As more animated films are produced, new "worlds of production" have emerged. The animation production system is distinct from film production, relying on different technologies and labor skills. Its globalization, therefore, has taken place differently, although both are structured by the global production networks of the media conglomerates. We present a framework for understanding the animation industry, its international division of labor, and its diverse markets, enabled by pools of artistic labor, growing demand, and the diffusion of production skills.

1. Introduction

Animated films, or cartoons, are popular throughout the world. Animation grew up with the film industry, typically exhibited for many decades mainly as "short subjects" or "shorts" prior to a feature-length film. An Academy Award (Oscar) has been awarded since 1931/32 for Best Short Subject (Cartoon). Slowly but steadily, animation found its way as well into feature-length films—defined here as those over 40 min. Television (TV) opened up a new market, stimulating demand for animations of varying lengths: short, feature-length, and in between, accommodated by the 30- and 60-min programming blocks. Recently, proprietary animated properties, as they are called, have become central, highly profitable elements of global media firms.

The animation industry, reliant on artists and animators rather than live actors, is distinct in its production process from the live-action film industry and has evolved differently. Technological development—in particular, the evolution from hand-drawn cel techniques to computer graphics imagery (CGI)—has brought about

1The category was changed to the Best Short Subject (Animated) in 1972 and to Best Short Film (Animated) in 1974 (Academy, 2007). Animated feature films did not have their own category until 2001, preceded by special awards to Walt Disney for Snow White and the Seven Dwarfs in 1938 and John Lasseter for Toy Story in 1995.
new priorities and opportunities. Labor-intensive tasks in both cel animation and CGI continue to disperse geographically. World-class feature-length CGI, however, embodies barriers to entry and requires a combination of artistic talent and technical skills that are—so far—found in relatively few locations worldwide.

In addition to presenting data on the technological transformation of animation through the advent of CGI, we combine two conceptualizations that bear on the animation industry: first, worlds of production and how the worlds of animation production have evolved; and second, global production networks (GPNs), seen mainly as the dominance of Hollywood studios and major media conglomerates and exploitation of global labor pools. These dynamics open up opportunities for differentiated production by artisan entrepreneurs for niche markets, including markets not controlled by the media giants. The combination of new technology and new markets has widened opportunities for studios from many countries, largely through the increasingly common phenomenon of international co-production. We illustrate the technological shift and global production with data on feature-length animated films. Finally, we discuss the upgrading path from subcontracting to feature films.

2. Animation as a creative cultural industry

Cultural industries agglomerate in a few locations—the creative hubs—within national economies (Power, 2003; Scott, 2005; Currid, 2007). In such hubs, agglomeration reinforces local creative fields—webs of production activities and associated social relationships that shape patterns of entrepreneurship and innovation (Scott, 2006a). Hollywood, the capital of the world motion picture industry, is a common focus of study, including the organization of studios and their employment patterns (Christopherson and Storper, 1989; Scott, 2005). As in other creative industries, the industry’s persistent agglomeration is a response to the expertise and skilled labor found there and the transactions-intensive nature of nonroutine work (Caves, 2000; Pratt, 2000; Scott, 2006a; Scott and Pope, 2007; Cole, 2008).

The “cultural industries,” however, are not exactly the same as the “creative industries.” As emerging sectors of cultural production, such as multimedia and software production, the audio-visual industries, architecture and design, became increasingly difficult to fit within traditionally defined sectors of the cultural industries, cultural industries were transformed into the (now larger category of) creative industries (Richards and Wilson, 2007). Creative industries are “are at the cross-road among the artisan, services and industrial sectors” (UNCTAD and UNDP, 2008: 13).

Film and animation have co-evolved with fundamental changes in the concept of culture. “High culture”, such as classical music and fine art and its manifestations, has given way to a large degree to popular or “pop” culture and its mass consumption, stimulated by young populations with disposable incomes (Pratt, 1997; Lukinbeal, 2004). The production of culture has grown to encompass advertising,
photography, pop music, films, cartoons, fashion, design, textiles, and other artifacts and symbols of style and fashion (Lash and Urry, 1994; Peterson and Kern, 1996; Gans, 1999; Scott, 2000, 2004). The production of each of these cultural forms has become a significant source of production and employment in advanced economies (Hesmondhalgh, 2002).

Earlier cultural policies had preservation and maintenance of high culture as the most important aims. Places with high culture (such as France and Italy) compete for tourists (Kong, 2000). A new dimension of this competition is “street-level culture”—localized niche versions of pop culture—which can only be consumed in particular places (Florida, 2002). In both high culture and street-level culture, cultural industries have become sectors that can be profitable and beneficial to regional economies (Power, 2002). Attracting artists and other creative people pays an “artistic dividend” to cities where creative people and “alpha” industries agglomerate (Markusen and Schrock, 2006; Schoales, 2006).

The cultural industries are what Jeffcutt and Pratt (2002) call chart businesses—“businesses that live or die by the volume and success of their output being valued as ‘best’ in the market place for a limited period”. The focus of firms is to produce novel products, which results in the fact that there is no “single ideal organizational form—rather different forms that emerge as ‘local solutions’ at different times, and for different technologies and industries” (Jeffcutt and Pratt, 2002: 228). Because of their novelty, production is typically project-based, with talent provided by freelance entrepreneurs who accumulate experience with a series of employers in various locations.

The development of technology also has stimulated growth of cultural industries (Leyshon, 2001; Power and Jansson, 2004). Mass production of culture has gone digital in TV, film, publishing, and music compression, brought about and made widely available by the technological development of digital formats and their storage and transmission. New devices, from iPods to mobile telephones with video and Internet capability, bring cultural forms to the individual, challenging the power of long-standing distributors of content, such as Hollywood studios, to control entertainment in a “digital and networked economy” (Currah, 2007). Differentiated demand beyond theatrical audiences, such as TV and video, means that studios need not only “blockbuster” theatrical films as their objective, but also products for various media platforms, including iPods, mobile phones, and web sites (Kompare, 2006; Screen Digest et al., 2006).

The production of culture for mass consumption has resulted in the domination of many markets by the global media conglomerates. The media giants—US-based Disney, Time Warner, Viacom and NBC Universal (80% owned by General Electric and 20% by France-based Vivendi), Australia-based News Corp., and Japan-based Sony—own the big Hollywood studios as well as arrays of broadcast stations and satellite television channels (Gomery, 2003; Mossig, 2008). The global media conglomerates—and others, such as Bertelsmann in Germany and Vivendi in France,
have chosen “aggressive strategies” of merger and acquisition to expand their control over the global media market through over the past three decades, aided by neoliberal privatization and deregulation (Jin, 2007).

The power of the media giants rests largely in their ability to identify “properties” in which they can take a financial interest if not outright ownership, and to bring these properties in their various forms to the marketplace. They are, therefore, active in all aspects of the media production process, from conceptualization through distribution, whether with internal staff or outsourced through affiliates or other providers in the marketplace (Wasko, 2003; Scott, 2005). Together, the mass production of culture, its commoditization, and digital forms have enabled the emergence of both wide and niche markets for cultural industries. Cultural diversity adds to the supply of, as well as the demand for, “specialized cultural production” which typically clusters in industrial districts in large urban areas (Scott, 2004, 2005). Animation is, like comic book production, an example of the “new artisan” culture, where subcontracting has become common, but also characterized by a transnational social economy that congregates periodically in regional or global venues (Nordcliffe and Rendace, 2003; Cole, 2008). Moreover, animation studios compete to be creative—creating new characters and new story ideas that can form the foundation of a franchise of products across media platforms and consumer products (Raugust, 2004; Screen Digest, 2007).

