Singapore Management University

Institutional Knowledge at Singapore Management University

Research Collection Lee Kong Chian School Of Business

Lee Kong Chian School of Business

2-2010

The outsourcing of creative work and the limits of capability: The case of the Philippines animation industry

Feichin, Ted TSCHANG
Singapore Management University, tedt@smu.edu.sg

A. Goldstein

Follow this and additional works at: https://ink.library.smu.edu.sg/lkcsb_research

Part of the Arts Management Commons, Strategic Management Policy Commons, and the Technology and Innovation Commons

Citation

The Outsourcing of "Creative" Work and the Limits of Capability: The Case of the Philippines' Animation Industry

Feichin Ted Tschang and Andrea Goldstein

Abstract—The animation industry, like many information-technology-enabled services sectors, has been of interest to many developing countries interested in developing services outsourcing industries. We analyze the case of the Philippines' animation industry. This paper investigates the outsourcing process in animation and the nature of capabilities within that, with the goal of contributing to a more general understanding of services outsourcing. We examine the industry's history, interview data with industry participants, and secondary data. We find that strong labor force skills have been central to capabilities rather than organizational abilities. Outsourcing of production takes place only so far as the work is codifiable, i.e., instructions and interface documents, or that tacit interactions between providers and their clients can facilitate the transfer of the work. This makes it extremely difficult for the industry to move into higher value work such as the conceptualization stage of product development. A major downturn in the past and technological automation shows that the industry has not been sustainable in the face of external influences, but stronger policies and company strategies that support investments in upgrading capabilities and workforce skills could ameliorate some of these effects. A strong foreign presence has also been found to support the development of the industry.

Index Terms—Animation industry, developing countries, outsourcing, technological capability, the Philippines.

I. INTRODUCTION

OVER the last several years, many developing countries, including India, China, and the Philippines, have developed software and services outsourcing industries based on those countries' low-cost but high-skilled labor [5]. Many software service providers—especially in India—have made significant strides. In 2007, the Indian software services industry exported $32 billion or 22% of the country's exports, making it the country's largest export industry. However, while there have been substantial studies on the Indian software services outsourcing industry [4], there has been relatively less work on understanding outsourcing in the broader information technology (IT) enabled services (ITESs) sectors, let alone other countries' industries. This is particularly relevant knowledge to develop as an increasing number of developing countries also consider industries such as film, animation, and video games to be potential growth areas in outsourcing [31]. Given the increasing

policy importance attached to services outsourcing as a part of an industrialization strategy, it will be useful to develop new cases with an eye to comparing processes and industrialization paths across industries.

We will frame our research as an exploratory search for specific and, possibly, general characteristics of outsourcing processes. We seek to understand if such features as found in the nonsoftware industries (such as the so-called creative industries, which require differently skilled, even creative, abilities [29]) are also similar to those found in software services outsourcing, and therefore, indicative of features general to services outsourcing. Specifically, we would like to understand some of the primary conditions that facilitate outsourcing in animation, how that outsourcing is accomplished, and, to the extent possible, why it is done. To contribute to a more general understanding of services outsourcing, we will focus on a hitherto unexamined sector and country—the Philippines and its animation outsourcing industry. While the Philippines' overall industrial growth path has historically been less technologically driven than that of its Asian counterparts, it has recently recorded high growth rates in services outsourcing [24]. We will root our study in a historical overview of the Philippine animation industry's development (which also captures salient aspects of the business environment), as well as cases of specific firms' experiences. To frame the data, we adopt a value chain *cum* outsourcing framework, because of the relevance of each approach for understanding the stages of production that are outsourced and the firms' capabilities involved, respectively. Since most of these aspects are more readily discerned in a qualitative manner, this paper is best viewed as an exploratory study that casts for a broader set of factors that mediate these industries' development.

In Section II of this paper, we will first discuss a selected literature. The main data sections are Section III, where we describe the general production process of animation, the outsourcing of animation, and a brief summary of the Philippine industry's history, and Section IV, where our case studies are analyzed according to a framework largely oriented around capabilities pertaining to the production process. In Section V, we discuss our findings, and in Section VI, we conclude and draw some implications for policy and research.

II. STUDY APPROACH: THE ANIMATION INDUSTRY

A. Brief Review of the Outsourcing Literature

To understand outsourcing, we will first review a selection of the literature on outsourcing. While outsourcing has

recognizably been going on in the hardware industries for quite some time, especially with the Asian newly industrialized countries (e.g., Taiwan and Singapore), outsourcing in software has been treated as a somewhat separate industrial phenomenon. We will address four "guiding issues" that pertain to (typically software) services outsourcing, and will follow in our data sections with an analysis of the animation equivalents.

1) Why and What Clients Outsource: On the demand side, outsourcing tends to occur when industries mature and as cost considerations rise. It has been commonly found that larger and higher value pieces of work may eventually be "modularized" and outsourced, especially given the attractive labor and cost proposition that many developing regions offer [25]. Sometimes, as in the case with India's software industry, the opportunity presents itself in an unexpected need, e.g., the opportunities in updating "Y2K legacy" programming code. This is not to say that outsourcing is always imperative. In some industries, activities or inputs that are higher in value, unique (or firm-specific), and tacit, tend to stay inside the boundaries of the lead (developed country) firm, i.e., "potential clients" do not outsource such activities [19] (see [26] for the case of R&D). Ultimately, the issue of what (and whether) to outsource will rest on whether tacit processes can be codified to enable their outsourcing [19]. In fact, software services outsourcing providers do often find it hard to participate in the highest levels of their client's value chain [3]. Grimaldi and Torrisi pointed out that this occurs because the most critical skills such as analysis of user requirements and system design are not well formalized and hard to codify, let alone easy to acquire [16].

2) Understanding the Process of Outsourcing: Our understanding of how activities are outsourced, and the effects of the tacitness of the knowledge on this, can be better understood within the overall context of Gereffi *et al.*'s global value chains framework. This identifies three major characteristics as governing the construction of value chains: the complexity of information and knowledge transfers during transactions, the ability to codify these transactions, and the capabilities of the providers [15]. While this framework adopts a transaction cost perspective, it is premised on the coordination of outsourcing as a technological process of modularization and codification of interfaces (or the "standards" to "allow clean hand offs" between trading partners). In addition to this, product lifecycle theory predicts that as industries become mature, process improvements and cost containment eventually become a central preoccupation (Vernon [33], also referred to by Utterback [32]). Modularization occurs at these mature stages of industrialization, and suggests that work can then be outsourced [13]. Baldwin and Clark provide an explanation for how modularization may occur at "naturally occurring" interfaces between the technology and its application domain that specify, in detail, the patterns of communication between the components and the design rules by which they fit together [7], [8]. In the case of outsourcing, these interfaces may well be the stages of product development (or of the production process, as it is termed in animation).

