (BUCKLEY and GHAURI, 2004; MORGAN and QUACK, 2005; PITELIS, 2006).

Global value chain\(^1\) (GVC) analysis provides a basis for understanding the possibilities and constraints on upgrading for firms and regions, because it provides insights into the way in which value is distributed across the value chain from conception to consumption and it incorporates an analysis of power relations associated with particular forms of governance of global value chains (GEREFFI, 1999; GEREFFI, 2005; GEREFFI et al., 2005). However, as KALANTARIDIS et al. (2010) have argued, the purposive actions or strategies of enterprises have tended to remain ‘in the shadow’ of global value chain analysis (pp. 2–3). This paper seeks to extend GVC analysis by drawing on wider research on power in global production networks and expanding on existing research on the challenges faced by SMEs in global networks. It identifies the ways in which these firms
maneuver to maintain profitability and capture a greater share of value in GVCs and the ways in which power in global production networks affects their maneuvers.

Visual effects (VFX) firms in Australia, Canada and the UK which provide services in the production of films financed and distributed by large U.S. media conglomerates are the focus of analysis. The visual effects component of film production is an ideal context within which to undertake this research. There are clear power asymmetries between the media conglomerates and VFX firms arising from the high levels of concentration in the media and entertainment industries which resulted from deregulatory changes in the USA in the 1990s. As CHRISTOPHERSON (2006) explains, deregulation involved a retreat from the ‘Paramount decision’ which had forced the divestiture of theatre chains by firms that owned production and distribution activities in the film industry in addition to the removal of restrictions on television networks undertaking production. These regulatory changes allowed for a substantial vertical and horizontal reintegration of production, distribution and exhibition in which a small number of media conglomerates acquired control of distribution markets across a range of media including film, broadcasting, cable and DVD.

VFX is a growing component of film production and is of increasing strategic importance within the global film production network. The financial success of effects-heavy films such as ‘Star Wars’ (1977) demonstrated the viability of using special effects in films (CUCCO, 2009) generating demand for VFX services (TURNOCK, 2009). Because most Hollywood studios had closed their own special effects departments in the 1960s, the effects were usually outsourced to specialist firms. With the introduction of desk top computing, entry costs into the digital VFX industry rapidly fell throughout the 1990s, and
the number of firms providing VFX services increased. Off-the-shelf software became available for many previously highly technical VFX processes further reducing the technological barrier to entry. Cutting edge VFX used in blockbuster VFX driven films still requires large R&D investment, but many other processes, such as rotoscoping and compositing can be performed with off-the-shelf software. Digital VFX are employed not only in all ‘blockbuster’ feature films produced by Hollywood (CUCCO, 2009), but many non-effects driven films as well. VFX are therefore important to the success of films. Seventy percent of the shots in the ‘Lord of the Rings: The Return of the King’ were generated by computers rather than cameras (EPSTEIN, 2005, p. 347).

Many films and other visual media now employ low level digital VFX because it can be cheaper than filming what is required. The demand for VFX has thus grown as costs have fallen. For the producers of films, then, the production of VFX has become an important and central activity in film production. Digital effects comprise an increasingly large share of film budgets (EPSTEIN, 2005, p. 21). With the work usually completely outsourced to independent firms, the potential therefore exists for the success or otherwise of films to ride, at least in part, on the VFX firms.

In the 1980s, digital VFX were only produced in the USA, especially in LA and San Francisco, and in London, in the UK. Both of these regions had established visual entertainment industries; Hollywood in the case of LA, and for the British film industry an established TV broadcast industry based mainly in and near London. The reductions in barriers to entry into the industry resulted in a large increase in the number of firms providing VFX services not only in these two regions, but also in other parts of the world. Both Canada and Australia developed nascent digital VFX industries in the early 1990s.
Since that time, Canada in particular has exhibited large growth in the number of firms operating in the region, and has been successful in capturing a greater proportion of work from Hollywood compared to Australia.

Visual effects firms that service film production and are located in production centers outside Las Angeles face several strategic challenges in seeking to capture value in the growing global market for VFX services. VFX firms are sub-contractors in the service industry that supports the film production sector, which remains relatively independent in terms of ownership arrangements, from the media conglomerates (NOAM, 2009, p. 105). However, as COE and JOHNS (2004) explain, in practice the production sector is very heavily dependent on the U.S. media conglomerates on whom they typically rely for both finance and distribution of their films. As such, these VFX firms are greatly impacted by the global production networks of the media giants.

Further, VFX firms in Australia, Canada and UK face particular strategic challenges arising from their location outside the centre of production in Las Angeles (CHRISTOPHERSON and CLARK, 2007b; COE and JOHNS, 2004). Prior to the 1990s ‘runaway production’ was driven by the desire of producers to make differentiated ‘place-based films’. However, from the 1990s, it became a technique for the media conglomerates to create cross-regional competition, which enabled them to reduce labor and location costs as regions competed to attract film production to their shores through the development of supporting infrastructure including studio complexes and the provision of tax subsidies. VFX firms in regional locations are therefore heavily dependent on the state providing cost competitive environments for U.S. media firms. As Epstein explains, costs are an important basis for competitiveness of VFX firms (EPSTEIN, 2005, p. 351). This paper therefore focuses on
how power relations affect the strategies VFX firms in these regions adopt to capture value in global markets.