The media giants dominate the market for proprietary products based on animated characters. Merchandising commodities based on movie themes and characters was pioneered by Walt Disney (Wasko et al., 1993; Bryman, 1999), and consumer products remain a key profit center in the company (Staggs et al., 2007). Disney characters are embodied in toys, school supplies, children’s apparel, home furnishings, stationery and, recently, wedding gowns (Marr, 2007a). A successful animated character has toyetic applications—“a personality that can be easily transferred to dolls and playset environments” (Wasko et al., 1993: 285). Creating such a character—a proprietary animation property—is a talent that is a blend of art and business (Neuwirth, 2003; Raugust, 2004).

For the Hollywood film industry, runaway production has been a nagging problem. Economic runaways from Hollywood over the last couple of decades have fanned out to locations in many different countries, but predominantly in Canada, particularly Vancouver but also Montreal and Toronto (Coe, 2001; Christopherson, 2006; Scott and Pope, 2007). Emerging satellite film-production

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2The Columbia Journalism Review maintains a web site that tracks ‘who owns what’ — what broadcasting, film, and other holdings the major media companies currently own: http://www.cjr.org/resources/.

3There is some debate as to whether the film industry is a tight oligopoly (Askoy and Robins, 1992; Wasko, 2003) or webs of transnational companies (Bergfelder, 2005; Strover, 1995). We believe it exhibits elements of each.
locations are found in other parts of the world, including Australia, New Zealand, the Czech Republic, Romania, Mexico, and South Africa (Miller et al., 2005; Scott and Pope, 2007). While details on runaway and offshore animation are scarce, Sito (2006) provides many examples of animation studios opened by the Hollywood studios in an effort to control labor costs. Moreover, Scott and Pope (2007) present data showing that although Canadian production has reduced the percentage of foreign projects to nearly 60% of film and TV production in British Columbia in 2004, in animation Canadian projects accounted for only 38%. In general, co-production has become nearly as common as outsourcing animation production, in large part to exploit talent pools with varying levels of cost, creativity, and quality.

Despite the apparent similarity to manufacturing production gravitating towards low-wage locales, in film production the cultural products are not mass-produced—even if facing race-to-the-bottom cost pressures—but rather are customized and unique. More critically, the labor in animation studios is both skilled and artistic: not merely docile and easily replaced as in a clothing or toy factory. As in manufacturing, however, Asian locations became early on the preferred destinations of runaway production. Asian traditions favoring animation are strong, for example, in Japan and the Philippines (Russell, 2003; Francia, 2004). What is emerging is “a far-flung and constantly evolving mosaic of productive agglomerations at various levels of development” with the elements of the mosaic becoming “steadily more integrated with one another in complex relations of competition and collaboration” (Scott, 2006b: 1533).

The history of animation embodies both technology and industrial organization. We next illustrate this history, and the different worlds of production that have evolved, illustrated by data on successful animated feature films.

3. The evolution of worlds of animation production

To explain how production of animated films has evolved and been influenced by technologies and markets, we borrow the analytical framework of worlds of production (Salais and Storper, 1992; Storper and Salais, 1997). Their four categories or worlds of production are defined by combinations of technology and market characteristics of products. Although their four worlds—standardized generic products, standardized dedicated, specialized dedicated products and specialized generic products—do not apply precisely to animation, we utilize this analytical framework to understand production in the animation industry.

3.1 The two worlds of animation production prior to 1980

From the 1920s until the early 1980s, animation production systems were of only two types (Figure 1a). Traditional animation production, found in the upper left cell, was represented by the early generation of animated films by artisan studios in Eastern
European countries, generally supported by governments. For example, then-Czechoslovakia was a dominant high-quality animated-films producer.

Such artists concerned to produce creative works of animation were no match for the Bray-Hurd process of cel animation, which uses transparent cels to separate the action from the background, no longer requiring a stationary background to be redrawn for each frame. This Fordist animation production facilitated rapid production on a regular schedule (Bryman, 2000; Langer, 2005). Walt Disney mastered the business of animation, blending richness, technical perfection, and economic power

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**Figure 1** (a) Specialized and standardized production 1930–1980 and (b) Diverse and segmented production since 1980.

*Source*: adapted from Salais and Storper (1992); Storper and Salais (1997).

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<td><em>Lotte Reiner’s silhouette animation</em></td>
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<th>Artisan style animation</th>
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<tr>
<td>Focus on artistic quality</td>
<td>For theaters: 2D animation has almost disappeared</td>
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<td>Frequently subsidized</td>
<td>For TV: Focus on cost; often ‘limited animation’</td>
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<td><em>Japanese animé</em> (eg, Studio Ghibli)</td>
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<td><em>Princes et Princesses</em> (La Fabrique)</td>
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<th>Theaters (Mainly CGI)</th>
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<td>Focus on originality; characterized by high cost and high risk</td>
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<td>Lower quality (and lower budget) products for TV</td>
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<td><em>Baby Einstein series</em> (Disney)</td>
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which artisans could not match (Bendazzi, 1996). Disney’s studio depended on overseas markets for as much as 45% of its income throughout the 1930s before a ban imposed on Hollywood movies by the Third Reich in 1940. With the loss of the European market, Disney’s overseas revenue nearly vanished (Sito, 2006).

For decades, theatrical exhibition was the center of film consumption, a situation that changed dramatically with the advent of television. Animated cartoons became a regular fixture, first in after-school hours and Saturday mornings and later in evening prime-time hours as well. New studios, such as Hanna-Barbera, focused on the TV market. The arrival of television caused many studios to eliminate animation jobs. The seasonal programming schedule also resulted in cyclical employment (Scott, 1984). Fewer theatrical animated films were counterbalanced by new opportunities presented by TV, such as the new territory of commercial advertising. Advertising remains a key market for animation, attractive because of its short products (30 seconds or shorter) and steady demand for new ideas.

To produce the large quantity of animation required for television, US studios found cheaper labor elsewhere, employing the “limited animation” system perfected by Hanna-Barbera and first tested overseas in 1971 in a studio in Sydney, Australia. US and Canadian animators were sent to train Australians and, later, others in Hollywood-style animation production, which changed the focus from visual images to the dialogue (Wells, 2003; Sito, 2006). The regular schedule of cartoons on television created continuous demand for animations which, together with labor issues in the US, led to widespread runaway animation production. By 1985, Hanna-Barbera was producing 100 half-hour TV shows a season in eight countries (Sito, 2006). GPNs for animation production had been created.