3) How Providers Develop Capabilities: A focus on technological and other capabilities is central to Gereffi *et al.*'s global value chains framework [15] as with many studies of outsourcing. In conventional industries' outsourcing, value chain analyses recognize that capability is developed via technology transfer from clients [18]. In contrast, studies of software outsourcing focus on providers' "own development of capabilities" [3]. Broader institutional factors have also been identified, including the quality of the labor force and its skills, the early clients' needs (which presented the first opportunities to those countries), and, to some extent, factors as the policy environment and talent diasporas [3], [5]. However, since the vast bulk of detailed studies has focused on India's software industry, the generality of this set of factors still needs to be validated. Furthermore, while measures of software outsourcing capability are commonplace (for example, see [5]), they overwhelmingly tend to focus on *process maturity*.

4) Challenges of Upgrading Capabilities: Previous studies of outsourcing also identified the upgrading of capabilities as a core necessity, and sought to place upgrading in a value chain context [18], [19]. The literature on firms' capabilities is itself voluminous [12], [17], [21]. From this literature and the broader literature on the political economy of industrialization, it emerges that, at the aggregate level, firms' capabilities and their upgrading over time are important determinants of a firm's or industry's competitive advantage [1], [20]. In particular, building on Gereffi [14] and others, Humphrey and Schmitz show that providers' upgrading prospects—and, indeed, their continued integration into these value chains—depend on the (positive or negative) strategic intents of both the client and the provider, e.g., the willingness of clients to relinquish these parts of the work and assist providers, and of providers to invest and learn, respectively [18]. Technological upgrading has also been shown to involve various challenges, including the technological "chasm" that firms must cross in trying to upgrade into more advanced research and development-based products [2], the general climbing of the industrial value chain despite the strong influence exerted by global buyers and other lead actors in the value chain [10], and the upgrading to own brand products [14]. In software, it was shown that India's early software activities were of the lower value and smaller scale variety, but that later work progressed to states of higher complexity and larger scale, at least for certain types of skills and stages of the work [3], [6]. Furthermore, these states are linked to specific "stages" of the product development cycle (e.g., conceptualization, production, and software maintenance), where each of these stages encompass specific activities or substages (e.g., requirements analysis, component development, systems integration, etc.) (as surveyed in [28]).

Given the "creative" nature of animation, in our analysis, we will pay especial attention to how the tacit and explicit nature of the work affects the outsourcing process.

B. The Philippines Case and Research Methodology

Generally speaking, country and industry case studies are necessary to provide a more detailed analysis of how the outsourcing (and industrialization) process proceeds. The approach in this paper follows conventional case study methodology to develop

an industry case based on multiple sources of primary interview and secondary data [36]. The Philippines is an ideal research site because of its recent success in attracting ITES (outsourcing) investments driven in part by the continuing search of multinational corporations for new, lower cost locations, as well as its long history in animation outsourcing. In fact, in 2003, the Philippines' business process outsourcing (BPO) and IT market size ranked it sixth amongst the major countries profiled in one report [25]. While animation is a much smaller proportion of the Philippines' overall ITES industry, its average wages are as much as a factor of two or more higher than the wages of sectors like call centers or BPOs (authors' interviews). The Philippines has accomplished this growth in ITES largely without the help of direct government support, due to the country's lower wages, an oversupply of tertiary educated or, otherwise, skilled labor, and the population's English-speaking ability (the latter of which has attracted firms from the U.S. and other English-speaking countries). These features have offset, at least partly, the country's generally weak policy and investment environment [35]. Analyses of the sector suggest that ITES has a significant potential to help the overall economy (albeit with weak intraeconomy linkages), and the government is now developing strategies for these sectors [24].

We initially conducted a series of semistructured interviews with four animation studios and an additional group (roundtable) interview with another five firms. This sample comprises 9 of the 15 firms in existence at the time, including all four of the major studios (Toei, Philippines Animation Studios, Top Draw, and Toon City Animation), and one newer, technologically advanced studio (Digital Eye Candy). The interviews were conducted in Manila, the Philippines, between March 2003 and July 2004. These were part of a larger World Bank Group project on the competitiveness of the Philippines, including its ITES industry. Each interview lasted for between 1 and 2 h, with one firm being interviewed twice for a total of 3 h. Each in-person interview was typically scheduled with the studio's head or manager. The basic characteristics (e.g., characteristics such as firm size, type of work done, and origins of the leadership and capability) of the firms that we interviewed are shown in Table I.

We used a semistructured, open-ended interviewing process to determine the basic background of the firms and industry (e.g., the origins of firms and their resources, nature of their production process, issues faced in its growth, etc.). As interviews progressed and concepts emerged, succeeding interviews were used to validate these concepts when possible. The interviews were transcribed, coded according to qualitative methodology, and analyzed [30]. Cross validations of emergent concepts were done where possible within the interview sample, as well as with other secondary data sources; this in order to ensure as "grounded" a view as possible, in this case, one representative of the industry's view.

III. PRODUCTION AND OUTSOURCING OF ANIMATION

We will now turn to an examination of our data to shed light on the four issues highlighted in Section II, though not necessarily in the same order. Generally speaking, the animation industry

was rooted in a tradition and evolutionary path similar to that of film making, involving a turn from craft toward mass production, mass markets, and sophistication in "production values" (i.e., quality). More recently, the industry witnessed technological, organizational changes, and market changes, such as the move from 2-D to 3-D animation, and increases in outlets for animation brought on by satellite and cable television (TV).

A. Animation Production Process

To set the ground for understanding the various aspects of the outsourcing process, we will first discuss the production process. This essentially consists of four stages.
1) Conceptualization, where the main idea and the story are created.
2) Preproduction, where the concept art and first scenes connecting the story (i.e., the storyboard) are developed.
3) Production—involving the bulk of the labor intensive work—including most of the art, modeling (with physical models), and animating (including key animation and in-betweening tasks).[1]
4) Postproduction, where editing and rework are done.

Somewhere in between conceptualization and preproduction, the storyboarding is done (especially for animated feature films), where the storyboard and "bible" (containing the characters and other background information) provide some of the necessities for an outsourcing provider to key in on the animation to be done.

B. Brief History of the Philippine Animation Industry and Why Outsourcing Occurs

We will now briefly examine the industry's history. This, in effect, addresses the first part of our first guiding issue—that of *why clients outsource.* As part of a move to tame costs, Western, in particular, U.S., animation producers have been outsourcing work to Asia since the 1970s [30]. Lent also noted that about 90% of all "American" television animation is produced in Asia—spread across countries like the Philippines, Korea, and Japan. He further pointed out that "Much of Asia's animation production since the 1960s has been tied to foreign interests attracted by stable and inexpensive labor supplies."[2] Like other industries, this outsourcing of animation can be influenced by a variety of factors. Cost (subject to quality) is a primary factor influencing animation outsourcing (as established in interviews and in [22]). Outsourcing is typically done in either captive (client-owned) facilities or by third-party providers. Given its labor-intensiveness (and perhaps its lesser degree of tacitness), production is the most outsourced stage, whereas conceptualization is more culturally bound, and therefore, not outsourced.