POWER AND VALUE CAPTURE BY NON-LEAD FIRMS IN GLOBAL VALUE CHAINS

Our research is concerned with power relations between TNCs and regionally dispersed SMEs and how they affect opportunities for the latter to capture a greater share of revenue. In contrast, regional development studies have tended to focus on mutuality or the commonality of interests between TNCs and regionally embedded networks of SMEs. The advantages of co-location of TNCs and SMEs have been described in terms of knowledge spill-over and learning effects in which TNCs benefit from local ‘sticky’ knowledge and SMEs in turn gain access to expanded global market opportunities and the external ‘world class’ or ‘ubiquitous’ knowledge of TNCs (ASHEIM and ISAKSEN, 2006). Further, TNCs offer local regions a buffer against the volatility of global markets because their products and markets are typically more diversified than the niche markets of regional SMEs (SABEL, 2002). Global flagship firms which coordinate networks of partner firms play a role in upgrading regional economies by linking with localized specialist suppliers and subcontractors who are required to meet the superior technical and managerial requirements of flagship companies (ERNST and KIM, 2002, p. 1420). The presence of TNCs can force local economies to upgrade production systems and products and to move into new areas of specialization as required by the lead firm (HUMPHREY and SCHMITZ, 2002, p. 1020). As such, local-global linkages may be an important explanation of innovation outcomes within local economic spaces.
Global value chain (GVC) analysis offers somewhat different insights into the nature of relations between firms in global markets because it focuses on the way in which industrial organization is governed in global markets and how those governance arrangements affect the distribution of revenue along the value chain (COE et al., 2008; GEREFFI et al., 2005; KAPLINSKY, 2000). The GVC is characterized by power dynamics involving lead firms and typically their suppliers, whose behaviors are coordinated through particular organizational mechanisms (hierarchies, markets, networks) which distribute resources in the chain. The GVC depicts the rules and structures which determine the opportunities and constraints firms face in seeking to increase their share of value associated with the global production of commodities and services. An analysis of the power dynamics influencing value capture or revenue share is a critical component of this approach. In GVC analysis, the level of power asymmetry between firms in a value chain varies according to the prevailing governance arrangements, which in turn depends on such factors as the complexity of transactions and associated information exchanges and the level of competency in the supply base. These factors all affect the ability of firms to switch partners and therefore their capacity to negotiate a higher share of revenue (GEREFFI et al., 2005).

Others have adopted a broader analysis of power relations focusing on firm networks, arguing that networks necessarily encompass hierarchies of power in which some positions attract more resources and influence than others (CHRISTOPHERSON and CLARK, 2007b). This is well demonstrated by JOHNS (20072006) who describes the global video games industry as one dominated by multinational hardware producers and publishers who are able to ‘manipulate the production network to increase their percentage of revenue’ as a consequence of their ‘positionality within the network’. Console manufacturers are central
to the network whereas developers ‘are relatively isolated in terms of network connectivity, occupying a more peripheral position than console manufacturers and publishers. Consequently, they are often in a weak negotiating position and are unable to capture extra value’ (JOHNS, 2007, p. 169).

The existence of power differences and conflicts between TNC and SMEs in global value chains accords with CHRISTOPHERSON and CLARK’s (2007a) case study of the photonics industry in Rochester, New York, which suggests that the small photonics firms which supply TNCs also compete with them in relation to key inputs including skilled and specialist labor and R&D inputs. This results in an adversarial relationship between TNCs and regional SMEs. TNCs in the region use their political and economic power to shape governance arrangements, which enables them to leverage key regional resources. For example, TNC benefit from ‘non-compete agreements’ imposed on employees which prevent the movement of labor between firms and also impede workers who might wish to start their own business. In addition, the research agendas of universities and innovation centers in the region are heavily shaped by TNCs.

Further, clear differences in the strategic agendas of TNCs and regional SMEs is well demonstrated by KRISTENSEN and ZEITLIN’s (2005) study of the strategic orientation of a TNC headquarters and its constituent subsidiaries. They suggest a high degree of discordance between global corporate and local regional strategic priorities. While the headquarters of the TNC pursued financial market goals and reputation within the network of institutional and financial investors in the City of London, local subsidiaries measured success ‘against the rival technologies of leading competitors’ (p. 6). Even more problematic was that the narrow financial agenda of the TNC headquarters resulted in
orders for subsidiaries to engage in downsizing, which ultimately led them to dispense of highly valuable labor with specialist skills which later had to be purchased from outside the firm at higher cost. RUTHERFORD and HOLMES (2007) draw out the implications of the competing agendas of TNC and their subsidiaries by arguing that the focus on short term costs, price reduction and intellectual property in US automotive supply chains diverted the attention of SMEs in the tool, die and mould cluster in Windsor, Ontario from knowledge-focused production and was associated with a net transfer of knowledge from suppliers to lead firms within the value chain. Kristensen and Zeitlin concluded that the tension between the goals of TNC and regional subsidiaries was resolved in the subsidiaries’ favor if they pursued ‘subversive strategies’ that went beyond the mandate of the TNC headquarters (KRISTENSEN and ZEITLIN, 2005, p. 17).

Global production network theory also has a broader conception of power relations in global networks than traditional GVC approaches, extending well beyond the focus of firm-firm relations typical of value chain approaches. It is critical of recent literature in the GVC domain which parallels regional development studies by focusing on the capacity of firms and regions to upgrade in global markets. A GPN approach suggests that production networks are not ‘simply arenas for market competition or chains of value-adding activities’ (LEVY, 2008, p. 943) but involve the complex coordination of economic activities across geographically disparate regions with different socio-political and economic environments. In particular, GPN analysis is interested in how a range of actors including government, labor and employer organizations (HENDERSON et. al., 2002, p. 447) ‘deploy resources, forge alliances, shape regulatory structures and frame issues’ (LEVY, 2008, p. 944) in political contests and global power games. In this approach, struggles within the GPN are not just in the interests of market competition but are instead
an attempt to influence the socio-political context of resource control and distribution (LEVY, 2008, p. 943).