Until recently, two industrial standards—Hollywood and animé—have predominated and are universally accepted. Growing demand from TV made the US market a major customer of animation studios. Japanese animé, long a standard of Asian artisan animation, has also embraced both computers and merchandising (Krikke, 2006; Wong, 2007). Animé remains far more popular in Asia, but it is steadily internationalizing (Lu, 2008).4

3.2 New worlds

3.2.1 New platforms, new markets

The Disney model was imitated by other firms in two ways. First, Disney’s marketing savvy and early television ventures provided a strong model for other media giants. Second, its box-office success based on artistic perfection led other firms to master newly-developed technologies for computer animation. These two paths formed the basis for the emergence of two new worlds of animation production.

4The Anime News Network is a rich source in English for the growing base of anime aficionados outside Asia.
The two original production worlds—*local, artisan production* and the *globalized Hollywood system*—continued into the 1980s. Until then, the only markets for the animation industry were theatres and the cartoon blocks in TV networks’ schedules. This equilibrium changed when cable and satellite TV providers began specialized animation channels showing cartoons for up to 24 h a day. The number of children’s channels has proliferated: there are now 14 full-time channels in the USA, 17 in France and the UK and nine in Germany. The new channels show many old cartoons but also provide tremendous demand for new material. The “big three” in television animation are Viacom’s Nickelodeon, Time Warner’s Cartoon Network, and Disney Channel (Westcott, 2002; *Screen Digest*, 2007). The “relocation of feature film animation viewing to the privatized sphere of the home (through the establishment of pay cable and home video as routine sites of film consumption)” made production of cartoons a growth market (Larson, 2003: 62). As cable and satellite channels proliferate and demand new material from studios, geographical and cultural specialization has emerged. Iranian animation studios, for example, target markets in Turkey and throughout the Islamic world (Harrison, 2005).

Animation is expanding on the program schedules of broadcasters and cable and satellite operators throughout the world, largely a result of the attractiveness of revenue from ancillary products such as toys and clothing (Wasko et al., 1993; Larson, 2003). This increased demand has not translated into higher prices. Simultaneous with the focus of media firms on the children’s market was the shift to low-budget reality shows, which dramatically lowered the price which media groups are willing to pay for programming, including animation (Raugust, 2004). Price is the most important criterion in the TV world. As a result, Lent (2000: 3) estimates that “about 90% of all ‘American’ television animation is produced in Asia”, with all pre-production work done in the USA. European studios with their artisan style have entered the market of US cable channels, but most have had difficulty getting distribution to theatres (Panzner, 2005a, b).

The first new world of production, then, is a result of the popularization of new electronic devices, such as video cassette recorders (VCRs) and digital videodisk (DVD) players, which has created a large new market (the lower-right quadrant in Figure 1b). Since the advent of video—first video cassettes and now DVDs—many animations are never shown in theatres but are released directly to video, a growing source of revenue to studios (Larson, 2003; Marr, 2007b). Thanks to the development of personal exhibition technology, such as home and portable electronic devices, DVD sales have become one of the main growth segments of the global animation market. Adams (2006) documents the major shift in studio revenue. Theatres were the source of 58% of revenue in 1981; this fell to just 14% in 2006 (Figure 2). The largest source of revenue today is video sales, or “sell-through”, which now account for 42% and, together with video rentals, 50% of studio revenues. Television, including broadcast channels, cable and satellite, has grown as a source of revenue from 24% in 1981 to 34% in 2006. A currently small (less
than 2%) but potentially huge source of revenue is video on demand (VOD), via both streaming and downloading (Screen Digest et al., 2006). Therefore, box office data, while complete and readily obtained, provide an ever-smaller part of the picture of the film business, and DVD sales themselves are now shrinking (Barnes, 2008).

The latest trend is toward interactive content and convergence toward platforms which the media giants do not (yet) control, such as video to mobile phones and iPods, and to the Internet via massively multiplayer online games (MMOGs) and social networking (Cardillo et al., 2006; Raugust, 2007b). As animation moves toward these less-familiar platforms, the media giants and small studios alike want to avoid the fate of the music industry, where sales fell following the emergence of digital file-sharing systems (Leyshon et al., 2005).

The overall popularity of cartoons is seen in the number of feature-length films produced in each year (Figure 3). No more than ten films per year were produced worldwide from 1917 until 1974. Since 1998, no fewer than 25 animated feature-length films have been released each year. The number released in the ten years since 1997 (509) is nearly as large as the total for the first 80 years of the craft from 1917 to 1996 (596). In part, this is a result of direct-to-video films which are never seen in theatres.

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5The source we used (Wikipedia, 2007) is far better than all alternatives we have found. It includes all films from every country beginning in 1917, and for recent years it includes films that have been produced for the growing TV and direct-to-video markets. No other source is as comprehensive. This source uses a fairly liberal definition of 40 min of animation, which includes most television specials and direct-to-DVD products, but excludes compilations of short television episodes.
Since the first feature-length animated film in 1917, 53 countries have been involved in at least one of the 1105 animation productions. The most prolific sources of animated films are the USA and Japan, which account for 39.0% and 19.1% of the world total. Studios in just 13 countries have produced 10 or more feature-length animated films in the 26 years since 1981. Argentina remains in the group of top animators; in Europe, France, Germany, Russia, Spain, Hungary, the UK, Denmark, and Sweden join the top group, as do Canada and Australia.

International co-productions represent 147 (13.3%) of the feature-length films. German animators have been the most collaborative, involved in 61 films with partners in 23 other countries, followed by French animators, with collaborations in 54 films with partners in 16 countries. The most frequent alliances have been between studios in the USA and Japan (15) and those in the USA and Canada (14).

3.2.2 New technologies

The second new world of animation production is the emergence of CGI technology in production of animation and its dominance in theatrical films (the lower left quadrant in Figure 1b). Computer animation began in the 1960s, and CGI has been incorporated in special effects in live-action films since the 1970s. CGI in animation has raised the standards of audiences regarding aesthetic appeal (they were visually richer and more exciting), broadened the audience for animation to
include adults, and incorporated more adult story themes. The artistic, experimental nature of CGI makes it the contemporary successor to artisan animation (Jones and Oliff, 2006).

The CGI production process begins with 2D techniques in the conceptualization stage, especially the design of the characters. This modeling step needs many skilled workers and takes much more time than in cel-animated films, requiring bigger budgets (Robertson, 1998). The large budgets and assembly of skilled CGI animators are high barriers to entry. Consequently, full-length CGI animations released in theatres are made by very few studios, even though CGI techniques in special effects are widespread. As technologies diffuse, however, we are beginning to see large-scale technological innovation, leading to relocation of production, foreseen by Scott (1984).

Although CGI production uses computer graphics, not human hands, to draw and color each frame, the process is still labor-intensive, relying on artists who have computer skills (Crawford, 2003; Jones and Oliff, 2006). For a full-length feature film, the rendering process (calculating the position of each character’s body parts for each expression or movement) can take more than a year of round-the-clock calculation (The Economist, 2005). CGI has become a staple in video games, whose popularity relies largely on their realistic graphics (Aoyama and Izushi, 2003; Johns, 2006), and advertising, such as depicting medical benefits of pharmaceuticals.