The animation outsourcing industry in the Philippines began about 20 years ago with the arrival of the first foreign studios

---

[1]Key animation is the creation of key frames of animation that serve as the endpoints for all the "in-between" frames that smooth the sequence. "In-betweening" refers to the work on all the frames in-between the key frames. In-betweening is largely computerized now.

[2]See [23]. An early history of outsourcing to Asia is provided by Lent [22].

TABLE I
CHARACTERISTICS OF STUDIOS IN INTERVIEW SAMPLE

Studio	Size	Current Work	Origins of Capabilities and Resources
Major studios (large, mature firms)			
Toei *	Had 135 employees in 2002, 170 in 2004, 100 in 2005.	It currently works on about three titles (and which will add another one soon). Toei produces anime series like *GI Joe*, *Transformers*, *Dragonball*, *Slam Dunk*, *Sailor Moon*, *Nadja*, and *Muscleman*. Toei Japan entrusted some part of 60 percent of its animation shows to this subsidiary.	Developed highly skilled animators (permanent staff) in unique Japanese anime style. Training over long term with parent firm's help (locally resident Japanese assistant director for past 20 years). Studio head is local.
Philippines Animation Studios (PASI)	Had reached 500 employees at its peak, in 2005, had 50 full-time employees (additional manpower hired on temporary basis).	Works with Canadian (Cinemaria, Nelvana) British (Tele Imagination) and German (TV Loonand) clients. Co-produced 13 episodes of *Committed* with Canadian studios.	Technical capability originally acquired from employees leaving other studios (especially Pacific Rim, which was closing its operations). Studio head is local, creative director is foreign.
Top Draw	In 2003 it employed 15 fulltime people and up to 500 freelance artists.	They do a range of animation work, ranging from TV series production to "direct to video". Top Draw has now secured work from clients in the US, Canada and Europe. Its growth rate has been extremely high (300% in 2003) – it did 1 ½ hours of episodes in 2000, 42 animation films or episodes in 2003. They started by working on three projects in 2000, but the number of projects went up to 43 in 2003.	Studio heads are expatriates and locals with experience in other companies. CEO/head is expatriate with substantial personal networks in financing, etc. Recently received technology (Flash) training from Canadian clients.
Toon City Animation	Staff reached 800 at its peak, went down to 400 in 2004, back to 800 in 2007.	Gradually started with one, then more Disney TV series (e.g. Lilo and Stitch), as well as more recently, 'direct to video' movies (i.e. full length features directly released on video format).	Originally a family owned business (later incorporated, with foreign heads). Built up a very strong staff and capability with close mirroring of Disney processes – considered one of the top outsourcing studios in the world and was Disney's largest non-US services provider. Foreign studio head, creative lead.
Newly developed studio with foreign ownership			
Digital Eye Candy	Had 45 artists and supporting personnel.	Focused on 3D feature films from Hollywood. Did production stage of *Hoodwinked* feature film.	Founders from Disney and ImagineAsia (a division of Global Animation Holdings which also oversees Spectrum Studios in Los Angeles). Acquired financing and contracts from overseas (U.S.). Set up specifically as offshore arm of Kanbar Entertainment in Los Angeles. Film was conceptualized by a US-based team which visited every month.
Smaller firms (two of four interviewed from the Philippines Animation Council for which information was available)			
Top Peg	Smaller 100-percent Philippine-owned company established in 1996.	Has worked on TV series like *101 Dalmatians*, *Tarzan*, *Kim Possible*, and *Hercules* for Disney. Also produced a local series (*Tutubi Patrol*)	Local studio head
Holy Cow!	Set up by former Burbank animators. Employs 17 people.	Specializing in 3D digital animation, mainly for commercial advertising and other purposes.	Local studio head

* Like other Japanese studios, Toei also has a facility in China.

and entrepreneurs. Interviewees from the Philippine Animation Council noted that the Philippines was "very strong in 2-D, because of Disney, Hanna Barbara, and Warner."[3] The first

[3]In 1991, the renowned U.S. animation company Hanna-Barbara, which already ran a studio in Australia, set up a studio in the Philippines called Fil-Cartoons, which at its peak had as many as 1200 staff. Later, Warner Brothers also set up a similarly large studio. These foreign firms transferred knowledge through training—knowledge that was so valuable that staff were later able to secure work directly in the U.S. for major studios such as Dreamworks and Disney. (Note that many of these cases were recorded in interviews; due to the lack of publisher sources, we have had to rely on oral histories.)

studio—Burbank—was founded in 1983 by two Australians who came to the Philippines and started the test site, providing initial training, amongst other activities. According to an interviewee who was present during this early period, Burbank's decision was driven by three considerations—tax and other investment incentives, the low cost of production, and reasonable proximity to the U.S. market. Although most of the staff in these studios was indigenous, Burbank's top managerial positions generally stayed in Australian hands. These firms were the largest in the industry, and helped the industry considerably by contributing to the training of artists and the development

of production processes, the provision of international contacts, and eventually, the creation of new companies, and further growth of the industry.

The Philippine animation industry's revenue grossed US $40 million in 2000, slumped to $21 million in 2001, but grew back to $40 million in 2004, $65 million in 2006, and $105 million in 2007. Although current growth rates are high, the numbers are still far off from the early 1980s, when the production stage of one fourth of the global animation output (put at $25 billion) was said to pass through the Philippines.[4] To put these figures in perspective, India's National Association of Software and Services Companies (NASSCOM) (the outsourcing association) reported India's animation outsourcing revenues at $285 million in 2005; and Philippine call centers generated about $1.8 billion revenues in 2005, equivalent to 75% of the total revenues generated by the entire Philippine BPO industry [24]. In 2004, there were estimated to be some 3000 artists in the country employed by about 15 animation firms, but this rose to 50 (mostly small) firms and 5000 artists by 2007.[5] In part due to increased overseas competition, the Philippines' labor is now somewhat more competitively priced than during the boom, being somewhere between the U.S. Korea, and Japan on the higher cost end, and China and India on the lower cost end. However, changing business conditions and technological change have taken their toll on the labor force. The digitization of production has greatly increased productivity at the expense of lowered employment levels.[6]

From our interviews, the industry's boom–bust–recovery cycle appears to correlate with wage rates, though wages alone only partially explain the cycle. By the late 1980s, many of the earlier studios had very high-cost structures because of the large proportion of permanent staff, and rising wages were growing out of proportion to the industry's capability by the late 1990s. As one observer put it, "We were arrogant, we thought we were safe because we had our production contracts with the big studios." [7] A general weakening of the market for animation started in 1999/2000. The downturn was exacerbated by broader economic problems, including the collapse of the IT bubble in 2000 and the economic shocks that followed the terrorist attacks on the U.S. in 2001. Another shock to the industry in the same period was the failure of EM.TV—a large German conglomerate trying to become one of the key animation houses in the world. According to Top Draw's head, "(The crisis) was triggered by EM.TV in Germany . . . . Because the Philippines was a service provider, we're down the food chain . . . the Philippines was affected within 2 weeks." Many contractors were dependent on EM.TV and its network of contracts for funding, and many had started doing work without payment, later suffering for it. Consequently, with the global TV industry experiencing financial distress, other large networks went bankrupt.

