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PRODUCTION AND POLITICAL ECONOMY IN THE ANIMATION INDUSTRY: WHY INSOURCING AND OUTSOURCING OCCUR

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This paper presents a framework for explaining production patterns in creative industries. In particular, we focus on the conditions under which insourcing occurs in the US three-dimensional animation industry and where outsourcing in the conventional two-dimensional animation industry occurs to the Philippines. The work that is outsourced is not the most creative component of the entire production process. Institutional decisions (as related to the location of decision makers and primary markets), and business conditions in the world market, have both positively and negatively affected the local Filipino industry and its position within the global division of labor. Implications for knowledge-based theories of the firm are discussed.

1.   Introduction

Over the last few years, economic liberalization, regulatory reform, technological advance and the pressure to reduce costs have combined to make outsourcing possible, and indeed apparently imperative for firms to survive in the global economy. Although figures have to be put in perspective – call-centers jobs in India are estimated at 300,000 compared with 6 million in the United States[1] – the debate on the consequences of outsourcing has gained political relevance in OECD countries and raised expectations in non-OECD ones over its long-term development impact. According to globalization priests such as Thomas Friedman, writing code, maintaining computer systems and trouble-shooting consumer complaints over the phone could become a springboard for growth in India and other prime locations.[2] Other observers note that the business applications that are so light-heartedly outsourced are peripheral to the competitive advantage of OECD nations and firms, and therefore also unlikely to provide a sustainable upgrading pattern for the developing countries (e.g., Vanaik 2004).

Outsourcing has been hyped as a possible strategy in almost all software-related and service industries. However, there has been little work to understand the nature of outsourcing, i.e., when and where it occurs, and in what industry-specific situations. Furthermore, only the successful case of Indian IT outsourcing has been fairly well documented, and the pitfalls have not been discussed as much.

Recently, many IT outsourcing service providers – especially Indian companies such as Infosys and Wipro – have moved up the value chain, by developing IT consulting capability, by going into product design and development (especially in embedded systems), and by offering other higher end services. Some Indian firms develop the capability to do this organically, while some firms do it by acquiring smaller companies, even in OECD countries. If such developments seem to suggest that outsourcing, far from condemning firms in the developing world to subsidiary positions, can turn into a springboard for upgrading, one important question is then whether outsourcing can effectively take place across a spectrum of industries. While value added or labor arbitrage are clearly some of the driving factors, they are not the only ones, as the structure of production and work have to first facilitate this.

In this paper, we focus on outsourcing in the creative industries and, more specifically, for the case of selected parts of the animation industry in the US and in the Philippines. The demand for animated entertainment has expanded with the increase in broadcasting hours by cable and satellite TV along with the growing popularity of the Internet. In the past, animation series were aimed at children aged nine and below. In recent years however, TV stations have been producing animation series for teenagers, adults and the whole family. Animation series like *The Simpsons* and *King of the Hill* have been successfully aired on primetime TV. Global animation revenue is expected to reach US$50 billion next year and US$142 billion by 2008. The major markets include the United States, Canada, Japan, France, Britain and Germany. Licensing operations for T-shirts, caps and other items have also been a major source of revenue for animation companies. In Japan, several successful computer games have crossed over and have become animated series like *Pokemon, Monster Farm, Power Stone* and

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[1] "Leader in outsourcing a victim of backlash", *International Herald Tribune*, 23 March 2004.
[2] All in *The New York Times*, see the following articles by Thomas Friedman: " Software Of Democracy", March 21, 2004; "Origin of Species", March 14, 2004; "The Great Indian Dream", March 11, 2004; "The Secret Of Our Sauce", March 7, 2004; "Small and Smaller", March 4, 2004; "30 Little Turtles", February 29, 2004; "What Goes Around . . .", February 26, 2004.

Detective Conan. More broadly speaking, animation is increasingly used in video games, and movies are also increasingly reliant on animation and computer graphic special effects.

Understanding the needs and reasons for outsourcing animation requires us to gain an appreciation of both the creative production process as well as of the business environment that governs how the industry works. The latter includes issues such as who controls the conceptual, production and distribution activities, and how the markets work. The missing link in many studies is the sense of how markets operate, and how creative capabilities can be used to address these markets. Markets for creative products like film, animation and games are fickler and harder to predict than any other industries (de Vary 2004). The process is made even more daunting when the creative processes are located in different geographic and cultural regions from the market. Animation production is also a very labor-intensive business process that can be segmented in different stages some of which are highly suitable to outsourcing to lower-cost locations. The process can also vary considerably. In American animation, there are up to 12,000 to 16,000 drawings, while the highly stylized form of Japanese animation requires only about 4,000 drawings for every 22-minute episode.[3] In two-dimensional (2D) animation, labor accounts for 70 percent to 80 percent of total costs. Even for three-dimensional (3D) animation, in which software and hardware play an important role, labor still accounts for 60 percent of the cost.[4] Such cost structures, with the high wage differentials, had made outsourcing a valid proposition as far back as the early 1950s, when foreign companies first identified the Philippines as a suitable location for "back-office" operations.

The general contemporary issue confronting business is that of when and how to outsource work to developing countries with highly-skilled and cheap labor. Our first question concerns the conditions within the *creative product development process* that *enables or dis-enables* outsourcing. This involves gaining an appreciation of how creative work and tasks can be partitioned. We develop a theoretical argument based on how creative work is done by developing an understanding of the general process from sources in the trade literature as well as from case and other primary evidence. Various perspectives of this are also possible. For instance, research on creative industries have highlighted the relevance of the cultural *milieu* and of creator-user interactions in the production of goods such as video games (Aoyama and Izushi 2003).[5]

Our second question involves understanding how the *political economy* of the industry and the conditions help dictate when and where outsourcing occurs.[6] Scholars working on the governance of global production networks have identified the promises and pitfalls of sub-contracting as an upgrading strategy for producers in developing countries (Gereffi *et al.* 2003). We will focus on the case of the Philippines. To understand why animation was first outsourced to, and then pulled back from the Philippines, we develop a higher-level framework based on the political economy of the institutions within the industry, and how

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[3] The difference is due to the more stylized movements in Japanese anime, versus the smoother transitions in American animation.

[4] *The Manila Times*, 18, 19 and 20 August 2003.

[5] Clearly there are other interactions as well between creators and users of animation, as well as between the animation and comics, games, and movie traditions, but we will not focus on them here.