In addition to CGI animated films, new digital technology has brought huge changes into the industry. Technology using computers and ICT networks has become commonplace not only in production but also in consumption. Consumers participate in the new forms of production in the networks (Benkler, 2006; Flowers et al., 2008). Animation fans share their interest with other consumers by translating subtitles and providing feedback with no financial reward. They also change films into other forms to make them available to watch online (as webisodes, YouTube or Veoh videos) or as peer-to-peer files to share with other users. The network participants also create new music video clips using animation cuts and adding music. In this sense, the new technologies have changed passive consumers to (inter)active users as well as expanding the overall market.

3.3 Theatre audiences prefer CGI

CGI techniques have led to spectacular successes for a few major studios, such as Pixar (now part of Disney), DreamWorks and Blue Sky. However, the high production costs—now routinely surpassing $100 million—are a major barrier to entry for new firms.

We have compiled a database of the commercially most successful animated films through 31 December 2006, based primarily on Box Office Mojo (2007) (hereafter Mojo), supplemented by data from the Internet Movie Database, or IMDb (http://www.imdb.com). We supplemented Mojo’s list of top animated films by
worldwide box office revenue with two films which did not appear on that list but had total worldwide box office revenues over $250 million: Spirited Away and Bambi. Box office revenue for DreamWorks’ Shrek 2 (2004), the top animated film, was $920 million, the seventh-highest box office total of all time for all films.

Through 2006, only 217 films of all genres had attained $250 million in total box office revenue; of those, 32 are animated films (Table 1). Of this list, 15 animations rank among the top 100 films (by worldwide box office revenue) of all time (Box Office Mojo, 2007). Of the 32 films, the US box office averaged 43.3% and non-US box office 56.7% of the total. The film whose box office success has been greatest outside the US is Spirited Away (originally Sen to Chihiro no kamikakushi), an anime film by Studio Ghibli in Japan, for which non-US box office represents 96.3% of the worldwide total. Only one film produced before 1988 is among the 32 animations: Walt Disney’s Bambi (1942). More tellingly, 19 of the 32 films are CGI animations; each year, new CGI animations replace 2D films at the top ranks of all-time box office revenue.

The year 1995 was a watershed year for animated films. In that year, Pixar Animation Studios released Toy Story, the first full-length animated film using CGI technology, ultimately accumulating $362 million in worldwide box office revenue (Price, 2008). Prior to Toy Story, only Disney cartoons had reached that level of box office success. After the onslaught of CGI animations from Pixar, DreamWorks and Blue Sky, Disney films’ success never equaled those of the early 1990s. From 1995 through 2006, 17 CGI films reached $300 million in total worldwide box office revenue.

Of the 32 2D animated films released 1995 through 2006, whose worldwide box office revenue reached $50 million, we have production cost data for 31; their average box-office profit was $109.6 million. The 2D animations have generally been profitable (box office revenue greater than production budget), but revenue from them has been declining steadily. Three Disney 2D animated films released between 2000 and 2004, despite production budgets over $100 million, did not recoup those budgets at the box office.

The steady trend, shown in Figure 4, is that CGI films have generally been far more profitable than 2D animations. The average profit of CGI films was $230.8 million—more than double that for 2D animated films produced during the decade. Disney saw that it could not maintain profitability from animation without CGI,

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6Sometimes missing from both data sources was a film’s production budget. Of 87 animated films (those with $50 million or more in worldwide box office), Mojo had the production budget for 58; IMDb had production data on 69 films. For 49 films, both sources provided a production budget. For 28 films, both sources had the same budget figure; neither source had systematically higher budget figures. For 78 films, we had a production budget from one or both sources; when we had data from both, we used the mean of the two figures. For four films, we found an estimated budget on another online source. For five films, we were unable to assign a production budget.
Table 1 Top animated films by total worldwide box office revenue

<table>
<thead>
<tr>
<th>Film</th>
<th>Type</th>
<th>Animation studio</th>
<th>Production budget (millions of US dollars)</th>
<th>Total world box office (millions of US dollars)</th>
<th>Percentage non-US box office</th>
<th>Year released</th>
</tr>
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<tbody>
<tr>
<td>Shrek 2</td>
<td>CG</td>
<td>DW</td>
<td>72.5</td>
<td>920.7</td>
<td>52.1</td>
<td>2004</td>
</tr>
<tr>
<td>Finding Nemo</td>
<td>CG</td>
<td>Pixar</td>
<td>94.0</td>
<td>864.6</td>
<td>60.7</td>
<td>2003</td>
</tr>
<tr>
<td>The Lion King</td>
<td>2D</td>
<td>Disney</td>
<td>62.0</td>
<td>783.8</td>
<td>58.1</td>
<td>1994</td>
</tr>
<tr>
<td>Ice Age: The Meltdown</td>
<td>CG</td>
<td>BlueSky</td>
<td>80.0</td>
<td>647.3</td>
<td>69.8</td>
<td>2006</td>
</tr>
<tr>
<td>The Incredibles</td>
<td>CG</td>
<td>Pixar</td>
<td>92.0</td>
<td>631.4</td>
<td>58.6</td>
<td>2004</td>
</tr>
<tr>
<td>Madagascar</td>
<td>CG</td>
<td>DW/PDI</td>
<td>250.0</td>
<td>528.9</td>
<td>63.4</td>
<td>2005</td>
</tr>
<tr>
<td>Monsters, Inc.</td>
<td>CG</td>
<td>Pixar</td>
<td>115.0</td>
<td>525.4</td>
<td>51.3</td>
<td>2001</td>
</tr>
<tr>
<td>Aladdin</td>
<td>2D</td>
<td>Disney</td>
<td>28.0</td>
<td>504.1</td>
<td>56.9</td>
<td>1992</td>
</tr>
<tr>
<td>Toy Story 2</td>
<td>CG</td>
<td>Pixar</td>
<td>90.0</td>
<td>485.0</td>
<td>49.3</td>
<td>1999</td>
</tr>
<tr>
<td>Shrek</td>
<td>CG</td>
<td>DW</td>
<td>60.0</td>
<td>484.4</td>
<td>44.7</td>
<td>2001</td>
</tr>
<tr>
<td>Cars</td>
<td>CG</td>
<td>Disney/Pixar</td>
<td>120.0</td>
<td>461.8</td>
<td>47.1</td>
<td>2006</td>
</tr>
<tr>
<td>Tarzan</td>
<td>2D</td>
<td>Disney</td>
<td>140.0</td>
<td>448.2</td>
<td>61.8</td>
<td>1999</td>
</tr>
<tr>
<td>Ice Age</td>
<td>CG</td>
<td>BlueSky</td>
<td>59.5</td>
<td>383.3</td>
<td>54.0</td>
<td>2002</td>
</tr>
<tr>
<td>Beauty and the Beast</td>
<td>2D</td>
<td>Disney</td>
<td>25.0</td>
<td>377.4</td>
<td>54.6</td>
<td>1991</td>
</tr>
<tr>
<td>Shark Tale</td>
<td>CG</td>
<td>DW/PDI</td>
<td>75.0</td>
<td>363.5</td>
<td>55.8</td>
<td>2004</td>
</tr>
<tr>
<td>A Bug’s Life</td>
<td>CG</td>
<td>Pixar</td>
<td>82.5</td>
<td>363.4</td>
<td>55.2</td>
<td>1998</td>
</tr>
<tr>
<td>Toy Story</td>
<td>CG</td>
<td>Pixar</td>
<td>30.0</td>
<td>362.0</td>
<td>47.0</td>
<td>1995</td>
</tr>
<tr>
<td>Dinosaur</td>
<td>CG</td>
<td>Disney</td>
<td>127.5</td>
<td>354.2</td>
<td>61.1</td>
<td>2000</td>
</tr>
<tr>
<td>Pocahontas</td>
<td>2D</td>
<td>Disney</td>
<td>55.0</td>
<td>346.1</td>
<td>59.1</td>
<td>1995</td>
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<tr>
<td>Over the Hedge</td>
<td>CG</td>
<td>DW</td>
<td>150.0</td>
<td>331.6</td>
<td>53.3</td>
<td>2006</td>
</tr>
<tr>
<td>Who Framed Roger Rabbit</td>
<td>Part live-action</td>
<td>Disney/L&amp;M</td>
<td>70.0</td>
<td>329.8</td>
<td>52.6</td>
<td>1988</td>
</tr>
<tr>
<td>The Hunchback of Notre Dame</td>
<td>2D</td>
<td>Disney</td>
<td>85.0</td>
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<td>69.2</td>
<td>1996</td>
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<tr>
<td>Chicken Little</td>
<td>CG</td>
<td>Disney</td>
<td>105.0</td>
<td>314.4</td>
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<td>2005</td>
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<tr>
<td>Mulan</td>
<td>2D</td>
<td>Disney</td>
<td>70.0</td>
<td>304.3</td>
<td>60.4</td>
<td>1998</td>
</tr>
<tr>
<td>The Polar Express</td>
<td>CG</td>
<td>Universal CGI</td>
<td>157.5</td>
<td>297.8</td>
<td>41.7</td>
<td>2004</td>
</tr>
<tr>
<td>Happy Feet</td>
<td>CG</td>
<td>Kennedy Miller</td>
<td>92.5</td>
<td>291.8</td>
<td>39.0</td>
<td>2006</td>
</tr>
<tr>
<td>Spirited Away</td>
<td>2D</td>
<td>Studio Ghibli</td>
<td>16.5</td>
<td>274.9</td>
<td>96.3</td>
<td>2002</td>
</tr>
<tr>
<td>Lilo &amp; Stitch</td>
<td>2D</td>
<td>Disney</td>
<td>80.0</td>
<td>273.1</td>
<td>46.6</td>
<td>2002</td>
</tr>
<tr>
<td>Bambi</td>
<td>2D</td>
<td>Disney</td>
<td>na</td>
<td>267.4</td>
<td>61.8</td>
<td>1941</td>
</tr>
<tr>
<td>Robots</td>
<td>CG</td>
<td>BlueSky</td>
<td>75.0</td>
<td>260.7</td>
<td>50.8</td>
<td>2005</td>
</tr>
<tr>
<td>Hercules</td>
<td>2D</td>
<td>Disney</td>
<td>77.5</td>
<td>252.7</td>
<td>60.8</td>
<td>1997</td>
</tr>
<tr>
<td>Brother Bear</td>
<td>2D</td>
<td>Disney</td>
<td>90.0</td>
<td>250.4</td>
<td>65.9</td>
<td>2003</td>
</tr>
</tbody>
</table>