During the downturn, many large animation studios around the world collapsed or had to lay off large numbers of permanent staff. In the Philippines, the combination of inflated wages and weak markets led to substantial closures, including captive operations like Fil-Cartoons (which closed in the early 2000s) and Warner Brothers (who closed their operation in the Philippines, and eventually, transferred animation work to China and India) (in fact, some of the earlier providers like Burbank had already shuttered their studios in the late 1980s). Disney also shut its Tokyo and Paris studios, and its US-based 2-D animation studios, and loosened its former exclusive agreement with ToonCity, its exclusive affiliate in the Philippines, so that ToonCity could seek work from other clients.

There has recently been a recovery of sorts. It was pointed out that the Philippines still offers an advantage for animation outsourcing because "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" ([9], pp. 15 and 28). At the moment, the Philippine industry's labor productivity for its level of production cost is still quite high relative to developed countries (e.g., their primary clients' own markets), while the labor force's skill level was generally higher than that of lower cost countries'. However, the Philippines' labor costs combined with the rise of other low-cost countries like India, and to some extent, China is also causing the Philippines' overall competitiveness to suffer. Thus, despite its once dominant status, the Philippines is by now just one of several countries to which animation outsourcing takes place. Certain conditions (such as the shrinking of the labor pool during the downturn) also limit the industry from growing more rapidly.

IV. CASE STUDY DESCRIPTIONS

A. Case Studies of Key Firms: The Origins of Firms and Their Capabilities

To provide a more detailed picture of the third guiding issue—that of how providers develop capabilities—we will examine how the animation firms developed and acquired their capabilities. We will focus on four key animation firms in the country (all largely involved in TV series production) for which we have primary interview and public information. The general characteristics of these firms are provided in Table I.

1) Top Draw: Top Draw was set up in 1999 by W. Dearing (an Australian, formerly with the earlier Burbank animation studio and *Philippine* animation studio (PASI), and has grown

---

[4]Revenue information from the Philippine Government's Board of Investment. (http://www.animationcouncil.org/page.php?p=38 (accessed September 3, 2008). First figure is from "Philippines seeks to re-animate cartoon industry", INQ7.Net, February 15, 2004. http://money.inq7.net/breakingnews/view_breakingnews.php?yyyy=2004& mon=02&dd=15&file=1 (accessed November 20, 2006). Production data are from http://www.philippinenews.com/news/view_article.html?article_id=f6e1d19da1d82944bec51a8fac702900 (accessed June 25, 2007).

[5]Various news and other sources used to obtain revenues and employment from the Philippine Animation Council (http://www.animationcouncil.org)

[6]An interviewee noted that at his former workplace, the now closed Fil-Cartoons, the increase in productivity was typically dramatic, with only 25 people doing what 200–300 artists used to do. Similarly, at Toei, 21 "ink and paint" artists do what took 130–150 people to do, and could be further reduced to 12 people.

[7]http://www.beanstalkmedia.com/industrynews_acpi.html (accessed: August 25, 2007). Our interviewees also noted that animators' salaries increased until by the mid-1990s, they were above other countries'. These have since been cut severely by 47%–73% at the present day. Such remuneration levels still far exceed those in the domestic economy.

well under the reviving market conditions. The Top Draw case illustrates that the entrepreneur's ability to build links with overseas markets, in particular, to secure and maintain contacts and clients' trust in the quality of the work, also appears to be an important way for new firms to grow or sustain themselves. Dearing has done this with financial backing from two other Australians, and his own capital (comprising 50% of the starting equity). This case also highlights the influence of expatriates in the industry (with the exception of PASI and Toei, the large firms in the past and current periods were primarily headed by expatriates). Top Draw is now upgrading its capabilities to work on advanced flash applications by working closely with a client, "{The Canadian) studio [x] is probably the most advanced in the flash area . . . part of (our) training was Studio [x] sending their people over here and working with our people, and we went over there . . . . We really set up our facility to mirror theirs, we got the benefit of everything they learned over the previous two years." Dearing is positioning the studio as a "high-end" "Mercedes" operation that does not have to compete with lower cost, lower quality locations, but that can compete with established countries on both cost and quality:

> We know clearly where we are and where we are going . . . . We have to be cost effective. I can make any product cheaper for (the same) quality as any Korean studio . . . . It is a creative process. This is a country of musicians and artists. That artistic skill means that the style of animation is extremely fluent, flamboyant, and has that Western taste. That's why Americans came here, instead of India or China, because the artistry is well recognized. Our experience is, whenever we work with anybody, they tend to stick to us, because the brand, the way we service them, is very reliable, always on time.

2) PASI: PASI was established in 1990 and is one of the three remaining studios from the early boom period. It is Filipino-managed with an American creative director, and was financed by Malaysia's Astro Group (whose parent company is in the oil industry, but which now has with media holdings). PASI suffered a lot during the recent downturn (even losing some staff to U.S. studios), but survived, in part because it is part of a diversified conglomerate, "Having a parent company has helped us . . . we could depend on them to get us through the rough times." However, PASI's studio manager also pointed out that the profit margins are low, making it difficult to accumulate enough retained earnings to reinvest in facilities or training. (This point of low margins, and generally, low investments were echoed by many other interviewees.) PASI's network has also helped it to find clients, e.g., a Malaysian artist's intellectual property was turned into an animated TV series. They have been listed as one of the top ten providers by *Animation World Network* (the main animation industry periodical) and have a professional reputation for quality. They are currently many times smaller than they were at their peak (as shown in Table I), but are in a rebuilding phase, training new staff, and seeking new contracts, including coproductions, as well as moving to a "smaller core/larger temporary pool of employees" model (the latter also reflecting Top Draw's model).