[6] As we completed this conference draft, we came a across a paper that tests the transaction cost framework to the organization of product sourcing and development (PS&D) activities within the popular music industry. Gander and Rieple (2004) argue that a more sensitive model can be achieved by including a number of moderating variables drawn from the socially constructed and situationally dependent idiosyncrasies of the assets involved in the PS&D activities under consideration.

that affects the location of work. We show, amongst other things, how institutional (i.e. North American and other client) decisions and vagaries in both domestic and international domestic markets for animation have affected the local Filipino industry and its position within the global division of labor.

The paper is organized as follows. First we sketch the major contours of the animation business process, the governance issues surrounding the supply chain, and the resulting outsourcing options. Based on primary interview material as well as secondary material, we then analyze two cases – Pixar as an instance of higher end feature film-length 3D animation (which is not outsourced); and the Philippines animation industry[7], to which the US and other developed countries outsource conventional 2D animation. In particular we analyze the economic, institutional and political environment in which the animation industry has been embedded in the Philippines and the state of capabilities for a selected sample of Philippine animation firms, focusing in particular on their relationship with overseas customers. Finally, we incorporate insights from theories on the capabilities of firms, and the nature of knowledge within the firm, to enrich our understanding of the out/in-sourcing decision in creative industries.

2.   The Production of Animation

The animation industry can be classified in various ways. Technically, it is divided into two-dimensional and three-dimensional animation. 2D is often hand drawn, but nowadays, is mostly computer aided, which has increased the productivity of artists by six-fold or more. 3D animation has involved a great deal of advanced computer software and processing power.[8] Another subdivision, based on commercial considerations, can be made into feature films and TV (cartoon) serials, as well as commercials. Much of American animation is outsourced to be "produced" overseas, in places like Japan, Korea, the Philippines, and, increasingly, India. The reasons for outsourcing are often cost and quality, and sometimes, lack of talent. Europe and Canada also outsource their animation. In Asia there are numerous small studios that do cartoon series, but much of the high-end animation appears to be kept in the US.

The industry is known for being highly cyclical, and the prospects of partial work over the year or regular layoffs frustrates artists in both the US and other countries. This has been exacerbated of late with business boom and bust cycles, rapid technological change, and other factors. Globally, the industry saw a strong revival in the 1990s, as Disney recorded a few blockbusters, including *The Lion King* and the *Beauty and the Beast*. This led to a boom in investments, which eventually turned into a bubble, before a downturn for studios in the last two to three years. In particular, Disney and Fox closed all of their 2D studios, mainly to focus on 3D animation, where marketing executives saw opportunities for greater profits. These were based on studios' perceptions that market tastes were changing and that 3D was

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[7] An interview and site visit at Pixar were made with a creative executive. Interviews with the Philippines animation industry were conducted in March 2004 with the following studios: Top Draw, Holy Cow, PASI, Toei Philippines, and selected studio heads from the Philippines Animation Council.

[8] 3D in computer graphics terms means that the characters' forms and actions are based on algorithms and specifications in the three dimensions of the virtual space. This is also affiliated with great deal of computer power and algorithms to render the precise outlines, colors, textures and other aspects of the form. 2D on the other hand is often based on freeform sketching and drawing, although it is increasingly computer aided. Both 2D and 3D have advantages native to themselves, and lend themselves better to different styles and uses. For instance, a 2D sight gag or slapstick joke can be depicted easily by simply drawing, while in 3D, the artist has to figure out how to render these in algorithms first before the system can depict them.

far more profitable: the relative gross takings of US$ 100 million for Disney's 2002 2D release *Treasure Planet* and US$339 million for *Finding Nemo* suggests that consumers prefer 3D over 2D. This was made more stark by the fact that *Finding Nemo* cost US$94 million, which was less than *Treasure Planet's* US$100 million cost, which is at the very high end of 2D.[9] The same conclusions, however, have also been criticized as misguided perceptions, since 2D animations like Disney's *Lilo and Stitch* and Hayao Miyazaki's (i.e., Studio Gibli's) mostly-2D *Spirited Away* have been great successes. It is also commonly observed that it is the story and style that has led to a particular film's success, and not the technology.

Even though the breed of 3D computer animation companies capable of making feature-length films is small in number, it is steadily increasing. These include Pixar, whose first hit was in 1995, Fox's Blue Sky Studios, Dreamworks SKG (the producer of *Shrek*), and now, Disney itself (which is internally orienting its capabilities towards 3D). Competition in 3D can also come from firms that specialize in special computer graphics effects for movies, such as Industrial Light and Magic (ILM), Tippet Studios (which did the effects for the final *Matrix* movie), and WETA (which did the effects for *The Lord of the Rings*).[10] Some industry watchers feel that this is only a phase which more major stumbles of 3D animated features will bring to a close.[11]

The budget for an animated feature film could be as low as US$15 million and as high as US$100 million or more for an "A list" feature (Winder and Dowlatabadi 2001). Further, for TV series, the budget can range from US$250,000 per episode up to US$1.5 million for a show like *The Simpsons*. The Pixar production model is quite costly, with pictures running at about US$100 million per film (although lately, well done 2D animated features could cost as much). At the same time, recent 3D animated movies have been well received, and have generated far more revenue than recent 2D animated films (although Disney's 1994 2D hit, *The Lion King* still held the record, until *Finding Nemo* overtook it in 2003).

In animation, the average crew ranges widely, depending on the length of the film. The average Pixar crew has been about 150 or more, working for an average of four years on a project. At the end of *Finding Nemo's* development, there were 180 employees on the project. Of Pixar's crew of 180 on *A Bug's Life*, about 40 percent were artists, 40 percent were technical people (consisting of the people who interface artists with the programming code), and 20 percent were managers. These were supported by a crew of film recording technicians, software developers, and the studio's animation tools department.[12]

2.1.   The Stages of Production

Animation work rests on artists for the most part, although in high end animation work, increasingly specialized technical positions are needed (e.g. in Pixar, which uses technical directors for lighting and other activities associated with each scene to be made). Computers have allowed the use of new images as computer generated imagery (CGI or CG), a form of animation that allows artists to draw three-dimensional (3D) images. In traditional animation,

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[9] "Dead or alive: is 2D Animation still wanted?" Custodiev Market Watch, October 2003.
[10] In terms of content, the animation processes used in three-dimensional (3D) animation are not that different from those used in making content for computer games. For more information, see Pixar Form 10-K, Securities and Exchange Commission, 2003.
[11] *Ibid.*.
[12] See Robertson, *op. cit.*.

computers have also allowed artists to produce two-dimensional (2D) images much faster, instead of having to repeatedly outline, ink and paint every frame by hand. In this sense, the role of technology or programming in animation is quite different from games in that it acts as a factor increasing the productivity of workers.