Source: Authors’ estimates based on data from Box Office Mojo (2007) and Internet Movie Data Base (2007).
Figure 4 Profit of 2D and CGI animated films, 1988–2006.
leading it to acquire Pixar in early 2006. Disney’s acquisition of Pixar will bring sequels of *Toy Story* and other box office successes (Solomon, 2006; Price, 2008).

In summary, the development and use of new CGI technologies allowed artisans to create a new genre of animation (Jones and Oliff, 2006). The global media giants have also diversified into both new markets and new platforms. Outside the four “worlds” of the animation industry that we have presented, animation continues to be produced for advertising, education, training, and scientific markets; CGI is prominent but not monolithic in each of these. The theatre and TV markets, however, leave plenty of room for the giant media conglomerates to influence strongly, if not completely control animation production throughout the world.

4. Global production networks

A second analytical framework that accounts for the global nature of animation production is that of GPNs (Coe *et al.*, 2004, 2008). In animation, the “runaway production” portion of the production process requires pools of workers with artistic abilities, thereby limiting the set of possible locations. This contrasts with runaway shooting locations, which save costs on labor for a variety of tasks, such as set transportation, catering, carpentry, and dry cleaning services, and extras. In both live-action and animated films, however, the pre- and post-production tasks remain rooted in Southern California, where the agglomeration of skills is unmatched by other locales (Christopherson, 2006; Scott and Pope, 2007).

The large multinational conglomerates—the majors—which are involved in all phases of production, from content origination, through distribution, to final sales, “are engaged in building global networks of creative partnerships such as international joint ventures, strategic alliances, co-productions, and so on. One of the benefits of these arrangements is that they allow producers to scour the world for talent, skills, and ideas” (Scott, 2006a: 77–78). The TV market is the venue for most international partnerships in animation, however, and the runaway production seen since the 1970s remains common for television series (Tschang and Goldstein, 2004). To penetrate local markets, the media conglomerates are involved in animation production for local as well as global markets. The media giants own animation production subsidiaries (News Corp. owns Blue Sky and Disney has purchased Pixar) as well as cartoon channels on television, such as Nickelodeon and Cartoon Network. However, vertical integration co-exists with a network model in which the media giants also wield power through distribution. The “Big Three” of TV animation are Disney, Viacom’s Nickelodeon, and Time Warner’s Cartoon Network. A notable strength of the “Big Three” is their ability to fill “programming blocks” of several shows aimed at specific age groups to be shown at particular days and times (Westcott, 2002).
The global media conglomerates, each with a presence in Hollywood, are central to the production, financing and distribution of films, including animated films (Mossig, 2008). As Scott (2005) and Wasko (2003) have shown, Hollywood is much more than a set of studios producing films; it is more than anything a system for distribution to a variety of markets beyond cinema audiences, such as television, video, and toys. The dominance of the global media giants is found in “the key finance and distribution relations”:

[These two stages are closely linked as finance is often secured by selling distribution rights in advance of production. . . In essence, power within the system largely resides with those that have the resources to finance and distribute films (Coe and Johns, 2004: 194; cf. Aksoy and Robins, 1992).]

The ability to create “synergies” among a studio’s properties is critical, as up to 90% of a film’s profits may come from sources other than theatre audiences. As theatre attendance has declined steadily since the 1950s, studios have sought audiences on the newer platforms (Newman-Baudais, 2007) as well as customers for licensed products.

At the same time, the major media firms do not—and cannot—control completely the worldwide market for cartoons. National and local channels continue to dominate children’s viewing in many countries, and national (including public) networks compete for viewers, and therefore also seek out alternative programming to that from the majors (Westcott, 2002, 2004).

4.1 Co-production for cartoon channels on TV

As animation on television has expanded worldwide, new sources of ideas have had to be identified and brought into the GPNs of the media giants. The preferred vehicle is co-production, and animation is experiencing a new wave of runaway production—toward locations where local co-production funding is available. The geographical shift has been recent as well as massive. A great deal of co-production takes place among studios outside the USA, both to lower costs and to create new proprietary animation properties outside the media giants’ control.