3) TOEI: The case of Toei lends some insight into how foreign investors build capability, especially in the longer term, and the culturally specific nature of certain "national"

forms of animation. The well-known Japanese film studio Toei decided to form an animation subsidiary for TV series in the Philippines in 1986 as a joint venture with a Philippines construction company, but the initial capability of the "studio" was minimal, "The only qualification we had was project management and hiring. That was the only thing that Toei considered at that time. Anyway, the process that they subcontracted to us was not really difficult; it was just painting work." The effort needed to build a Japanese animation facility was considered greater than that of Western animation due to the culturally specific nature of Japanese animation and the lack of "trained" talent in these areas. A longer time was involved in training Filipino artists to the Japanese style of animation, "most of animators have been here for 10 years, and in the course of their working with us, they have already adapted very well to the Japanese style." As a result of this, the Japanese parent has formed a strong integration with its subsidiary, with anywhere from 20% to 80% of the processes of individual shows being done in the Philippines. A Japanese assistant director is also stationed in the Manila office to act as coordinator between the Manila office and the Japanese side. The artists in the Philippines studio are now entrusted with several of the key animated series, including the international hit series *Dragonball Z*. In a way, this mirrors the technology transfer seen in manufacturing foreign investments in Southeast Asia, China, and elsewhere. Toei continues to conceptualize its series in Japan, and to produce in various locations. Toei's Manila studio is currently engaged in the production stage, but not in conceptualization, preproduction, or postproduction (i.e., editing) work. The concepts and production process are so well specified in Toei (as with the industry) that most of the tasks performed in the Philippines, including painting, do not involve much creativity. Nevertheless, Toei has also offered its subsidiary opportunities to participate in higher value added work (see Table II).

4) ToonCity: ToonCity was established 1993 as a family business, and from the beginning and for most of its life has been working exclusively for Disney. The studio is now headed by foreigners, but its secretive nature is well known in the industry, and little public or private information is available. Following the decline in performance of Disney's animation group and its subsequent restructuring, ToonCity was "released" in 2000 to work in the open market. It continues to do fairly well, and despite the downturn, has come back up to its early boom period employment levels. The ToonCity case illustrates the value of longer term contracts (especially for episodic TV shows). Firms can sustain themselves with long-term relationships, as did ToonCity with Disney. As one interviewee observed of American clients:

> American companies don't shift easily. They are conservative when it comes to suppliers. They are used to using the same studios, they have worked with them over the years, and in our business, when you're sending multimillion dollar contracts overseas, its important to have that comfort level, so if they already have that comfort level, its pretty tough to get them to walk away from it.

TABLE II
DIMENSIONS OF CAPABILITY FOR THE MAJOR STUDIOS

	Pre-production and production stages reached	Measures of capability (including level of analysis)	Upgrading possibilities and capability issues
Toei	Mostly undertaking the production stage. Also undertaking limited pre-production activities (i.e. pre-animation): *"Pre-production and post-production are mostly creative. But we're not doing it here."*	Discussion of work and capability as being measured in *"sheets per day."* Also mentioned specificity of assets, e.g. cultural variances within animation. For instance, *"Japanese animation is more cultural… you have to create some movement which is very Japanese. The way they laugh, the way they walk."*	Toei had offered Toei-Manila the opportunity to conceive their own series. However, *"so many factors prevent us from doing so, for instance, we're constantly looking for more acceptable stories, but the number one factor is our schedule, because we'll be using the same staff"*
Philippines Animation Studios (PASI)	Mostly working on production stage. They are the "prime contractors", i.e. *"we don't subcontract other studios' work."* Starting to do some pre-production for their own projects.	Capability comparisons were made on an **individual** (artist) level. Discussion of work are very task-specific (e.g. storyboard, background keys, scripts), and tend to be matched to specific artists. *	PASI is also developing co-production agreements, and seeking to develop its own intellectual property – anticipating that their costs will not be competitive some day. However, creative directors and script writers are hard to find. *"We've only found one (local) script writer so far who is good enough."*
TopDraw	Working on production stages of multiple series concurrently.	Discussed **procedures** and **technology** as capability: There are *"very technical specifications for delivery. There's a studio standard: Warner Bros will have its own standard,… certain parts are universal, but other parts, mostly the technical, are procedural."* Strongly orienting towards new technology and high quality *"…we got our technical guys… we became technology based through Flash, but we were already technology based"*. Contracts based on numbers of episodes (of given length) per week.	Top Draw is cooperating with a Canadian broadcasting studio on co-productions. Opinion on broader industry: *"My perception is the Philippines… doesn't have something culturally specific in animation as in culture-design stuff. I'm not sure what you can label as being clearly Filipino."*
ToonCity Animation	Capable of doing pre-production, but largely focused on a (full range of) production stage services. Also does direct-to-video films.	Based on numbers of episodes (of given length) per week: *"…the in-house capacity to produce 3 half hour episodes per week"*.	(not available)

B. Observations on Outsourcing Patterns, and Comparisons of Work and Capability

Our overview of the industry's history illustrated why animation outsourcing occurred (the first guiding issue). We will now develop a broader comparison across our cases in order to gain additional insights into the remaining issues: what is outsourced (the second part of the first guiding issue), the process of outsourcing (the second guiding issue), and how capability is upgraded (the fourth guiding issue). Despite our small sample size, one observation that comes out clearly from comparing across the firms is the varied nature of their origins. Of the four firms, Toei is Japanese-owned and anime-focused, PASI is owned by a Malaysian conglomerate, and the remaining two are locally based and headed or owned by expatriates. Furthermore, each tries to rely on its larger international owners or clients for funding and/or work for a variety of needs: To tide over the rough times (in the case of Toei and ToonCity), cover the more

minor seasonal business fluctuations (in the case of PASI), or continue their growth (in the case of Top Draw). Table II illustrates different aspects of the firms' capability, including the highest value of work done, measures of capability, and upgrading mechanisms used.

1) Type of Work Outsourced and How Outsourcing is Done (First and Second Guiding Issues, Respectively): To address the guiding issue that relates to the "type of work outsourced," Table II shows the stage of the value chain to which the various companies have climbed: All are now effectively involved in production stage work on animated TV series. This has been facilitated by a process of codification and tacit forms of coordination. Various documents are used to codify and coordinate, for instance, Toei–Manila noted the following:

> We're not allowed to change the script. Everything is based on their storyboard. But, maybe there are just little changes, e.g., to change the colors. We're allowed to change the supporting characters, but

not the main characters. Once they decided the character, that's final. So everything is based on the color model [in the documents].

Similar processes are mentioned in other animation outsourcing projects profiled in our secondary data, as well as in industry manuals, where reference is typically made to "bibles" that are the main documents delineating the core story background and characters (including their looks) for the production stage (e.g., see [34]). In the Simpson's, for instance, the full storyboard consisting of as much as 200 pages. This and many more concept pictures are created before production starts.[8] Projects can even be separated by "scene."[9] Because of the nature of this codification, as one studio head that we interviewed noted, "painting (one major process in production) is not creative ... just follow the model."

The means for dealing with a lack of codified knowledge is tacit interaction. Most firms reported interacting tacitly with clients to handle the latter's expectations: this may also be done on a regular basis during the course of a project, as Toei does with phone calls to Japan (e.g., by its resident Japanese coordinator). The outsourcing of parts of *The Simpsons'* production stage to Korea also involved initial tacit coordination and knowledge transfer between Fox and its Korean outsourcing provider (to attune the provider to Fox's visual styles and other expectations). A similar experience ensued at Digital Eye Candy, when key staff flew back and forth between their base in Los Angeles and Manila.