The key to further understanding the conditions under which animation is outsourced is to understand *how* it is done. The animation production process, especially for animated TV series, is fairly mature by now. Table 1 depicts a stylized model of animation production for both feature films and TV series. There are actually multiple activities embedded in each stage, sometimes in sequence, and there are also concurrent activities, *e.g.* character model generation, background generation being done in tandem etc.

Table 1.   Stages of Production Process for General Animation

Stage 1 Conceptualization	Stage 2 Pre-production	Stage 3 Production	Stage 4 Post-production	Next cycle (for tech intensive firms)
Idea for series or production (short concept and final script); planning	**Storyboarding; concept art to flesh out script; story reels; script changes**	**Animating**: Very large investment of resources (animators, supporting technical staff); voice acting	Some **editing** of scenes, retakes	Development of software tools for next generation animated features

Conceptualization

The conceptualization stage starts with an idea to capitalize on an early stage script or property, or to develop something new. This is eventually fully fleshed out as an idea and script. Planning is also done at this stage. The script, bible (which details the show "concept" and main elements, e.g. characters) and conceptual artwork are done here. These are used to create a production plan, including issues of resources, roles, logistics, schedules, and manning. There are numerous shooting, asset development, and integration schedules to be planned out. By the time the planning stage ends, the director should have finalized the style and purpose (i.e. scenes) of the artwork.

If the work is to be outsourced, especially TV work, usually the contracting studio needs to show the "bible", the main models (i.e. look of the characters for 2D), and scripts for discussions with the contractor studio (Winder and Dowlatabadi 2001). This search is usually done in the pre-production phase.

Pre-production

Because the cost of making "each take" of an animation scene is far higher than a film producer shooting an additional take, they cannot reduce risk in the "shooting" period as done in film. This costlier animated content production means that as much of the risk has to be minimized up front in pre-production (Winder and Dowlatabadi, 2001). This was the case in Pixar, where tens of thousands of drawings and concept art are done in the pre-production phase, to literally nail down a "prototype" of the feature film, before the computers are put to work.

In concrete terms, pre-production means getting the idea and script fleshed out in models, storyboards and finally, story reels. Story reels are a full sequence of the art conveying the story that can be viewed largely in its entirety. For animated features, pre-production may be more elaborate and iterative. Animated 3D features are still scripted as well as fully fleshed out in non-computer-generated art, and combined as a story reel. In a 3D process such as Pixar's, the content pipeline is started by laying out the various aspects that ensues in production: modeling, rigging, surfaces (consisting of textures and colors), and various tests of animation and other software systems.

In fact, for a feature length animation film, the story may be changed throughout the production process (Winder and Dowlatabadi 2001). At Pixar, once a concept such as *A Bug's Life* was identified, the preproduction process lasted two years, in preparation for the eventual two years of production. The preproduction is also more extensive, involving much more art. The process consists of scripting, converting the script to drawings (of which 27,000 were done for *A Bug's Life*), and storyboarding.[13] The storyline was also radically changed during preproduction. Apparently, the initial premise for *A Bug's Life* was not compelling or realistic enough, so the co-directors recast it. Rework on scenes is common as well, with one scene being rewritten 30 times.[14]

Production

The production phase of animation involves developing the specifications, visual effects, background paint, and ink and paint (all of which shows the exact look of each character and background (i.e. color, textures and styles). In addition, animation, visual effects and so on are needed. All these are based on the sequences and look from the film reels

For 3D such as Pixar's, modeling (where digitized models of each set and character and developed), layout, rigging (consisting of the controls to move face "muscles" and the like), animation, shading and lighting (including texturing), rendering and film recording are done, usually in sequence, as well as compositing, effects, and other activities. A contractor may be found for the production stage. The contractor is usually used for animation, clean up, visual effects, and digital ink and paint (especially for 2D), and for 3D, rendering, compositing. If a contractor studio is used for 2D production, they usually need precise specifications like the timing sequence, layout, color, models, and so on. In the case of Pixar, because their goal is to always include new technical features, they also develop the software features first, then use it in production.

Post-production

Animation post-production in Pixar consists of the sound effects, the final musical score, sound mixing, and color correction. This may also involve editing of scenes, and even retakes. Sometimes a drastic retake occurs such as when Mike Meyers, the voice of *Shrek*, decided after an initial viewing that he wanted to change main character's accent to a Scottish one. This one change forced some of the animation to be discarded, and reportedly cost Dreamworks an extra US$4 million.[15]

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[13] B. Robertson, "A Bug's Eye View," *Computer Graphics World*, November 1998, Vol. 21, No. 11: 24-31.
[14] P. Burrows and R. Grover, "Steve Jobs, Movie Mogul," *Business Week*: 140-148.
[15] http://www.digitalmediafx.com

2.2. Supply chain governance and outsourcing in animation

As a result of all the potential of the animation market, the governance of animation production (i.e., where decisions on the supply chain) is dictated by the institutions which control whether content is produced and how it is distributed. Increasingly, these two aspects are connected. In the US, the distribution of animation is essentially controlled by the large TV channels such as the Fox Network, the specialized channels such as Nickleodeon and Cartoon Network, the larger distributor/studios or other content providers such as Disney. It is only when a production studio gets large and well-known enough that it can effectively dictate its own future.

Since most animation series are carried by TV studios, and since these studios may be in the broadcasting rather than production business, they rely heavily on contracting with creative talent of outside production studios. Specialized animation channels, and previously Fox, usually keep some internal pre-production and postproduction operations, and sometimes even hold onto the production internally. That is, they have their own creative talent, either for developing animation in-house, or for spotting or identifying concepts in the conceptualization and preproduction phase, which are then "outsourced" to animation studios. Post-production is often done in-house as well since it is really a follow-up stage that ensures that production meets the preproduction specifications. In contrast, the recent 3D movies have largely not been outsourced. The reasons for this will follow as we examine the creative production process for Pixar in more detail.