As the GPN framework suggests, states as well as firms determine patterns of global production. Many animated television series are targeted for local consumption to meet local content requirements, and subsequently picked up for distribution elsewhere. An increasing amount of animation is being produced in Europe and Canada, largely due to public policy initiatives (especially in France and Canada), which subsidize the development of domestic production. These two countries are now “pivotal to international co-production” (Westcott, 2002 p. 74).7

7Westcott’s Animation Europe web site (http://www.animationeurope.com) is a useful source and data base on European animation, particularly feature films.
Support schemes have aided development in other countries like Germany and Australia and are now in place or under consideration in Asian countries, notably China and South Korea (Larson, 2003; Asia Image, 2004b; Raugust, 2004; Wong, 2006). Production subsidies may cover only production, however, leaving distribution to markets a major challenge (Iordanova, 2002). Co-production with US firms also require that a producer “replicate the Hollywood formula” or recruit Americans to bestow the ‘American commercial touch’” (Strover, 1995: 115). For many producers, however, co-production is “a passport to international recognition” (Stein, 2005: 18).

Increasingly, then, transnational capital is complemented by transnational labor. Experienced animators with managerial skills were common as new “runaway production” studios were opened by Hollywood majors since the 1950s (Sito, 2006).

LA artists were offered tempting deals if they would go abroad and train artists in Hollywood production techniques. . . . Canadians proved particularly useful as trainers. . . . by virtue of their British Commonwealth passports could work in many parts of the world where Americans would have difficulty: Singapore, Hong Kong, Australia, and the European Union. Wherever you went in the world to visit an animation studio, there probably was a Canadian supervising artist to meet you. (Sito, 2006, 258).

“New Argonauts” (Saxenian, 2006)—animators with big-studio experience—have become entrepreneurs in new studios in Canada, Korea, and elsewhere (Raugust, 2007a, 2008a). “Nowadays, movement of film professionals is more intense than ever, and with cross-border financing for films more and more of them work internationally. . . . They are no longer exiles, and not even émigrés, but members of the new class of people involved in transnational filmmaking” (Iordanova, 2002: 527). For instance, Nelson Shin, a Korean animator who worked at major studios in the USA, started as a subcontractor for Hollywood studios and then created his own animations, drawing on both his experience and knowledge of the production system from Hollywood and its expectations (Rao, 2007). In addition, stories of Indian animators who had worked in studios in the USA, UK, Canada and Germany, returning to their countries to train local animators and initiate subcontracting in India are no longer rare (Overseas Indian, 2008).

The transnational character of animation in Europe is promoted by the Council of Europe’s Eurimages program, which supports co-production of animated feature films, and by CARTOON, funded by the MEDIA Programme of the European Union. CARTOON, the European Association of Animation Film, sponsors gatherings where artisans meet for collaboration, knowledge-sharing, and training, including Cartoon Forum, a co-production forum for European animation TV series; Cartoon Movie, a co-production forum for feature-length animation mainly
for the cinema; and Cartoon Masters, four training seminars per year, dealing with specialized subjects. These venues and animated film festivals in Annecy and Stuttgart serve as “temporary clusters” for the dispersed network of animators throughout Europe; such gatherings substitute to some extent for agglomeration economies found in Hollywood (Cole, 2008). Bathelt and Schuldt (2008) and Maskell et al. (2006) make a more general case for the benefits of professional gatherings for knowledge-sharing activities. The media giants have taken advantage of the innovative animations being produced in Europe, doubtless enjoying as well the subsidies for co-production (Masters, 2005).

For example, the UK Film Council has bilateral co-production agreements with seven other countries (Australia, Canada, France, India, Jamaica, New Zealand, and South Africa) intended “to encourage cross cultural collaboration between film makers from both countries”. The location of labour (“personnel”) determines eligibility for film tax relief (UK Film Council, 2008). Hirsh, former CEO of Canadian animation studio Nelvana, points out that successful co-production requires sufficient capital, a creative script, and an international team of animators (Hirsh, 1998). In short, a co-production strategy becomes an efficient way to explore foreign markets and protect local culture from transnational capital while gaining experience and international recognition (Cole, 2008).

4.2 Unbundling the animation production process

The production process for animation is the same as for films generally, and comprises five stages: conceptualization, pre-production, production, post-production, and distribution (Krätke, 2002). More central in animation is the conceptualization stage, prior to pre-production, when the development of characters and backgrounds takes place. This is done through the storyboard, the visual presentation of the script in a series of sketches, which contains the storyline and instructions to animators and also may indicate the soundtrack and dialogue (Neuwirth, 2003; Wright, 2005). New characters may be modified as they are developed to make them more suitable for toy production (Patrick, 2006).

The spatial division of labor and the unbundling of tasks seen in manufacturing sectors now encompass service industries, including animation production (Baldwin, 2006; Blinder, 2006). A division of creativity sharply delineates creative work, such as character ideas, scripts and direction, done mainly in North America and Europe, while production tasks remain in Asia (deGraf, 2004; Tschang and Goldstein, 2004). While labor-intensive work, such as repetitive drawing and coloring, is subcontracted to distant studios, storyboards and characters in the animated film are planned within the major studios. This division of labor is standard for studios that subcontract in Asia, whether based in Canada, France, Germany, Japan, or the USA (Aghion and Merson, 1998; Bull, 2006). In the words of Rainer Shoellein of BFC Berliner Film Companie: “All our stories, all our scripts come from L.A. . . . If you don’t do
development in L.A., or maybe New York or London, you lose that special sensibility that is key for success in the North American market” (quoted in Roxborough, 2006). When cel animation is outsourced, then, subcontracting studios in developing countries work in isolation from pre-production tasks, such as character development, and post-production tasks, such as adding voices and sounds. The choice of voices is a critical element for marketing, particularly in the lucrative US market (Panzner, 2005b; Denison, 2008).

In Asia, Singapore is emerging as a hub for studios like German BKN. Ideas for local shows come from London and the USA and animation production takes place in China and the Philippines (Stein, 2005). Singapore’s Media Development Authority (MDA) promotes and subsidizes co-production with studios both within and outside Asia (Chan, 2007). Similar priority has recently been placed on animation in China, Malaysia, the Philippines, South Korea, and Taiwan (Wong, 2006). Generally, and despite policies and subsidies, firms in cultural-products industries face high levels of uncertainty and risk—consequences of fickle tastes and the need to create a distinct and differentiated product (Scott, 2006a). Even leaders such as Disney face difficulties entering new, unfamiliar markets, such as India, necessitating co-production arrangements with local studios to create culturally customized animations (Marr 2007c). Creating local animation content means work for local studios, but only if they are linked to the global conglomerates. Without a comprehensive understanding of the full production process, subcontracting studios cannot compete on an equal footing with major animation studios.