2) How Capability is Measured: A precursor to understanding capability is to know how it is defined by the industry. The measures of capability shown in Table II indicate that the industry mainly treats capability as consisting of individual skills (and artistic skills at that), and to some extent, the facility with technology or procedures required to engage with clients. All of our interviewees remarked on the nature of the individual skill of their animators relative to some industry or global standard. For instance, Toei–Manila noted that "On the technical side for producing animated show (process), we have people who direct, animate, do special effects." Strikingly, no interviewees mentioned the knowledge or skill of the "team," but rather, would talk of the pooling or aggregation of skills. At the organizational level, capability is defined in terms of the firm's ability to handle a given scale of project (see Table II). This sort of capability involves less of a need for individuals to coordinate on complex, logically interconnected tasks—a typical feature of software outsourcing. Aside from scale (which has been a problem for many companies in the Philippines, which are too small to service large clients), issues

of organizational capability also center on studios' reputation for quality.

A second aspect of capability relates to automation. Given the technological changes to enhance productivity, it has been increasingly important for the individual animator to have facility with computing technology. However, for the most part, this skill is separate from the artistic one. The modern animation studio is very technologically based (see Top Draw in Table II). Most firms report using off-the-shelf technology, including Toei–Manila. One interviewee noted of Toei–Manila: "It's total technology. They have no paper in their studio." However, Toei–Manila itself noted that with digitization come threats, "Those with the advantage are the studios that can buy the software. In our case, as soon as Toei (the headquarters) digitized this process, many studios could be considered to be a (competitive) threat to us, because they can do the work that we're doing."

A third aspect of capability has to do with processes and client-specific procedures (see Top Draw in Table II). Of the processes mentioned in interviews, some are client-specific, e.g., Top Draw's Dearing points out, "Warner Bros is different from Disney in archiving: They will archive the raw shots, they won't archive their finished piece."

3) Upgrading of Capability (Fourth Guiding Issue): The next step in analyzing capabilities is to understand how they have been developed over time. While firms may by now handle the entire production stage, they typically arrived at this through a more gradual process of growing capability by incrementally adding tasks. For example, Toei–Manila discussed how the production stage work was moved over:

> We started only with ink and paint. Then, in another year, we started with the in-betweening process, and it keeps on increasing, and now we're doing animation which was only confined to the Japanese animators before. The only process that maybe we can add to the operations here is compositing [or the bringing together of all the layers of a scene]. We have the capability here. We've done it before.

One of the biggest fears expressed in various interviews has been that the individual skills are easily duplicated by other country competitors, as had already occurred with India's continuing rise in the more technological 3-D animation and attempts to move into 2-D animation (which requires more artistry, but on which India was catching up). This has reinforced the need for firms to upgrade or else to face lower cost competition. Top Draw's head pointed out, "we believe we have a niche for the next couple of years, and the niche will disappear because people will catch up but ... we hopefully will have moved on." There are three further upgrading possibilities by which this can be addressed: 1) doing conceptual stage work, possibly by developing local content; 2) upgrading technology and skills; and 3) engaging in coproduction agreements with clients (which could involve developing one's own content). Table II shows how firms upgrade to higher value work in order to stay ahead of competition—a strategy common to other industries' (e.g., [18]).

a) Upgrading to More Creative Stages: Conceptual work is the typical goal of upgrading in creative industries as it

[8]The storyboard, backgrounds, and key scenes, with painting instructions that need to be followed closely for digital production are then sent to Korea for finer reproduction of the art and all the in-between frames. Source: Visual Process, The Simpson's Folder: http://www.simpsonsfolder.com/library/visual.html (accessed September 27, 2008).

[9]For example, Winder and Dowlatabadi describing a project that operated under budgetary and resource limitations, "the work was divided up and subcontracted to studios all over the world. Sections of the film were sent to Canada ... Argentina. Every scene ultimately ended up going through a studio in Asia for clean up, and ink and paint" [34, p. 2].

involves the most creative parts of the work. Interviewees variously expressed the need for the industry to move away from subcontracting, and pointed out that employees actually wanted to move into higher value areas of work. However, for a variety of reasons, as Table II shows, it is not easy for firms to become involved in conceptualization work. Scarce skills or the lack of talent is one of the foremost reasons. For instance, one local studio manager noted, "There's no one that I can speak of in the Philippines with the creative director's material." (see Table II for illustrations of PASI's difficulty in getting such talents). This may be due to the lack of an environment for developing these talents. Advanced preproduction or production stage work can be difficult, even for TV shows that have already been conceptualized. Toei–Manila notes, "There are really some processes where you cannot do the work for Toei. We're only doing key animation for some shows [an advanced task within the production stage]." The degree of difficulty depends on the style of animation and the specific task within the stage of development. Thus, in Japanese animation, for instance, Toei confirmed that some processes like painting were very easy to learn (and could be learned in two weeks), while others like the overall animating task (including the intricate, more "tacit," knowledge like the timing of scenes) could take more than a year to learn. In contrast, American animation was more generic, but the challenge was still in doing the conceptualization, preproduction, and postproduction stages, which tended to be done in the home markets.

b) Upgrading Skills: Another issue pertaining to upgrading includes investments in new technology and skills. Technological changes (i.e., the industry's gravitation toward Flash animation and 3-D) have also made reskilling and replenishing of the labor pool even more essential. The challenge has been to find the financing to undertake this training and other investments. Given the lack of public funds, firms have had to train their employees and even trainees in Flash, 3-D, and other newer technologies (authors' interviews with Top Draw and PASI). As a smaller studio member of the PAC noted, "With 3-D now, we have to put more human resources into it, and heavy capitalization (for technology infrastructure and training) is needed." The interviewee from the more established PASI noted that "Margins are low . . . . It's difficult to live from project to project. We're not in the sort of business where you know you can make projections on what is going to happen next year." Some firms with strong foreign roots or contacts manage to find the financial and other resources from overseas sources. Digital Eye Candy, for instance, was funded when its American founders exploited their personal networks in Los Angeles to build their 3-D production facility (after a prior company in the Philippines failed). The new firm ("reconstituted" with the previous company's employees) was eventually successful in doing the bulk of the production for *Hoodwinked*—a 3-D animated feature film that saw worldwide theatrical release. In Top Draw's case, a foreign client provided technology transfer. All of this notwithstanding, many interviewees either agreed (or did not disagree) that there is still room for more aggressive government skill development policies than what currently exists.