Unlike animation, the film industry has outsourced their computer graphics (CG) effects for the most part. This is partly because of the flexibly specialized nature of film production, which allows outsourcing, and partly because of the fact that the film industry has traditionally been dependent only on physical assets such as actors and locations. Increasingly, however, computer graphics effects are becoming more and more useful in film, blurring the line between film and CG or CGI animation. No where was this more evident than in the *Lord of the Rings* trilogy: All three movies used CG effects extensively for the main battle scenes, redefining the notion of what assets are needed for epic scenes or to define a movie.

3. Pixar's Technology and Creative Process: The In-house Production of 3D Animation

By laying out the animation production process, we have now set the stage for a more detailed investigation of our two cases in animation: the high end of 3D, and 2D animation. In this section we will focus on the high end of animation, specifically, 3D animation. In this area, Pixar's success has been credited both to its creative stories, as well as its inventive use of technology. Amongst other things, this will provide us with an understanding of *what is not outsourced, and why*.

3.1. Pixar's Technology

Being computer based, animation involves heavy amounts of programming to create the software animation tools. The story of Pixar is really the story of how 3D has come to a strong position in the animation industry. The Pixar model is a particularly successful but extreme one for animation, and aspects of the model are in fact more suggestive of how a videogame company operates than an animation company. Pixar has now grown to over 700

employees, and is seeking to diversify itself by producing more than one feature film at a time.

From the early days, companies like Pixar have built their own tools to develop higher end animation. Pixar also licenses its animation tools to others, although it only derives about four percent of its revenue from this.[16] Pixar's technological edge effectively began in 1973 when Ed Catmull, currently the studio's president and chief technologist, was working on early generation computer graphics at the University of Utah.[17] The efforts eventually culminated when Catmull together with the original Pixar development team brought their first results at LucasFilm. They developed *RenderMan* – a 3D graphics rendering program (to create an image with all its desired lighting and shading effects), which is now one of Pixar's technological mainstays.[18] Steve Jobs bought Pixar in 1986, and with his regular cash infusions, Pixar started their climb to fame. Pixar also developed *Marionette* – a 3D painting package.[19] Much as in games, Pixar software developers will tweak *RenderMan* and *Marionette* for each new movie to provide new technical features that will enable new effects in the movies. Pixar artists also use third party software in their work.[20] Increasingly, other high end animation studios are developing their own tools, and "off the shelf" commercial packages are becoming as good if not better than internally developed software, such as Alias/Wavefront's Maya (used to animate figures), Adobe's Photoshop for digital painting, etc. These have also helped to make the starting up process easier for new firms.

Each of Pixar's movies has a defining characteristic based on some technological advancement. In *Toy Story*, it was the refinement of a 3D world projected onto 2D, with sufficient details (e.g. hair, leaves and realistic clothing movement) as well as textures to make it realistic, while in *Monsters Inc.*, the focus was on realistic looking fur. In *Finding Nemo*, a great deal of attention was paid to the look of the ocean and to fish movement, to make sure it was realistic, but also not so realistic as to make an audience feel the environment was completely real. Too much realism in the background would have made the computer graphic projections of fish look as if they were pasted on a real scene.

However, this technology focus comes at a cost. Over 100 staff work on programming and software R&D for each new generation of technology, while in 1995, 117 Sun workstations were used to render *Toy Story*. Just four years later, *Toy Story 2* required 22 times more computing power. The typical Pixar film is ever increasing in complexity. *Toy Story* had 5 to 6 million polygons per frame, and *Toy Story 2* had double that (the number of polygons being the discrete shapes that make up an object within the frame of animation). In contrast, because of their need to run in real-time on most home users' PCs, most current videogames only consist of thousands of polygons per frame, and sometimes, several hundred per character.

It is in the sense of technology enabling art that Pixar and game development are very similar in their business model. The high risk in this model is well recognized by the industry.[21] The

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[16] *Ibid.*.
[17] Catmull's classmates at the University of Utah's computer science program included Silicon Graphics and Netscape founder Jim Clark as well as John Warnock, who founded Adobe Systems.
[18] *RenderMan* won an Academy Award for technical achievement in 2001.
[19] See Robertson, *op. cit.*.
[20] See Robertson, *op. cit.*. These include modeling software from Alias/Wavefront, and Amazon painting software from Interactive Effects. Other third party software commonly used by other CG studios includes Adobe System's Photoshop for turning 3D animations into paintings, and animation software such as Maya.
[21] See Pixar Form 10-K.

well publicized failure of the game developer Square to turn their hot *Final Fantasy* game property into a movie (*Final Fantasy: The Spirits Within*) also highlights the importance of having more than technology, and even big name actors. The creative process that created the scripts, styles and characters behind *Shrek, Toy Story* and other successful animated features are clearly woven from the talent of directors, actors, and artists, working individually and collaboratively. *Final Fantasy* devoted so much of its budget to realistic human expressions, textures, movement and the like, much more than *Toy Story 2* and many recent Pixar films. But *Final Fantasy* fell flat with a plot and dialogue that did not move these animated humans into a more compelling and immersive setting.

3.2. The Creative Process

Despite its importance, in Pixar's production process technology is still led by the creativity of the story and the visual effects desired to support it.[22] Pixar recognizes that creativity extends into everything that the director controls or has a hand in, including the theme, the script and the voice acting. In the case of *Finding Nemo*, directors wanted to convey the feel of really being a small fish in the ocean. This was achieved by getting the ocean and perspectives done properly. 3D allows perspectives to be more accurately modeled.

Creativity at the Top

Interviews with animation companies show that much of the creative direction focuses on scenes and that directors decide how scenes are visually, narratively, and technically carried out Other artists, particularly at the production stage, essentially act as directed workers, filling out details on specifications by the top. This view is corroborated by Winder and Dowlatabadi (2001, p. 80), who state that

> "The director is the primary storyteller on a project. It is his or her vision that is the guiding force. A director sets the visual style of the animation", and in production, "the director is in change of …viewing and approving all artwork generated by the in-house artists and subcontractors."

This lays an immense amount of responsibility on directors. The Pixar animation directors are passionate about their work, and often work on themes that they are most interested in, or can relate to. Conversely, many internal and external assessments of Pixar conclude having the best directors is one of the most important factors the company focus on. One of the edges that Pixar has over Disney (which has been known to be faring considerably worse in recent years) is probably in directors. Pixar directors have strong control, even hiring the script-writers to work in-house directly under them, often on new, made to order scripts. In animation, it is clear that at least some directors are very much concerned with the look and acting within a scene (as well as the overall story). No outsourcing is done, even in scripts and art.[23]

Creativity at the Bottom: Collaborative Models

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[22] As Catmull observed, "Clearly there are a lot of movies where the special effects are excessive […] I believe it's because directors come in and sign up a good effects studio, of which there are plenty. It's like a kid in a candy store. It winds up taking all their energy. The film comes out, and the effects look great, but the story sucks. We have some amazing technical abilities. But we still have to rely on good old-fashioned storytelling." See "Inside the Pixar Dream Factory", *Fortune*, 1 February 2003.