Until recently, CGI work was rarely outsourced but, since 2000, the cost of the hardware and software has become so inexpensive that it is now commonplace among Asian studios (Asia Image, 2004a). Finding people with the necessary blend of software skill with artistic animation, however, remains difficult (Neuwirth, 2003; Jones and Oliff, 2006). Therefore, in 3D, the creative pre-production tasks are rarely outsourced, since they demand frequent interaction between artists, software experts, and others in the studio. Accounts of Pixar’s process emphasize a number of characteristics: story-telling, artisanal perfectionism, and intensive creative interaction (Robertson, 1998; Tschang and Goldstein, 2004; Schlender, 2006). A few years ago, it was difficult, if not impossible, to separate the creative tasks in CGI production from the technical or mechanical tasks (Tschang and Goldstein, 2004). Now, however, it seems that CGI can be outsourced to low-wage locations, such as North Korea (AWN, 2006). Chinese studios now face competition from India, North Korea and studios in Africa (Raugust, 2008b,c)

Thus, unbundled production with an international team of animators—their labor differentiated by cost and therefore by location—is now the global norm. Not all animation is alike, varying widely in quality and creativity. As animators gain experience and reputation, the trend is to add feature films to their portfolios, which can attract, in turn, financing for future projects. The industry remains highly
5. Different strategies, different markets

Until recently, the animation industry focused on only two markets: feature films and television. To these major markets, we can add two others: the preschool market, and interstitials and mobile platforms as a point of entry. The potential cross-over of animated characters from one platform to another means that contract work can attract an audience and bring new success to a small studio (Strike, 2007a,b). New platforms such as mobile video, Internet sites and podcasts remain somewhat less constrained by the rigid contractual norms of the film and television divisions of the media giants (Raugust, 2007c). Despite the cost-related shift to Asia, clusters of animators thrive in perhaps unexpected locations such as Berlin, Cologne, Paris, Singapore, Toronto, and Vancouver. Entrepreneurial “new artisans” in these clusters prefer the flexibility of project work and the creativity they can exhibit by working in many genres and for a wide variety of distribution channels (Eberts and Norcliffe, 1998; Raugust, 2007a).

The combination of flexibility and risk are customary in the project-based world of animation, which it has in common with other cultural and media industries (Grabher, 2002; Sydow and Staber, 2002). Project-based production is considered more appropriate for highly-customized products, incorporating a great deal of flexibility in labor relations and in contracts between firms (Christopherson, 2002). Feature-length films, including animations, are erratic in their schedule, responding to creative opportunities. Animation for television adheres more to fixed production schedules while sacrificing creativity. The risks are smaller for animation intended for the home video market, which requires only distribution to retailers (both shops and web sites), and for TV. Both markets have had seemingly insatiable demand for new animations.

We provide next two vignettes that illustrate that an animation studio need not be “stuck” or “locked in” to only one market or platform. Just as many studios do work for advertising clients and others, it is possible for a studio to shift among markets as opportunities arise and ultimately to upgrade to feature films.

5.1 Upgrading from television series subcontracting to blockbuster: AKOM and The Simpsons

AKOM, the largest animation studio in South Korea, produces for many foreign companies (Yu, 1999). Its founder, Nelson Shin, who had worked on the film Star Wars and was familiar with the animation production system in the USA, began work on The Simpsons, a regular series on US television, in 1989. For each 22-min episode of The Simpsons, AKOM spends three months and needs 22,000 sheets of
To meet this rigid schedule, the offshore production adheres to a strict division of labor: AKOM does only the production stage, but not conceptualization or pre- or post-production (Lent, 1998). For several years, AKOM was a hidden subcontractor of The Simpsons, not acknowledged in the credits of each episode. It is fully credited recently as well as in The Simpsons Movie (2007), the first feature-length film.\(^8\)

The South Korean animation industry has grown by concentrating on subcontracting work for major studios in the US and Japan, a result of a weak domestic market and little investment by TV stations in Korea in original TV animations. The focus on subcontracting has meant that creativity takes a back seat, with foreign animators directing every detail in every cel. Even Nelson Shin admits, “Koreans’ technique is okay, but they don’t know anything about creation” (quoted in Russell, 2003: 44). Local governments in South Korea recently invested in an incubator supporting young animators and since 1995 support the Seoul International Cartoon and Animation Festival (SICAF) (SICAF, 2009). In addition to the government support, Tooniverse, a cartoon channel, started to broadcast in 1999 (Tooniverse, 2009).\(^9\) The development of 3D animations, connected to the game industry, began in the late 1990s and enjoys a booming Internet market. Korean animators now try to withstand cost competition with countries, such as China, that have lower labor costs (Lent and Yu, 2001). As one strategy, AKOM has outsourced work to North Korea (Russell, 2003).

5.2 The preschool niche market: Pororo, the little penguin and Wonder Pets!

Some animation studios in Asia, having accumulated skills and know-how through their subcontracting experiences, have entered the competition for feature-length animated films and creation of original cartoons. Although these newcomers have developed capability to produce 3D animation, they lack the resources to produce feature-length films as well as an established reputation on which to acquire resources. Thus, they enter a different market niche: television and feature-length educational films for video, rather than the more risky market of theatres (Kim, 2007). The preschool market for animation is booming—entirely outside theatres—in DVDs and television, providing opportunities for animators (Gupta, 2005; Strike, 2007b). The children’s market is divided into preschool and several age-related subsets (Gupta, 2005). This market demands, perhaps more than any other, “a good story, memorable characters, and good music” (Sito, 2006: 296). Among the media giants, Disney acquired the Baby Einstein Company, which specialized in animations on DVD for the preschool market, and is expanding it further with

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\(^8\)Outside Korea, Taiwanese studio Wang Productions has followed a similar path.

\(^9\)Tooniverse is a cartoon cable channel that shows cartoons 24 h a day, similar to Cartoon Network in the US. In addition to original Korean cartoons, Tooniverse imports many Japanese and US animations.
Einstein Pals and Little Einsteins, both seen on TV as well as on DVD, to retain the market familiar with the Einstein name. KidsCo, started in early 2007, is a fourth global children’s network, owned by Toronto-based Corus Entertainment and The Cookie Jar Company as well as (by acquisition) NBC Universal. Along with Nickelodeon’s NOGGIN, News Corp.’s Fox BabyTV and Playhouse Disney, all target the preschool audience (less than 5 years). Even though the major animation studios have made efforts to profit from these niche markets, the following cases show possibilities also exist for small studios to enter these niche markets.

A 3D animated series, Pororo, the Little Penguin, produced by the Korean studio Iconix, is an example of Korean animation moving from subcontracting or service work for other studios to development of proprietary animation (Iconix, 2007). It is now seen in 80 countries, including tough markets such as France and the UK, but the list excludes Japan and the US (Raugust, 2008a). As the series has become popular, a feature-length film led to a toy and book licensing business as well (Kim, 2007). In Pororo, Iconix adopted and blended both American and Japanese styles. The Japanese style looks like a traditional hand-drawn cel type, even if incorporating CGI technology (Krikke, 2006). The animation styles of US studios, such as New York-based Little Airplane Productions, pursue a more 3D effect. Once again, we see examples of the “infinite variety” suggested by Caves (2000). Little Airplane’s Wonder Pets! TV series pays particular attention to music, commissioning compositions that will appeal to their young audiences (Strike, 2007a). As each of these studios has found success in the preschool market, licensing of toys and other products has followed.