In order to further understand how non-lead firms respond to power relations and maneuver to capture value in global markets, this research draws on resource dependency theory in the field of strategic management, which provides some insights into the variety of tactics firms use to manage power relations in their external environment to achieve stability, manipulate external dependencies and gain control over critical resources (FLIGSTEIN, 2001; PFEFFER and SALANCIK, 1978). A foundational premise of resource dependence theory is that firm survival depends on the management of external demands including access to scarce resources for the purpose of reducing uncertainty in the environment and increasing power and influence (PROVAN et al., 1980). The pursuit of power and the mobilization of external resources are therefore critical motivations for firm behavior in this approach (OLIVER, 1991). As such, resource dependence theory provides useful insights into the variety of tactics firms use to manage the power asymmetries in global value chains for the purpose of securing access to critical resources which are the basis of higher revenue share or value capture in global markets.

These tactics can be categorized as either unilateral or bilateral (PFEFFER and SALANCIK, 1978). Unilateral operations involve the reduction in magnitude of dependence on a particular resource and include avoidance involving diversification into other markets or the search for alternative partners in an exchange relationship (KATILA et al., 2008) for the purpose of altering the asymmetrical power relations within the value chain. Unilateral tactics also include mimicking the dominant firms by seeking to upgrade to higher value added activities in the production network (FLIGSTEIN, 2001). In addition,
a firm might pursue bilateral power restructuring operations, which include *cooptation* (the development of inter-locking boards or long-term contractual relations) and *constraint absorption* (such as mergers and acquisition), which are focused directly on the stronger firm in the power relationship. Alternatively, some firms simply seek to *adapt* to existing environmental constraints by selecting market segments in which they are able to survive (PFEFFER and LEONG, 1977; PFEFFER and NOVAK, 1976; PFEFFER and SALANCNIK, 1978).

Recent advances in resource dependency theory explain that power imbalance would be likely to greatly affect the ability of a firm to adopt these strategies, particularly those of cooptation and constraint, because the dominant party in the relationship would be highly resistant to such approaches (CASCIARO and PISKORSKI, 2005). We would expect the dominant to take advantage of positions of power to extract concessions from the dominated (BACHARACH and LAWLER, 1981; BURT, 1980; FLIGSTEIN, 2001). This would suggest that power asymmetries are likely to hinder weaker firms in effectively upgrading in GVCs. The literature on power in global production networks provides a basis for understanding how broader network based power relations might also constrain the range of tactics firms are able to adopt in seeking to capture a greater share of revenue in global markets; there are impediments to firms pursuing particular strategies to capture higher revenue shares arising from the uneven distribution of resources and influence in global markets.

This paper therefore seeks to further develop an understanding of how non-lead firms maneuver to capture higher value in GVCs and the way in which power relations affect their ability so to do. In so doing, it will extend the growing body of literature that draws
attention to issues of power associated with global production networks and the coordination or governance of global markets and the potential and actual constraints on value capture arising from the disparate power of TNCs and regionally embedded SMEs.

RESEARCH DESIGN, DATA COLLECTION AND ANALYSIS

Our research is focused on the global visual effects (VFX) industry and the strategies of VFX firms in Australia, UK and Canada in capturing value and managing power relations in the Hollywood global production network. Our data shows that Australia, UK and Canada constitute the major centers of VFX activity outside Los Angeles. In addition, these regions vary in the number of firms operating within the region, their proximity to Los Angeles in terms of both space and time and the availability of markets outside the Hollywood production network, including domestic film markets and TV and advertising (Table 2) – all of these factors would be likely to affect the ability of firms in these regions to access revenue in the GVC and manage power relations with the Hollywood production network. Our main data sources for this paper are a total of 22 interviews with VFX firms across Australia, London and Canada and a database of VFX credits for 3323 visual products for 640 VFX firms. However, we undertook a much larger number of interviews throughout the post-digital and VFX sector (Table 1) which informed our theoretical development, such that our total number of interviews is 36.

We were initially interested in the way in which technological change and globalization were providing opportunities for service firms outside the major centre of film production in Hollywood to capture value in the global film industry, and we sought to explore the mechanisms by which they became ‘successful’ in entering the Hollywood production network. Our first round of data collection involved in-depth interviews with nineteen
informants who were identified as being knowledgeable about the PDV artefact sector within Australia, including six firms that operate in the narrower VFX sector. The respondents were chosen purposively, the aim being to identify representatives of industry associations, firms and training institutes heavily engaged with the sector (Table 1). 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). In most cases, this person was either the firm’s founder or its current owner/manager. Interviews lasted for between one and 1½ hours and were recorded and fully transcribed.