[23] Interview with Pixar creative executive.

At the same time, Pixar makes it clear that their model is also collaborative, and that "All groups work closely together in an iterative process. We have a cooperative working environment and a non-hierarchical culture whereby each member of the creative team, regardless of position or department, considers the ideas of any other member of the team."[24] Furthermore, Pixar directors empower their subordinates. In Pixar's *A Bug's Life*, director John Lasseter gave each of his 27 animators "three minutes" in the movie that "they could call their own". This with the collaborative atmosphere helps the organization to bind together in the making of the feature.[25]

Pixar also seeks to recognize the creativity of its employees in various informal ways. Like many game development studios, Pixar provides a creative atmosphere by giving its employees "creative" perks and encouragement, e.g. promoting individual artistic efforts outside of their normal work. Pixar's studio resembles a campus with sports facilities, creative art workshops, art exhibition space, an outdoor public theatre, and the like.[26]

There are numerous sources attesting to the creativity of Pixar's directors, as well as the latters' assessment of their own people. As to the sources of their creativity, we can only speculate on what drives the creativity and genius in Pixar's directors and its people. We might attribute it to their native creative skills, complemented by the right environment.

3.3.   Task Partitioning and Clusters

Based on the production process we have outlined, it is very clear that creativity is located both at the top of the organization or project in terms of vision, as well as at the bottom, in terms of how a collaborative process is used to solicit bottom up input from staff.

The production of the high end of animation, such as 3D feature films, is not outsourced yet, possibly because there are so few firms with that level of capability. On top of that, the cost of production is very high. Firms like Pixar tend to keep their capabilities in house. Thus, Pixar's model can be considered to be a high investment, advanced technology model with internally-sourced content.

Modularization of Tasks in Clusters

Pixar's work arrangement appears to be coordinated around scenes, with each scene being led by an animator, who then has the technical assistance of technical directors dedicated to the lighting, shading, modeling, and effects on that scene, as well as project development in the pre-production stage. Thus, a scene appears to be a "cluster" around which technical and artistic work is organized. In this way, movies can also be thought of as being made in the same way as games and high end animations - a set of decomposable scenes that are linked together. At the same time, the development process is full of regular viewings where scenes that have been developed are viewed by the directors and the responsible staff. These periods also form natural clusters (in time), and can involve frequent script, model and other changes, suggesting the need for production to be done in house.

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[24] See Pixar Form 10-K.
[25] Lawrence French, "An Interview with Lasseter."
[26] Interview with Pixar creative executive.

As our source told us, for the 50 animators on a recent project, there are about 100 technical directors shared across them. A technical director needs to have a strong graphics background with grounding in the standard packages, as well as a technical art background possessing familiarity with technical aspects of digital art, and a programming background, or at least, an ability to work with scripted languages. This ensures that each team member can be interface with the rest of the many skilled team.

From the above descriptions, we can also speculate that in a studio like Pixar, the core creative activities are formed around groups that engage in either certain high level tasks or componentized lower level tasks. As we have indicated (and will discuss further later), the complexity of dealing with these task clusters tacitly, as well as new technological features and storylines simultaneously. may also suggest why Pixar prefers to keep these groups in-house.

4.   The Political Economy of Animation Outsourcing: What Actually Happened in the Philippines

Our framework established a basis for understanding not only why some firms like Pixar do not outsource, but also how for instance, some parts of the production process can be outsourced in 2D animation. Now, we turn to a discussion of how outsourcing has actually taken place. The Philippines is one of the more illustrative cases, since it has a long track record of animation, and has gone through a major business cycle with its clients. How the process occurred in the Philippines might suggest a broader model for what happens with lower end outsourcing to developing countries.

4.1.   The Political Economy of the Philippines Animation Industry

Analyses of the Philippine economy have argued that "services are what [the country] is best at, [given its] English-language competence, competitively priced labor for a range of middle-level technical skills, familiarity with American cultural norms, and widespread international employment experience" (Baliscan and Hill 2003, pp. 15 and 28). Regular Filipino artists can draw 24 to 30 drawings – equal to two to three seconds of animation – a day, and they are paid much less than animators in Los Angeles or Tokyo.[27]

Animation history in Asia – meaning the realization of full-length cartoons – started in the 1940s and was heavily influenced by the needs of Western studios, and Disney in particular (Lent 2000). Exposure to foreign production, training abroad, and foreign assistance were important factors behind the emergence of an animation tradition in countries such as China, Japan, Korea, and India. In all such instances, however, Asian artists only adopted those elements that fit their own culture, although this strategy was probably more pronounced in China, especially after 1949, and Japan than elsewhere.

In the Philippines animation began as early as the 1950s – primarily to promote products through animated advertisements. Examples of popular cartoonists that tried their luck in animation in those pioneering days include Jerry Navarro, Larry Alcala, Vicente Penetrante, and Jose Zabala Santos (Garcia and Masigan 2001). In the Marcos period animation emerged as one of the regime's propaganda tools to build a confident and patriotic nation, convince

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[27] *The Manila Times*, 18, 19 and 20 August 2003

viewers, and win them over (Tolentino 2000). In 1979, a 60-minute animated feature based on a local folklore called *The Adventures of Lam-Ang* was produced.

Many local studios were set up by expatriates with the production process knowledge as well as international contacts. In 1983, Burbank Studios, an Australian owned company, was the first to sub-contract animation production in the country, setting up a studio in Manila to which it provided initial training. Although after a couple of years most staff was indigenous, the top managerial positions were kept in Australian hands. Later in the decade Warner Brothers and Disney also opened affiliate studios in the Philippines, that came to represent more than 50 percent of the country's industry. Similarly, PASI, ToonCity, and other studios have been set up by foreign industry executives.