5.3 An upgrading path

Coe et al., (2004, 2008) see their GPN framework as more comprehensive than that of the global value chain (GVC) (Gereffi and Korzeniewicz, 1994) and its producer-driven and buyer-driven models, which are powerful explanations of routine global production. However, while both models describe rather well static conditions and historical evolutions, neither model explicitly points toward an upgrading path for economies that have specific roles in a global chain.

An upward development trajectory can be proposed for animation, based on elements of the GVC and GPN frameworks, to capture the upgrading process and concomitant ability to capture value. A studio builds skill and a portfolio of animation production doing small animation tasks, such as advertising and subcontracting. Both are precarious work, with little value added and only slight chance to build a reputation—an essential element of creative industries (Caves, 2000). Therefore, all animation studios aspire to produce a feature film, even if it cannot compete with Hollywood productions (Panzner, 2005b).

Gereffi et al. (2005) suggest that three variables determine how global value chains are governed and change: (1) the complexity of transactions, (2) the ability to codify
transactions, and (3) the capabilities in the supply-base. This framework results in five types of global value chain governance—hierarchy, captive, relational, modular, and market—which describe a range from high to low levels of explicit coordination and power asymmetry. Although Gereffi et al. deal only with four manufactured products (apparel, bicycles, horticulture and electronics), we now analyze animation in light of their framework. In 2D animation, as discussed in section 3, the “limited animation” system permitted highly codified, low-complexity transactions, which could be communicated to workforces with low capability. Thus, offshore animation production was typically in captive studios either owned by or subcontracting to the major studios in a hierarchical manner.

As CGI animation has become more commonplace, the complexity of transactions has increased, the ability to codify has fallen, and the capabilities in the supply-base are more variable. For high-quality suppliers, such as Wang and AKOM, relational governance is likely. For newer studios, whose work is not of sufficiently high quality and may have to be “fixed” by animators in places with greater capability, which suggests a modular supply chain, with the customer in effect using two sets of animation suppliers—those with hierarchical and relational ties. Raugust (2008a) says that Korean animation studios are called upon to fix or finish work that has been done in India or other low-wage countries. The power over who does which work continues to rest with the major studios and television customers who control distribution (Scott, 2005; Mossig, 2008).

Similarly, Monitor Company (1999) suggests a four-stage development path for a country’s film production industry, based largely on the Canadian experience. Initially, an undeveloped industry attracts film productions that shoot films locally but import most of the key crew members. Second, service capabilities grow to include facilities, equipment supply, and service companies, while Hollywood studios also open offices and build sound stages. During these first two stages, tax credits are used to attract productions. Third, as the local industry matures, US producers are able to hire most key crew members from the local labor pool, which has begun to accumulate industry-specific expertise and skills. At the same time, the industry configures itself to serve as a production location, and post-production capabilities grow. The government is able to restrict the import of crew members in below-the-line positions. Finally, in the fourth stage, the local industry achieves critical mass and begins to hold its own as a major player in film production. Labor tax credits are initiated to encourage further employment.

Monitor proposes a time trend in which only US producers in California and New York had attained the highest capabilities. The earliest runaway producers were in Canada and the UK, followed by Australia and, more recently, Ireland. The film industry in New Zealand and Mexico are suggested as undeveloped locations.

In animation, Japan, Australia and Canada were the early sites of runaway or offshore animation. These were followed by Taiwan and South Korea, where animated TV series were regularly outsourced, followed, in turn, by the
Philippines and Vietnam. Consequently, studios in all these countries have both accumulated experience and built up critical mass of expertise and support for animation. The key indicator of expertise is the ability to produce a feature film, which requires finance as well as talent.

The most recent animation industries are in India, where Chinese studios subcontract work, and North Korea, an outpost for South Korean studios (Sito, 2006). And now studios in Egypt, Kenya, and South Africa are utilizing co-production links with the UK and the US to enter both TV series and feature film markets (Raugust, 2008c). The multiple objectives of outsourcers have changed from cost orientation alone to concerns also for quality and innovation (Maskell et al., 2007). The insatiable demand for animation for TV gives opportunities for new studios (typically with experience and connections from previous work) to build their reputations for quality and innovation. A feature film remains the standard for displaying a studio’s management skills, even if the ultimate goal—a box-office blockbuster—remains elusive for most studios.

6. Conclusions

In this article, we have examined the different segments of the animation industry. Production of traditional 2D cel animation is global, seeking cheap and skilled artistic labor with little creativity required. This type of global production has occurred since the 1970s, and has expanded at a tremendous rate since the 1990s. The major studios in the US and Japan led the search for subcontractors, finding them in small studios in South Korea, the Philippines, Taiwan, and Vietnam. The conceptualization, pre-production and post-production stages of the animation production process are controlled by and remain located at the major studios. Thus, the division of labor in animation production restricts the work done by subcontractors to only production tasks. Subcontractors gain experience from this outsourcing but they learn little know-how relevant to production of original animation and cannot easily find investors for their original animations.

The development of new technology, CGI, by contrast, influences geography very differently. CGI films have attained huge success at the box office all over the world. In theatres and, to a lesser degree, on television, 3D techniques are now a mainstay of animated films. However, 3D animation production requires much more time and capital than 2D animation and the entry barriers into 3D production are very high. The risk of box-office failure is also high. Thus, only a few major studios can afford to produce CGI animations. To hit it big, as a group of Australian studios did with Happy Feet, the 2006 Academy Award winner for best animated feature film, remains the goal of many animation studios. For other studios, shortages of artistic and storytelling ability continue to hamper their ability to make animation production as widespread as the apparel industry.
The flood of cartoons on theatre screens and, even more, on TV suggest that more studios in more countries have been able to produce high-quality animation. However, a creative product such as an animated film embodies some cultural characteristics that thwart attempts to attain global market success. The specific “cultural codes” in which the outputs of animation are embedded, embodying history and traditions that are not globally familiar, make it difficult for studios from many Asian countries to tap into global markets (Scott, 2006a). Government support in Korea, China, and elsewhere in Asia is aimed at building competitiveness in animation production but can have little influence on demand. Impediments to newcomers include the risks of a fickle market and the massive capital requirements to produce a computing-intensive CGI feature-length animated film. It is much less risky to feed the TV market, and a successful series can propel a studio to visibility for feature-length films and the increasingly prominent DVD and streaming video markets.

The global production of animation illustrates both how technology affects the division of labor in production and how the major studios and their networks of subcontractors have responded to demand from new markets. The larger, differentiated markets for products of the animation industry are being supplied by major studios, artisan studios and new start-up studios. However, for now, the emergence of 3D animated films has reinforced the agglomeration of the industry in the USA and Japan, slowly spreading to studios where animators have been trained to meet the demands of the major markets. These studios outside Japan and the USA have been able to enter the global market with smaller, less costly products for TV, thereby building recognition for their characters, and then producing feature-length videos. As theatre box office revenue shrinks as a percentage of studio revenue, theatres have become less critical as a point of entry to audiences. By entering TV markets, which can be done incrementally, one country at a time, a studio can build a reputation and a revenue base for assault on the theatrical market and its larger potential profits. The media giants’ model is a “division of creativity” sensitive primarily to the US market. Animators continue to create alternative models, taking advantage of a booming market for cartoons.

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