Early in the first round of interviews, it became clear that firms were adopting a range of responses to the pressures of the global VFX market, and that they were facing significant constraints in resolving their market uncertainty. The importance of resource dependency and global value chain theory became apparent. Following established protocols for moving among data, literature and emerging theory (EISENHARDT, 1989), we refined our questions to elicit more direct information on the global value chain, power relations, dependency and firms’ strategic responses, and to verify our initial theory development. We then conducted a further set of face-to-face interviews with firms; five in Australia (in addition to those completed in round one interviews), seven in London and five in Canada. We also conducted a telephone interview with a VFX producer in Los Angeles. The selection of interviewees was driven by theoretical considerations rather than statistical sampling; we used the credit database (discussed below) to identify a variety of firms of different sizes operating across the three regions. Once we achieved a high convergence of responses we ceased interviews (CORBIN and STRAUSS, 1990; MORSE, 1995).
The second component of data collection involved the compilation of a database containing credit lists of VFX firms that have worked on film or television programs. Firms that serviced only the corporate market were not included as their credit data is not accessible. The purpose of collecting credit data was twofold. First, the data assisted with the sampling of firms for interviewing, and second, the data provided information about the number and characteristics of the credits that VFX firms possess in different regions of the world and how this has changed over time. This constitutes an important source of data for analyzing the transactions and exchanges that comprise the global value chain of VFX. As credits are evidence of an exchange relationship, the credit database is a critical source of information on resource dependency and power relations in the VFX global value chain. This data formed an important basis for identifying the number and types of transactions that the VFX firms were engaged in, with which exchange partners, in which sectors of the industry (film, TV, TVC) and variations across regions and time.

In creating the database we identified any credits listed on the company’s website or other promotional material. We also collected credits listed on IMDB.com, a widely used online film database. This database includes feature films, short films and television (TV) shows, plus a range of other formats. For each film or other credit for each company, the data collected included the title, date of release, budget, format (feature film, TV series, short form), whether the credit was a Hollywood related production (based upon the production and distribution companies involved), the country or countries of the primary production company and the name and country of any other visual or special effects company that also worked on that film. These procedures produced a list of 640 digital VFX firms, plus their
film credits. The earliest credit was 1973 and the total film database included over 7870 company credits.

VFX AND THE GEOGRAPHY OF GLOBAL FILM PRODUCTION NETWORKS

The production, financing, distribution and exhibition of motion pictures has traditionally been dominated by six Hollywood studio companies all of which are located in the vicinity of Los Angeles (SCOTT, 2004a). Despite challenges to their dominance in the 1950s and 1960s, including their forced divestiture of theatre chains under Anti-trust laws and the initial erosion of their market through the growth of television, by 2004 the six studios accounted for over 87% of the production/distribution sector (NOAM, 2009, p. 119). Concentration in the film industry is connected to the broader consolidation of activity in media and communications conglomerates. From the 1980s, mergers and acquisitions occurred across the broadcasting and film industries as television networks sought access to the film libraries of the studios (NOAM, 2009, p. 105). In addition, the studios acquired ‘art-house’ companies to meet the growing demand for high-quality films ensuring that the Hollywood studios controlled much of the independent movie business (EPSTEIN, 2005, p. 20).

The concentration of ownership in the distribution sector is particularly important to the profitability of these conglomerates. However, although there is concentration in the distribution and financing arms of the industry, the production industry is comprised of a large number of semi-independent companies. As NOAM (2009, p. 105) explains, the vertical and horizontal integration of the industry resulted in a situation whereby the ‘major
film companies themselves became primarily distribution and financing firms that supported and bundled production of semi-independent production companies’. Production companies remain heavily dependent on the major Hollywood majors and associated media conglomerates for financing and distribution. Production companies typically require distribution agreements with studio-distributors in order to secure financing from independent sources (NOAM, 2009, p. 107) and independent producers rely on pre-sales across a variety of distribution outlets including pay-TV/cable networks and home video companies in order to secure financing (WASKO, 2003, p. 34). Production companies are compelled to connect to the distribution networks of the media conglomerates and the Hollywood majors are ‘gatekeepers’ in that process (COE and JOHNS, 2004).

Within the film production network, VFX service providers are of increasing importance given that VFX are a growing component of film production, and therefore an increasing share of the global value chain in film production. As ROSMARIN (2007) explains, it is not just action films and animated features that incorporate VFX. Period dramas and romantic comedies typically include as many as 400 VFX shots including weather effects, backdrops and set extensions. Accounts of the VFX budgets of these films vary, some suggesting that producers allocate between 25% and 45% of their budgets to VFX (ROSMARIN, 2007), and more for animated features. In ‘Spider-Man 3’, (Sony) there were 70 minutes or 930 VFX shots. The budget allocation for VFX has increased even in non-action and animated films and in the more effects-intensive films, it has grown well beyond the estimated 10% of budget allocated to VFX in the original ‘Star Wars’ (ROSMARIN, 2007).
Despite the fragmentation and relative independence of the film production sector (in terms of ownership), SCOTT (2002; 2004a; 2004b) has emphasized the continuing dominance of the city of Los Angeles as a regional location for film production and ancillary services. While the preeminence of Los Angeles is a central feature of the geography of the global value chain, ‘runaway production’ including the VFX component, is an opportunity for the Hollywood majors to exploit regional advantages in the distribution of VFX service work globally:

So what they now do is they look around the world and they divide the world up into various kinds of territories, not along political lines but along capabilities and cost lines. They know exactly what incentives policies are in play in any territory. And they know what that territory is good for in terms of particular kinds of work. They also know what houses and studios exist in those territories and they know what they’ve done (A4).

As a consequence, conflict emerges between territories to attract ‘runaway’ VFX work. The global distribution of VFX work ensures that there is sufficient competition between firms in different territories in seeking to attract work on films that are part of the Hollywood global production network, which intensifies competition between service providers, and therefore reduces their power in the production network. The decision by Hollywood gatekeepers to carve up work globally is a risk management strategy (COE and JOHNS, 2004). It ensures that the Hollywood production network is not overly focused on any one VFX house or market.