In the late 1990s, the global TV industry experienced financial distress, large networks went bankrupt, and the animation industry suffered a deep slump. The Philippines were among the hardest hit as Warner Brothers and Disney closed shop and transferred animation work to China and India where labor was considerably cheaper. The recovery begun in 2002 and gathered momentum in 2003 as the number of animation projects rose. In 2001, the industry's revenue reached US$21 million and it is expected to grow 25 percent annually, to reach US$40 million in 2004. According to the Board of Investment, the local industry is presently capable of generating 300 22-minute long animated episodes annually with rates ranging from US$45,000 to US$150,000 per episode. Services include pre-production on storyboard, character design, background design, props design, layout keys, sheet direction, slugging, track reading, and special effects. Most of the output of the industry is exported. Currently, there are 24 animation firms in the country employing some 2,500 artists. Labor is competitively priced – relatively to the United States, 15-20 percent cheaper for 2D and 25-30 percent lower for 3D.[28] However, in the late 1990s, wages in the Philippines grew out of proportion of their capability, and partly led to its difficult position, especially when low cost countries like India and China came onto the scene.

In recent years, international competition amongst suppliers has also been strong. The lower costs in India have been attractive to foreign clients. However, in creative industries more than elsewhere, a business strategy excessively focused on cost-containment risks jeopardizing the attainment of quality goals. Additionally, cost control may clash with the need to ensure delivery of reliable products according to tight meeting deadlines. Thus, it is sometimes debated that the Indian studios are not yet mature, and may stand the risk of passing mediocre work to a client in order to avoid missing deadlines. This is something that substantially increases the final cost as the episode has to be re-taken or revised.[29] However, with the global industry recession a few years ago, a large number of Filipino artists moved to India to get jobs as trainers. Some observers believe that this will help India to have a competitive quality force at much lower wages in several years' time. Already, one large Indian animation company – Pentafour – has developed three animated feature films, one of them co-funded by the Singapore government.

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[28] "Animation is a booming business in film, web, advertising and education", *BizNews Asia*, 23 March 2004.
[29] According to Toei Japan, while it is cheaper to run operations in China or India, Indians bring to the Philippines animation scenes that they could not do themselves. The re-take rate is very high in India and now studios rely on Filipino animators for revisions and trouble shooting. Philippine studios argue that it would have been better if the projects went straight to them so that there would be fewer problems. Insofar as the foreign producers have learned their lessons, they are now slowly coming back to the Philippines.

However, considering the economic potential of the industry, the Philippines Department of Trade and Industry has included animation among the five priority industries for promotion under the IT-service sector roadmap. The animation industry is classified in the same priority list as call centers, medical transcription, backroom services and software development. The DTI led a five-company delegation to the 2002 International Animated Film Market in Annecy, France, the world's largest show, and promoted Philippine animation companies in the 19th International Film and Program Market for TV, Video, Cable and Satellite in Cannes, France. In February 2003, animation companies attended the local "e-Services Philippines: IT Outsourcing Conference and Exhibition". On this occasion DTI and the Animation Council of the Philippines also launched an annual amateur competition – Animazing Shorts – with assistance from Intel Philippines and the local distributor of the Maya animation Software

4.2.   The Competitive Advantages of Filipino Firms

In this section we sketch the record of outsourcing and the potential for upgrading on the basis of the findings from a series of semi-structured interviews with several major studios and several smaller studios, held in Manila in March-April 2004, aimed at exploring their history, the role of foreign partners and talent in enhancing technical competencies, gaining market knowledge, and overcoming financial bottlenecks. These findings were later corroborated by examining the existing literature in trade magazines and by our primary interviews as well as secondary interviews in the trade literature with industry professionals from the more developed markets.

Foreign ownership or leadership is considerable, and has provided Philippines-based studios with the contacts, credibility (to foreign buyers, including both production studios and TV chains), finance, and production and creative expertise. The major studios include:
- Toei Animation is the Japanese company behind anime hits like *GI Joe*, *Transformers*, *Dragonball*, *Slam Dunk*, *Sailor Moon*, *Nadja*, and *Muscleman*. Toei Japan has decided to entrust 60 percent of its total animation work to its Philippine subsidiary, and the staff level rose from 135 employees in 2002 to 170.
- Top Peg Animation and Creative Studio Inc., a 100-percent Philippine-owned company that has worked on TV series like *101 Dalmatians*, *Tarzan*, *Kim Possible*, and *Hercules* for Disney.
- Top Draw, which is a recent entrant that is highly regarded and which does international work.
- Philippines Animation Studios (PASI), which is funded by a listed Malaysian company, and which has a strong core team of animators.
- Holy Cow! Animation, a studio specializing in 3D (three-dimensional) digital animation.

Along with these, there are numerous other smaller companies.

In recent years, some of the major studios that had been owned by or captive to larger foreign studios have now branched out to seek work on their own worldwide through their networks. As one interviewee noted about foreign clients, "Our only advantage is the quality of our work. Once they see our work then we are sure to convince them. But it is hard to convince them based on image alone."

Asian animation studios have also realized the need to develop locally produced animated series for the local and regional market alike. Since 1996, Malaysia has successfully produced and marketed the *Kampung Boy* series (done with the help of PASI). In 2003 Toonz

Animation India also produced a series based on an Indian folk tale called *The Adventures of Tenali Raman*, while Silicon Illusions of Singapore is producing *Sing to the Dawn*. The first of locally produced animated series in the Philippines, *Ang Panday* and *Captain Barbel*, were released in 1987 and aired on Philippine TV. Then, in 1997, *Ibong Adarna*, based on Filipino folklore, became the first wide- screen full-length commercial animated film. Top Peg has also successfully produced an animated series based on a Philippine children's book called *Tutubi Patrol*. This sort of upgrading has required surmounting a number of obstacles. It took 18 months to finish the 13-episode series when normally it would have taken only six months. The first thing was to persuade artists to share the risk of product development by charging below-market rates for preparing samples. Top Peg successfully played the card of this being a Filipino-owned animation and a Filipino investor was impressed to see the work-in-progress and decided to invest in the project until it was completed. The series is currently aired primetime on Philippine TV and plans are underway for its broadcast in several Asian TV networks.

Attracting local investors and developing a Philippines or regional Asian market for local animation appear to be some of the major challenges. While foreign investors and clients have in the past built longer-term relationships and contracts with studios in the Philippines, recent events have turned that option around. Disney has shuttered its windows at its overseas (Japan, Paris) offices (as well as its Orlando, US studio), and loosened its former exclusive agreement with ToonCity, its affiliate in the Philippines.