c) Coproductions and Own Intellectual Property: One mechanism that could facilitate conceptual work and the
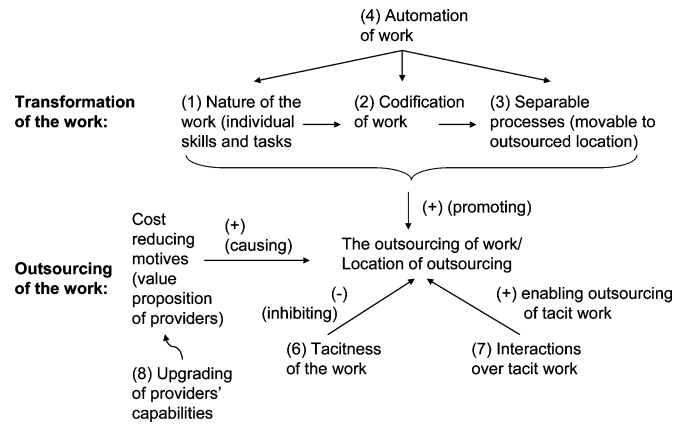

Fig. 1. Key aspects of the animation production and outsourcing process (identified from data).

opportunity to gain a larger share of revenue is the coproduction agreement, which allows the provider to take on some of the product cost and risk while benefiting clients who do not want to engage in production. While coproduction efforts are underway for at least two of the firms that we interviewed, and while this has given the firms a chance to obtain higher stakes in their own (Asian) region, the concept, as practiced, still devolves to foreign conceptualization and ownership of the intellectual property for the main markets, and has not led to the local firms doing any of the creative work at the conceptual or postproduction stages. The reason why coproduction ultimately has not yet provided "creative work" is partly cultural in nature, having to do with the kind of skills and experience in the country. Finally, developing local content is also a potentially viable way of increasing added value, but these products appeal to other markets' cultural preferences can be an issue.

V. DISCUSSION

We started this paper by inquiring as to whether there is a general nature to outsourcing (i.e., one that applies beyond software), the reasons for its taking place, and the nature of what is outsourced. We have also noted turbulent influences on the Philippine's animation industry. We will now develop a model of how this outsourcing occurs, followed by a discussion of two modes of organizing production.

Fig. 1 summarizes our findings in a model of the animation process and its outsourcing. We will relate the case data to the various factors examined earlier that can help us interpret what is outsourced and how outsourcing occurs. Specifically, the factors discussed earlier (or their subcomponents) are rearranged to provide a logical flow of the outsourcing process, starting with the antecedents to outsourcing (i.e., those that transform the work), and following with the influences causing or constraining outsourcing. Given the prevalent references in the data to the tacit and explicit nature of the work, we also make efforts to represent them in the model. Where possible, each concept is discussed with representative evidence from our data, as well as contrasted with the software outsourcing equivalents.

1) *Nature of the work (in individual skills and tasks):* The provider's capability is fundamental to any understanding of outsourcing patterns [15]. In animation, we observed that this is strongly rooted in individual skills, including the task- and piece-based nature of the work. Unlike animation, in software outsourcing, as the provider advances in terms of the sophistication of its work or as projects become more complex, an organizational ability starts to supplement if not overtake individual skill, e.g., increasing emphases on software engineering processes and measures, and on proprietary software development platforms.

2) *Codification:* The second antecedent to outsourcing was the routinization of the work, in part faciliated by its codification. Codification relates to both the task (instructions), as well as the interfaces themselves. The power of codified interfaces (between the stages and tasks) to oversee animation was seen in how documents like "storyboards" and "bibles" enable outsourcing to occur (see Toei case). In the modern day, this codification occurs hand-in-hand with (digital) automation.

3) *Separable processes:* Associated with the codification of the work is the issue of turning it into separable tasks and processes, as typically seen in the separable scenes of animation. This precedes the eventual shifting of the work to outsourcing providers. Again, this is not unlike the evolutionary process of capability development and employment seen in software [28].

4) *Automation:* One factor that has been closely associated with the aforementioned factors was the automation of the work. This was noted of Toei's studio, where technology has made the *outsourced work* "paperless," i.e., for all practical purposes, codified. Technologies like Flash have enabled studios like Top Draw to rearrange and "composite" (i.e., arrange by layering separate details) complex scenes out of "objects," where the objects are digital and archived in object libraries.

5) *Cost:* While the aforementioned factors may have actually served as antecedents to outsourcing, the motivation to outsource primarily revolves around the clients' recognition of the need to lower production costs. This was mentioned indirectly in our interviews, but was also illustrated in previous references.

6) *Tacitness of the work (as constraint on outsourcing):* Despite the routinization of tasks and codification of a large part of the outsourced production work, our interviews illustrated that some forms of animation and even tasks are more tacit and complex than others, and tacitness constrains certain processes or stages of production from being transferred to the provider. This mirrors the challenges of upgrading in software services outsourcing, where the more "tacit" tasks as requirements analysis are done in the lead markets by the independent software vendors (ISVs), while the providers are mainly limited to software "production." In addition, there is an "*x* factor," the creative work itself. Toei refers to, "processes where you cannot do the work." In part, this is also attributed to an individual's ability (e.g., the lack of a "creative director's material"). To some extent, the larger, more successful Indian software firms have been able to position themselves higher on the value chain through using their considerable cash to purchase smaller firms in lead markets, this in order to give them a lead market "presence" [27]. Other studies also note that advanced work is generally not transferred by multinational enterprises to emerging economies (e.g., [2] and [10]). In animation, as in other industries, the client/buyer has almost complete authority over the "global value chain" [10], [14], [18].

7) *Interactions over tacit work (mitigating stickiness of tacit work):* The tacit forms of interaction used to handle corrections, exceptions, and the general coordination of outsourcing tasks underscores the importance of continued interaction between providers and clients. These interventions may happen at the start of a project, e.g., the "attuning" of a provider to a client's needs, or even during the course of an outsourcing project (often making the provider "valued" to the client). At the same time, we note that tacit interactions are in effect a complement to codification since they help make sense of tasks that are not codifiable.

8) *Upgrading as continuing competitive advantage:* Upgrading is an essential activity, with providers and industries as a whole having to continue honing their competitiveness through the upgrading of skills, technology investments, or other means. Without this, they risk falling behind as new, lower cost, and sometimes, more heavily capitalized competitors arise.

A. Two Models of Enterprise: The Flexible and the Fixed Relationship Models

We will now examine the organization of production at the level of the enterprise. To a large degree, this influences the industry's sustainability. There are of course a variety of factors that help with the start-up and growth of firms. Learning from past mistakes, studios like Top Draw and PASI have moved away from the earlier factory model (permanently employing large numbers of animators for labor-intensive tasks) toward one with a smaller core group and a larger temporary workforce (drawn from the floating labor pool at large). Many firms such as ToonCity also use small firms as subcontractors in order to reduce their permanent staff costs (based on authors' interview). Top Draw now uses freelance artists for up to 95% of its workforce, and only has about 15 full-time artists. It uses 400–500 people when it is fully laden with work. Firms also need stability, and seek this by engaging in multiple projects. Top Draw noted that "You need to have the right number of good clients and enough layers on your business to make sure that when one stops, the other starts . . . . Its doing multiple deals at the same time, and different types of deals." However, what chiefly divides the firms that we have studied is their respective treatment of the connections to markets and input markets (i.e., employees) via the flexibility, and temporariness, of their relations with these markets.