Hollywood is very good at managing …. Like they have an interest in having people working on this all over the world so that they’re not beholden to one place. So there’s a desire from them to spread the work around to a certain level (A9).
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 (L1).

In this context, the dependency of VFX service providers on the Hollywood production network arises from the fact that there are only twenty to thirty films per year that have a sufficiently large VFX budget to sustain the highly specialist VFX firms. In addition, interviewees reported a strong creative desire to capture work on large budget films that are part of the Hollywood network because they were regarded as more creatively challenging, which draws attention to the non-economic dimension of dependency, which is well documented with respect to the creative industries (GIBSON and KONG, 2005). As such, while VFX firms can and do enter into exchanges in other segments of the VFX market, such as advertising, firms wishing to work in film remain highly dependent on the Hollywood production network. As shown in Table 2, over the whole sample of firms, 74.3% of credits were Hollywood-related and the majority of these credits were in film. As expected, this percentage was highest for USA-based firms.

The high dependence on the Hollywood network is intensified by the relatively weak position of power that VFX service providers have as a result of intense competition and the ability of producers in the Hollywood network to switch between exchange partners. This is in part explained by the increasing number of firms providing VFX services. As shown in Figure 1, in all geographical regions the number of firms operating in the industry has increased over time, with large growth in the number of firms operating within the USA.
from the early 1980s and in the rest of the world since the early 1990s. Competition has been intensified by the lowering of barriers to entry arising from technological changes as well as the globalization of the market. The initial growth in the industry occurred with the introduction of computers into the production of VFX (RICKITT, 2006; TURNOCK, 2009), beginning the transition from a film-based optical effects industry to a digital industry. This transition intensified with the introduction of desktop computers into the industry in the early 1990s which significantly lowered cost-based entry barriers. There are a larger number of firms carrying out VFX work in each of London, Canada and Australia (Figure 1). Hollywood producers take advantage of this competition:

Producers know it and they know how to play the game and triumph. They go X, Y, Z, get all the bids, go back again X, Y, Z and then just play and play and play until players just pull out and say you know what, it’s just not worth it. It’s just not worth competing (C5).

A further source of weakness for VFX firms in the Hollywood production network arises from their positioning in the global value chain at the end of production. Visual effects firms have to compete for funds after budgets have already been consumed by production costs and other service providers. This seems to be a consequence of VFX having previously been a component of post-production, which occurred towards the end of production. VFX work is increasingly embedded in the production process itself, but the allocation of budgets to VFX has not changed accordingly:
The visual effect companies are at the bottom of the food chain. I don’t understand why that is. I still don’t. I mean I understood a bit more when we were much more post-production oriented but now we’re production (L6).

This was confirmed by a VFX producer who noted that ‘anybody at the end of the process of filmmaking gets the biggest squeeze’.

VALUE CAPTURE STRATEGIES OF VFX FIRMS

The above discussion indicates that VFX firms face a range of pressures arising from the nature of power in global value chains, including entering into exchanges within the Hollywood network and negotiating around low margins and intense competition. Our data indicate that firms have adopted a variety of responses to the effects of their dependency on the Hollywood network and the power asymmetries in the global film production network.

Adaptation: Selecting Market Segments

Adaptation as a response to market pressure does not achieve a reduction or loosening of power asymmetries and dependency on the Hollywood network, but is instead a mechanism for coping with rather than challenging or seeking to restructure power relations. As PFEFFER and SALANCIK (1978, p. 107) explain, organizations can respond to their environment as ‘an environmental requirement taker’ in the sense of adapting to rather than seeking to change their dependencies. One component of this approach involves organizations searching for an environment or market segment within which they can successfully compete in the context of a given set of environmental constraints.
One of the mechanisms for maintaining profitability involves the control of costs or fundamental inputs into the production process. Variation in the size of VFX firms and the types of VFX projects they undertake (large or small budget films) represent different tactics for controlling two critical resource costs in the form of labor and technological infrastructure. Firms seek to control these costs in an attempt to deal with a lack of continuity of absorption of VFX services. Table 3 shows the large variation in the mean budgets of film credits of interview firms, which range from around ten to well over 100 million (USD). Managing value capture through the selection of market segments, however, involves more than a choice between large and small budget films; the size of the core workforce of the firm and its technology infrastructure are also elements of market segmentation.

Some firms remain small and specifically target lower budget films. They offer ‘efficient, quick solutions’ that do not require complete computer graphics (CG) to produce the shot, because full CG solutions are research and development (R&D) intensive and therefore expensive. They explicitly avoid ‘over-engineering’ solutions and always look for a low-technology route to achieve results. They select 2D rather than 3D solutions because the latter are resource intensive. They avoid the ‘Apocalypse Now’ syndrome:

If you were in a jungle with a lot of money and a lot of resources, you end up napalming the whole jungle because you can. When you have all the technical equipment and you have a bunch of R&D people and loads of CG people, you go for R&D, you do the CG solutions because you can. Why not? Because the solution is there if you always take that route (L4).
Wherever possible, these firms use ‘out of the box’ solutions that are optimized software that allows them to build scenes for a fraction of the cost of R&D and CG.

An alternative route is to invest in more equipment, and in particular more workstations, retain a larger core workforce and be prepared to upscale quickly in order to target large projects in the relatively small number of films that have very large VFX components. Once investment in scale is undertaken, larger firms remain locked in to the high-end of the market because the margin on small films is insufficient to meet costs. These large facilities are engaged in R&D, often in the form of 3D which is resource intensive; they build software solutions around 3D platforms such as Maya or XSI while the smaller firms rely more heavily on ‘off the shelf’ software. The larger firms maintain substantial R&D overheads and significant expertise to maintain their pipelines, and further resources to manage the large number of digital assets that are developed and stored for every project.