The impact of technology can also be seen clearly in the Philippines, especially with regards to 2D work. Projects that we interviewed had reduced their artist and animator staffing by factors of several times or more with digital ink and paint and other animation technologies. In the past, 2D technology was quite unaffordable for all but the specialized studios, but the advent of new software and technologies such as Macromedia's Flash has put animation tools within the reach of many smaller studios, as well as non-animation industry people. Flash software is also helping web sites and studios alike to develop simple animation content at lower cost. As a result, many studios are gearing up to work with Flash. As one Philippines studio manager noted, "By the beginning of next year, I believe 25 percent of the business will be developed through Flash. We're struggling to get more people at the moment but plan to hire more for training." The next goal is 3D capability, but this requires overcoming an investment barrier - the high cost hardware and software - for both training and work purposes.

Local firms have had trouble keeping a foothold with these conditions. Size is also a problem as existing small players neither have the resources nor the courage to build an international business. Local firms look with some admiration at the Indian animation industry, which has the benefit of being linked financially and otherwise to its booking software services industry.[30]

5. The Partitioning of Creativity and Knowledge-based Theories of the Firm

In this paper we have shown how in the contemporary global economy two sets of industrial dynamics may emerge and coexist. We have also indicated that under given circumstances developing countries can attract considerable foreign direct investment, although we cautioned against fairytale predictions on the impact of this process on industrial upgrading.

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[30] Never mind having the likes of a Steve Jobs with his deep pockets and long term vision.

We have shown how and why certain creative works are outsourced, and how some are not. However, we have still not adequately justified why companies like Pixar do not outsource. This section presents a theoretical justification of why such creative work is not outsourced, using the context of the existing literature on knowledge. We propose a distinction that draws on the differences seen in the creative problem-solving tradition and Taylorist forms of division of labor. Based on our secondary and interview evidence from the animation industry, we find it useful to distinguish between *mechanistic* and *creative work*. These quite naturally map onto the equivalents in industrial research of assembly line work and innovative R&D respectively.

Firstly, it is worth recapping what animation can be outsourced. The strong divisibility of the production process into creative work and more mechanistic elements underscores the potential for outsourcing. Task partitioning is easier for conventional animation applications such as serial TV cartoons, which is why outsourcing takes place in the 2D space (although 3D cartoons are also outsourced these days). This in part has to do with the structure of the industry. Many TV studios did not have internal expertise, and served as distributors of content. The studios that outsource 2D production tend to hold on to the conceptual, pre-production and production stages, and outsource only the costly, labor-intensive production stage.

The production stage is outsourced using two types of activities: coordination mechanisms and specifications. Specifications specify what the contractor artists have to do in precise terms, such that there can be no mistake in interpreting the original creator's goals. Timing, model, and color sheets are used to specific the exact number of seconds and exact ways in which a scene and elements within it should look and unfold. This in effect reduces the outsourcing artists' role to one of "painting by numbers" (Lent 2001).

Coordination is part of the perceived overall use of information-communication technology in development (Steinmuller 2000). In the project context, coordination is also necessary to communicate intent, as well as to ensure that schedules are kept, and that work is coordinated, and that specifications are delivered and adhered to. Nowadays, computing technology such as shared servers are used, but in the pre-Internet days, content could still be mailed, and faxes were still effective for coordination and communication (Winder and Dowlatabadi 2001)

But this does not explain why Pixar's work is not outsourced. Other explanations have been forwarded as to why less 3D is outsourced. The standard explanation is that the 3D industry is not mature enough, but in the future, could possibly be standardized enough to entertain outsourcing.[31] We have also presented data showing the complexity of Pixar's process. We further argue here why at this current stage of the industry, Pixar's production *cannot be outsourced*.

At this early stage of industrial and technological maturity, and under the uncertainties that dog these industries' products, the competitive advantage for a firm is still not in how it assembles, integrates or uses off the shelf components or tools. Rather, its advantage (and risk minimizing strategy) is in how it manages to integrate its content production in ways attractive to audiences. This can be done only with a unique, organic and complex production

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[31] Winder and Dowlatabadi (2001), p. 145.

process, that is, a firm-specific asset (in the terms of resource-base theories of the firm). Thus, Pixar's process is both its competitive advantage and a way of reducing risk.

This relates to the distinction between *general* and *abstract* knowledge introduced by Arora and Gambardella (1994), which is used to understand what underlies the scientific division of labor. Their main belief is that "the use of generalized knowledge and abstraction… makes a greater fraction of information intelligible and applicable in diverse contexts." Their belief is that knowledge in industrial research can quite naturally be divided into general and abstract knowledge, and that the "complementarity between these areas is apparent, and progress in all three areas is together changing the nature of technical change" (Arora and Garmbadella 1994).

While there is a strong technological aspect to Pixar's work, this does not represent a layer of "general and abstract knowledge". Rather, it is the use of general principles of 3D animation, extended and applied in the animation feature context that is giving Pixar its lead in film-making. Even so, this firm-specific capability, which is obviously far less amenable to outsourcing, is still not the creative part of the production process. The creative part ensues when the creative interpretation of these technological features and their uses are made, which is what allows a technology to attain its potential in a "hit" film.[32] It is this myriad of technology adaptation, applied development, and application in the creative film-making context, which is challenging and not easy to outsource.

Knowledge-based Limits to Upgrading Capability

To further identify what types of knowledge are actually outsourced or needed for a project to be kept in house, we can also delve into the creative process. There have been other revisits to the basic conceptions of knowledge, but many tend to focus on the problems inherent in the tacit-explicit distinction (Ancori *et al.* 2003; Nightingale 2003). Another recent suggestion that attempts to break away from this is to look at the social context for the evolution of knowledge (Nelson and Nelson 2002). It is in this latter vein that our proposed typology of knowledge fits in.

Based on common conceptions of the creative process, we can hypothesize that the knowledge used in the creative process can be distinguished into three basic types:
- Problem-setting knowledge, which is knowledge used to stimulate or create the seeds of new knowledge. This is the combination of base contextual knowledge with some creative thinking processes and the stimulants themselves.
- Constraint-setting knowledge, which is the knowledge of what can or cannot be done (either in problem setting or problem solving)
- Problem-solving knowledge, which is the main body of knowledge used to solve problems. These are the learnt and experienced artistic techniques.