Small firms report that they stay small in order to avoid the risks of becoming a larger facility because larger facilities can go under within weeks if they are unsuccessful in securing a continuous flow of work in large VFX films. Despite the high risk associated with growth, these larger VFX firms have ‘countervailing resources’ in the form of a sufficiently large workforce and technology infrastructure to undertake a large number of complex VFX shots. This is a point of competitive differentiation and source of countervailing power in relation to the Hollywood production network:

If they [producers] come into a small boutique company, they’re more apt to just throw their weight around, try to get exactly what they want and just hammer this company until they give us what we want [C5].
Finally, other firms deal with the problem less explicitly by maintaining a capacity for ‘upscaling’. These firms have developed an ability to find talent and upscale operations. One London firm explained that it operates as a very small firm but is capable of delivering on large projects because of the reputation of its core employees and because it delivers on projects by up-scaling:

This has to be the smallest facility in Soho if not the world…But we’re capable of taking on enormous projects, projects with good kudos, high quality work, high quality directors and we do that by, whenever we get a job, we look and see what resources are required and we find those resources (L5).

While project management firms are typical throughout the creative industries (WHITELY, 2005), this is relatively new to the VFX sector and arises from the increasing size of projects and the very high risk of trying to maintain a permanent salaried workforce. These VFX firms are now differentiated by the capacity to bring together teams and manage the logistics of delivery, rather than the creative talent of a core workforce or the physical infrastructure or technology of the firm.

Avoidance: Diversification

Diversification is one of the tactics firms can use to reduce their dependency and thereby improve their power and profitability, by reducing the concentration of their output absorbed by any one link in the value chain (PFEFFER and SALANCIK, 1978). A response to the tight margins in the VFX industry is to maintain operations across a range of sub-sectors such as film, TV or TVC. Table 3 shows the extent of specialization in interviewee firms. The level of film specialization ranges from no film credits for one UK firm, to 100% for a number of Canadian firms.
Some firms indicated that it was not possible to service a range of sub-sectors; this was explained in terms of the ‘snobbery in film’, which was regarded as the more creative format, and which meant that film clients were suspicious of firms that did not specialize in film. One UK firm indicated that the market segments of film and TV were completely separate in the UK such that ‘never the twain shall meet’ (London VFX firm). A further explanation was the different capabilities demanded by the different sectors:

The film people are after a very bespoke service and that’s the difference, isn’t it? Just after very bespoke, my film’s special, it’s not like every other film and I want a very specialized service. Whereas TV people are very much like, well, it’s the process, this is TV, I’ve got to get out an episode every two weeks. Bespoke is great but it’s not, I need process here, I need to know that an episode’s going to appear every two weeks and you know how to do that and we’re not going to be gazing at our navels (L4).

However, other firms indicated that working in a range of sub-sectors such as TV and in particular TVC enabled firms to cross-subsidize their less profitable film work. One firm indicated that 85% of its work was in commercials and the remainder was in long-form and film (London VFX firm). Yet another firm reported that it was established with a specialization in film and TVC and was now doing mainly TV (London VFX). In strong contrast to other firms quoted previously that indicated that the sub-sectors were incompatible, one firm reported that it was diversifying from film to commercials because the latter was more lucrative:

I suppose off the top of my head I’d say film accounted for probably about 35%, commercials 50, 60, and the rest odds and sods which would, it’s extraordinary
what stuff gets asked for. I mean there’s music videos, there’s concerts, screen projections, stuff for the internet. There’s lots of little random jobs and you think what’s that for but it’s visual (L5).

The same firm stated that they were considering engaging in other visual work in sectors such as museums. Another VFX firm was already undertaking work in print which they reported was very close to TV:

It’s a natural fit. We both do very creative parts of things. Obviously there’s the non-creative part and there’s the block printing stuff but if you think of any of the massive sort of billboards or any of the campaigns that you see, they tend to be very high-end creative work. And it’s the same kit (L7).

For this firm, it was necessary to mix ‘high-end cool’ with ‘bread-and-butter’ work in order to survive. Firms could not afford to tightly specialize in one segment of the market; firms had to diversify if they wanted to ‘stay alive’:

I don’t just rely on commercials. I don’t just rely on TV. I don’t rely on film. I don’t rely on any of those markets individually. It’s a massive mix (L7).

A more dramatic shift in format includes the activities of one London firm in providing VFX for three-minute episodes on the web that involved product placement. However, only one firm reported involvement in on-line activities and these were regarded as marginal to their core operations. There appears to be some regional differences in the use of this strategy. The UK is a well-recognized major television broadcast (COOKE and PANDIT, 2005) and advertizing centre (GRABHER, 2002), so many firms operate in these sectors, more so than film, which might explain the lower level of specialization in film amongst UK firms compared with Canadian and Australian firms (Table 3).
Mimicking: Re-positioning in the Value Chain

A further response to their weak position in the VFX global value chain involves firms’ attempts to reposition themselves in GVCs in order to improve their margins by participating in higher value-added activities. Two of our interviewee firms have adopted this strategy (Table 3, see column ‘Does Production?’). In this scenario, firms are seeking to capture the advantages of Hollywood in its control over production by trying in effect to imitate the dominant organization (FLIGSTEIN, 2001). One London firm clearly articulated the need for this type of response to the pressures of the GVC. The imperative to move within the value chain was linked to the low margins and high expectations placed on VFX firms associated with them being at the ‘bottom of the food chain’:

I was at a talk by UK Screen last night…What this guy was saying is you should try and just go up the food chain, go in there. And I think actually that’s what we’ve just been doing. And that’s definitely interesting. Just go up the food chain and go, you know what, we can do that and show you the price that we’re doing it for and you probably won’t be that shot because you’re used to paying that for all these layers beneath you. We must not underestimate the importance of those layers in between us and that client to get those professionals on board (L5).

One such technique involves ‘moving into content’ through various means of capturing intellectual property (IP) rights in a film project. This is well illustrated by the attempts of Animal Logic to capture value through IP ownership. Warner Brothers Pictures formed an agreement with Animal Logic in May 2007 to develop and co-produce three animated feature films. Animal Logic established its reputation for the production of animated feature films with ‘Happy Feet’ (2006), during which it transitioned from a VFX service provider
to a production house, which resulted in a growth in its core crew from around 150 to a peak of 500. As a follow-on to this agreement, Animal Logic has produced an animated feature film, ‘Guardians of Ga’hoole’, for Village Roadshow Pictures at the Fox Studio in Sydney involving the employment of around 300 artists (MORGAN, 2008). Controlling IP has become an objective of some firms who see it as an essential step in capturing an increasing share of value in the GVC (Personal interviews, Industry Bodies, Australia 2007).

However, other firms indicated that this strategy is only available to the ‘big boys’ who have close networks with the studios and a track record delivering on large VFX projects. Yet another firm warned of the dangers of seeking to undertake production independently of, or in competition with, the studios because of the risk that they will not use your services on future film projects. Firms which have undertaken this approach, such as Animal Logic in Australia or Framestore-CFC in the UK, have done so in collaboration rather than in competition with the studios. For example, Framestore-CFC, a large London-based VFX firm, set up an animation studio to produce an animated film called ‘The Tale of Despereaux’ (2008) in collaboration with Universal Studios. This path to production appears to be open more to firms operating with animation, in particular 3D character animation, than those firms who work only on photo-realistic VFX.

Firms are experimenting with other techniques for increasing their intellectual property rights including taking equity in a project. One firm explained to us that VFX firms in London had started taking cash payments to cover costs and were seeking equity as margin on VFX film projects. However, as competition had intensified, they had begun to accept equity to cover costs and were not receiving any margin. The same firm indicated that a
potentially more advantageous strategy was to use sales agents who negotiate a VFX firm’s equity in a project at the stage of conception, rather than seeking to negotiate equity stakes at the point of post-production after prior equity arrangements are in place.

CONCLUSION

The paper has utilized GVC analysis and broader theories of power in global production networks to develop an understanding of the global film production network. VFX firms occupy a peripheral and highly dependent position in the global network in which Hollywood majors are key gatekeepers for the broader media conglomerates. This is a consequence of the high levels of concentration in the finance and distribution sectors and the dependence of production firms on distribution agreements as a precondition for accessing finance for a film (COE and JOHNS, 2004)

These characteristics of the global film production network constrain the strategic choices of VFX firms seeking to capture a higher share of revenue in the global film market. One approach VFX firms are adopting involves unilateral action to try to identify a segment of the market in which it is possible to compete (or survive). By controlling their key inputs of labor and technology infrastructure, firms seek to manage the environmental pressures that arise from their heavy dependence on the Hollywood market. They do this by focusing on particular segments of the market, such as high intensity VFX projects on large budget films or low-engineered solutions for low budget films. These firms adopt a strategy of *adaptation* which involves identifying a market segment in which they are able to survive while excluding others (PFEFFER and SALANCIK, 1978, p. 107). This is effectively a
coping strategy rather than one involving a restructuring of power and resource dependencies.

Unilateral responses with the potential to restructure the power and resource dependencies of VFX firms are also highly constrained by the characteristics of the global film production network. Some VFX firms attempt a strategy of *avoidance* involving diversification into other VFX markets such as TV and TVC. However, the effectiveness of this strategy is limited by the fact that other segments of the market are typically also dominated by the media conglomerates of which the Hollywood majors are a part (SCOTT, 2004b). As explained above, the TV sector in the USA exhibits a substantial vertical integration with the Hollywood majors in addition to some other very large and also vertically integrated media companies (FCC, 2007). This is not the case in relation to material distributed on-line. However, only one firm reported that it was engaged in VFX work for on-line distribution and noted that it was a marginal activity.

Finally, a very small number of firms have sought to avoid their resource dependencies by *mimicking the dominant firms*. This involves firms re-positioning themselves in the value chain to gain greater control over production. As FLIGSTEIN (2001, p. 17) explains, for dominated firms, an alternative to finding a position in the market (or niche) in which they are able to survive is to seek to imitate dominant firms. There are a small number of examples of VFX firms operating as production houses and not merely service firms. However, a major threat for firms undertaking this type of activity is that they cannot afford to offend the Hollywood majors. This is because VFX firms rely so heavily on the Hollywood global film production network. As such, firms that have become involved in production have done so in collaboration with the Hollywood majors. It should also be
noted that this constitutes a very weak form of ‘imitating the dominant’, because the key advantage of the Hollywood majors is in fact their stronghold on the global distribution and exhibition sector, rather than their dominance of production (SCOTT, 2004a; 2004b).