These three types can be used to explain why firms in other countries will not be joining the ranks of Pixar's capabilities, or not doing any conceptual development any time soon. While it may be argued that the Philippines and other developing countries can attain the same level of sophistication in artistic techniques as US animators, we argue that in fact, what the

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[32] Examples of this include the desire of Pixar to add textures to *Monsters Inc.*, to simulate water environments in *Finding Nemo*, and starting it all off, to provide broad, expansive immersive 3D worlds in *Toy Story*. Even the simulation of dust in *Toy Story 2* was a major technological feature, which was woven into the storyline.

contractors are in fact doing is to rely on a limited subset of problem solving skills and knowledge.[33] This includes such artistic techniques as are readily available and learnable. These can be considered the mechanistic parts of the knowledge base, or to phrase in different terms, the codifiable knowledge.[34]

We posit that the two remaining types of knowledge will be the most difficult to acquire through outsourcing. These are not easily transferable because they involve a great deal of context, and hence, make it hard to transfer the very creative parts of the work (i.e. outsource them) to countries where the artists and technical staff do not have a sense of what the market will bear in terms of problems. It can be argued that to do (front end) conceptualization work, it is necessary for the artist in the developing country to intimately know either what the international or domestic market wants and can bear.

We argue that this situation is one reason why the Philippines industry has found itself unable to truly scale the value chain in animation, and to become more than simply temporary partners in a generally very shaky animation market. National authorities like to think that Filipino artists have the ability to internalize storylines and concepts for better art execution due to their exposure to a multi-cultural environment. The problem with upgrading in high-tech products is that there was always something that could be better done, either by developing technology to improve minimize cost and increase productivity of process, which was done by Taiwanese and other contract manufacturers, or to move towards product development, itself a fairly well defined. In animation on the other hand, to focus on artistic skills is not to participate in the evolving technologically-enhanced world of a Pixar. Furthermore, studios in the West are unlikely to release their hold on the crown jewels of conceptualization to developing country artists. Consumers are too fickle, and audience responses too unpredictable, for them to take these risks.

Other Limits to Outsourcing and the Industry's Responses

In addition to the problems of the overall animation market, and the problem with upgrading we have just identified, the Philippines industry also faces other challenges.

Generally speaking, even though wages have been good, the seasonal nature of animation work and lack of longer term employment security is a problem with animators in both the US and other countries. Coupled with this, the restructuring of large clients like Disney due to technological change and audience preferences also hurts the domestic industry's markets. In the late 1990s exodus, a number of Filipinos left for the US, especially for the Fox Network's animation studio (which has since been closed). The problem of increasing labor costs was exacerbated by the absence of institutionalized training programs for animators.[35] In the early 1980 some animation companies conducted in-house training, but in recent years the tendency has rather been to poach talented animators from competitors. A vicious circle has emerged, whereby Filipino animators adopt a freelance mentality – not seeing the value in staying in a company – and employees have stopped training animators. Technological changes (i.e. the move to 3D) also have made reskilling and replenishing of the labor pool

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[33] As an aside, we also note that the form of problem solving knowledge used to create Pixar's technology is important for technology development, but it is only seen in Pixar-initiated features, and cannot be learnt, or reapplied anywhere else.

[34] References include Ancori *et al.* (2000) and Nightingale (2003).

[35] Animators 10 years ago were earning around P150,000 a month. In the past two years, animators' salaries have been cut severely by 47 to 73 percent to around P40,000 to 80,000.

essential. Although there are multimedia courses, the emphasis is on the technical side and they offer very little animation training.[36] To circumvent this, the companies are agreeing in principle not to engage in poaching practices, and some are viewing training as a necessary need of the industry as a whole.

In partial response to the problems in the global animation market, and perhaps in recognition that they are being consigned to mechanistic work while the foreign studios will continue to keep control of the more creative work (i.e. conceptualization and preproduction), the Philippines industry has been seeking new ways to improve its situation. One solution was to try to develop local content for schools and TV. At least a couple of local attempts to do so have occurred, but the general lack of capital and the lack of a institutional support may constrain these efforts. To address this, the industry has also called for legal measures that can replicate the model already in place for Filipino songs, which would require local TV stations to regularly air locally-produced cartoons. Existing regulatory impediments should also be removed. Taxes on software and hardware as well as long clearing times make it expensive for animation studios to upgrade their computer systems. The advent of more inexpensive and flexible software programs for animation like Macromedia Flash and lowering of costs in other packages, e.g. the 3D animation package Maya, along with less expensive telecoms infrastructure has also helped (high bandwidth T1 communication lines have come down in price).

6.   Conclusions

We have presented two faces of the animation industry: one at the very high end of 3D animation, as represented by Pixar, with all its internal technology development and total self-sufficiency in content development; and another, as represented by various studios in the Philippines doing 2D cartoon animation as contractors. Essentially, the technology-driven nature of Pixar, and the need for constant creative interaction dictate an in-house approach to production. Pixar's model will come under increasing pressure as other animation companies develop the technology and creative processes to compete. The model is also not a guarantee in an industry where hits and misses cannot not forecasted, even up to the point when the product is released.

We have also illustrated how animation outsourcing occurs. It now appears that when labor-intensive production processes mature, along with substantial mechanisms for coordination and specifications, production can be located almost anywhere. In our second model, we also illustrated how political economy shapes the outsourcing pattern in the Philippines. Philippine executives and officials have often argued that while Asian competitors offer animation services at lower prices, the Philippines boasts a cultural affinity to clients. However, this has not been enough to protect the industry from the vagaries of the markets, and especially from itself, when wages went far higher than the market could sustain. The entrance of new players like India and China who work much more cheaply, combined with the Philippines too high wages, has caught the Philippines industry in a squeeze.

In addition to this, there is a deep divide between these two cases of the animation industry. The Philippines studios are essentially doing less creative work, and will not likely soon have the opportunity to participate in the conceptualization stage of creative production for global

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[36] The Technical Education and Skills Development Authority (Tesda) is actually researching the animation industry in order to certify the animation program. According to artists, the problem is the tendency to liken animation to technical courses and to downplay the importance of fine arts.

markets. The Pixar model is too capital- and technology-intensive to be located elsewhere. It also involves creative and conceptualization skills which are still lacking in most places, even in the U.S. Pixar is also using technology to improve productivity, and this will almost certainly work against outsourcing and the hopes that export oriented countries have.

Local creative advantages are somewhat muted by these effects. There is the hope that if more front end work is to be outsourced, or if the Philippines can find its own properties that have a global or regional sales appeal, they could do well in the US like some Japanese firms. This however takes financial resources, fairly significant domestic market power, and the right blend of creativity and appreciation for what markets want (i.e., a high degree of contextual knowledge).

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