There is also a range of strategies which are not being adopted by VFX firms; these include cooptation (the development of inter-locking boards or long-term contractual relations) and constraint absorption (such as mergers and acquisitions). These options are not available to SMEs in the global film production network. Such tactics would require the cooperation of the Hollywood majors and the broader media conglomerates of which they are a part and they have no incentive to relinquish their position of dominance (CASCIARO and PISKORSKI, 2005).

The weak position of VFX firms is intensified by the increasing tendency for ‘runaway production’ activities to be used as a strategy for creating competition between regions which now utilize tax incentives and cost cutting as devices to attract offshore production (CHRISTOPHERSON and CLARKE, 2007b). This results in a clear conflict between the strategy of TNCs and local SMEs (KRISTENSEN and ZEITLIN, 2005; RUTHERFORD and HOLMES, 2007). The TNCs are interested in regional investment for cost-cutting purposes, which conflicts with the need of regional VFX firms to capture a greater share of revenue in a progressively more competitive industry with increasingly tight margins. Even further, the Hollywood majors now approach ‘runaway production’ as a mechanism for consolidating their power globally by ensuring that they are able to create and exploit cross-regional competition and that they are not heavily dependent on any one VFX market. In this way, the Hollywood majors distribute VFX work globally, not simply as a strategy for
value creation but as a mechanism for managing power relations across geographically dispersed regions (LEVY, 2008).

This analysis has implications for understandings of the role that TNCs play in upgrading regional economies as depicted in the regional development literature (ASHEIM and ISAKSEN, 2006; ERNST and KIM, 2002; HUMPHREY and SCHMITZ, 2002). Existing research needs to be further supplemented with an analysis of the constraining effects of power relations in global production networks on the opportunities for local SMEs to pursue various upgrading strategies. While TNCs are thought to provide a buffering against the volatility of regional markets in which SMEs are typically located (SABEL, 2002), the Hollywood film production network is just as volatile as the domestic film, TV and TVC markets. This is because runaway production is heavily driven by cost considerations (including exchange rates) and inter-regional competition relating to tax incentives. In addition diversification across these markets does not necessarily offer an opportunity for liberation from the constraints of any one market. The media conglomerates of which Hollywood is a part own an increasing share of a variety of media and there is a tendency for VFX firms to specialize in particular market segments because of reputational effects. Further, while TNC are thought to drive upgrading in regional SMEs by forcing the latter to adapt superior technical standards (ERNST and KIM, 2002), in the VFX sector that does not translate into an ability to capture higher value. However, films financed and distributed by Hollywood certainly do typically provide a broader range of creative opportunities for regional SMEs.

The research reported in this paper therefore has important implications for regional upgrading strategies which involve attempts to attract and support flagship TNCs that are at
the centre of global production networks. Such policies need to acknowledge the power
differentials in global markets and the potential for TNC lead firms to dominate regional
economies and manipulate the political-economic environment to their advantage
(BUCKLEY and GHAURI, 2004; CHRISTOPHERSON and CLARK, 2007b; MORGAN
and QUACK, 2005; PITELIS, 2006). In addition, such policies need to provide support to
regional SMEs, which acknowledges their peripheral position in global production
networks and the implications that has for their power to negotiate to capture value in
global markets. This might include policies which place conditions on TNC access to
regional incentives or which link such incentives with support for regional SMEs.

REFERENCES


925.

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Quarterly* 50, 167–199.


Table 1: Interviewees

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<th>Location of Interview</th>
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Table 2: Regional analysis of VFX Firms Credits

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<th>Country</th>
<th>Mean number of credits</th>
<th>Number of firms</th>
<th>Regional distribution of firms (%)</th>
<th>Mean % of each firms’ total credits related to Hollywood</th>
<th>Mean % of each firms’ film credits related to Hollywood</th>
<th>Mean % of each firms’ tv credits related to Hollywood</th>
<th>Mean % of each firms’ other credits related to Hollywood</th>
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Source: Author’s VFX credit database
Table 3: The response of VFX firms to global pressures

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Average 54.9 33.4 55.5 30.8 13.7
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Source: Authors’ VFX credit database

*aUnknown

*bEstimate. See data base description
Number of VFX firms operating in each region by year

Source: Authors’ VFX credit data base
Figure 1: VFX firms over time and per region
NOTES

i From the 1990s, various terms have been used to refer to the networks of production that comprise global markets including value chains (PORTER, 1990), global commodity chains (GEREFFI, 1994, 1996; WHITLEY, 1996), global value chains (GEREFFI et al., 2005) and global production networks (COE et al., 2008; LEVY, 2008). They share in common a concern with value capture, power and territorial embeddedness (JOHNS, 2006).

ii PDV refers to post, digital and visual effects and is used by the sector to capture the increasing tendency for work which was once part of post-production to be undertaken before or during production. According to Screen Australia, the industry ‘incorporates sound and visual editing, digital effects, creation of computer-generated images (CGI), film laboratory work and duplication services’. Our analysis is focused on the segment of digital effects and CGI.

iii A film production was coded as Hollywood-related if it was produced or distributed by a major Hollywood studio or one of its subsidiaries (SCOTT, 2004a). For the television sector, the broadcast and cable channels owned by the Hollywood majors or their subsidiaries were also coded as Hollywood-related (FCC, 2007). As SCOTT (2004a) shows, the majors and their subsidiaries captured approximately 90% of the motion picture box office in the USA in 2000, despite releasing only 46% of the motion pictures in 2000. It is these larger films that contain most of the VFX work; independently released films generally have smaller budgets as well as smaller box office, and have fewer