In the first model, the cases of newer firms like Top Draw and Digital Eye Candy, as well as the restructured PASI, illustrated how entrepreneurs and firms organize human capital into temporary patterns of employment for the project durations. This higher flexibility can be more adaptive to markets in two ways. First, this sort of firm also takes advantage of their flexibility within output markets, i.e., the "flexibility" of engaging with a variety of clients on a transactions basis. Second, firms can ramp up labor quickly for new projects or in the wake of market disruptions. However, this type of largely, temporary labor force is often easily laid off or made redundant, and the risks are that, like was seen in the last downturn, employees may leave the industry or country if left unemployed for too long.

This flexible model offers a stark contrast with the other model seen with Toei or ToonCity, which is based on longer term client relationships. In this model, an organization develops a close relationship with its clients, essentially transferring much tacit knowledge. Further study would be needed in order to better understand the advantages and disadvantages of each of these models.

VI. Conclusion

Our study has both practical and theoretical implications. We showed how the Philippines' animation industry went through a particular path, first emerging strongly, then entering a downturn where many original entrants were lost, and more recently, reemerging. The industry suffered, in part, from international pressures and competition from its out-of-proportion wage increases (relative to its capability), and from its failure to constantly upgrade skills and provide investments. On the practical side, this shows the need for better public policies to support and guide industries.

Our main objective was to identify why and how outsourcing is done. While we have illustrated that cost is the main reason for animation outsourcing in general, our investigation also shows that a more complex competitive process ensued as the Philippines' providers matured and as lower cost competitor countries appeared in the global market.

To address how outsourcing occurs, we explored how the tacit and codifiable nature of the work provides a basis for understanding the outsourcing process. In particular, the tacitness of the more creative parts of the work limits its transferability, but tacit interactions between providers and clients, and codified instructions at "interfaces" between processes and production stages are used to overcome this limitation. More research can be done in the future to better understand how these mechanisms work.

We also have an interest in understanding the general nature of outsourcing processes and capability. We identified certain features that serve as useful contrasts with the software industry.

First, unlike in software, animation capability, even in advanced firms, appears to rest more on individual capability than on organizational process. To the degree that this is true, animation outsourcing providers may be less able to differentiate themselves from other firms or industries through means of organizational capability building (aside from a reputation for

quality). This and the low margins in this industry (unlike those of Indian IT firms, which support their own development and ventures into new industries with retained earnings) requires firms to be even more proactive in addressing trends, and for government to be even more supportive, e.g., in education and in assisting firms to upgrade technologically.[10]

Second, animation involves an evolutionary process of moving work of increasing value over to providers. In software, providers face difficulties in acquiring the highest ends of the work (e.g., consulting and requirements analysis). This is no different in animation, where the most creative processes, namely, conceptualization, preproduction, and postproduction, "stay home." In this sense, the "naturally occurring interface" at which outsourcing occurs is skills-based, with a high tacit cultural component. The implication of this is that, as in software, animation firms in developing countries may find it exceedingly difficult to create their "own brand" products in foreign markets, although for animation, this is due more to reasons of cultural tastes.

Third, entrepreneurial expatriates with their personal networks (and interfirm networks yielding coproductions) have been beneficial to the Philippines' industry. In particular, expatriates and foreign investors played crucial roles in the creation and revitalization of the Philippines animation industry—in part due to those actors' global contacts. This foreign investment ownership pattern was also seen in electronics manufacturing in Southeast Asia and China [17], but is quite different from the ownership pattern of Indian and Chinese software multinationals [27].

Finally, keeping in mind this nature of outsourcing and the industry's experiences, it may now be possible to determine policies and strategies to help sustain the industry and help with its upgrading. The Philippines' history shows that a heavily skills- and project-based industry without deep local (ownership) roots may vanish. On the other hand, with appropriate investments in new technology, skills, and labor force, it is possible to maintain or improve the industry's value proposition, as well as its attractive reputation (to clients) for quality. Future work may also look into whether certain organizational models can better sustain firms through downturns, and over technological and other future changes.

References

[1] A. H. Amsden, *East Asia's Next Giant.* Oxford, U.K.: Oxford Univ. Press, 1989.

[2] A. H. Amsden and F. T. Tschang, "A new approach to assessing the technological complexity of different categories of R&D (with examples from Singapore)," *Res. Policy*, vol. 32, no. 4, pp. 553–572, 2003.

[3] A. Arora, V. S. Arunachalam, J. Asundi, and R. Fernandes, "The Indian software services industry," *Res. Policy*, vol. 30, no. 8, pp. 1267–1287, 2001.

[10]Having said that, in the absence of public or even third-party educational provider training schemes, firms like Top Draw and PASI have developed in-house equivalents. It is worth noting that the generous subsidy and support schemes that countries such as Singapore and Korea provide to their industries were very desirable to many firms in the Philippines. Interviewees specifically cited the most useful purposes of government support to be their use for improving the visibility of the industry at the national level, providing funding to attend international animation shows, and promoting entrepreneurship.

[4] A. Arora and A. Gambardella, "The globalization of the software industry: Perspectives and opportunities for developed and developing countries," in *Nat. Bureau Econ. Res.*, Cambridge, MA, Paper 10538, 2004.

[5] A. Arora and A. Gambardella, *From Underdogs to Tigers: The Rise and Growth of the Software Industry in Brazil, China, India, Ireland and Israeli.* Oxford, U.K.: Oxford Univ. Press, 2005.

[6] S. Athreye, "The Indian software industry and its evolving service capability," *Ind. Corp. Change*, vol. 14, no. 3, pp. 393–418, 2005.

[7] C. Y. Baldwin, "Where do transactions come from? Modularity, transactions and the boundaries of the firm," *Ind. Corp. Change*, vol. 17, no. 1, pp. 155–195, 2007.

[8] C. Y. Baldwin and K. B. Clark, *Design Rules, Vol. 1: The Power of Modularity.* Cambridge, MA: MIT Press, 2000.

[9] A. Baliscan and H. Hill, "Introduction," in *The Philippine Economy*, A. Baliscan and H. Hill, Eds. Oxford, U.K.: Oxford Univ. Press, 2003.

[10] J. Barnes and M. Morris, "Staying alive in the global automotive industry: What can developing economies learn from South Africa about linking into global automotive value chains?," *Eur. J. Develop. Res.*, vol. 20, no. 1, pp. 31–55, 2008.

[11] DCMS, *Creative Industries Mapping Document 1998.* London, U.K.: Dept. Culture, Media Sport, 1998.

[12] P. N. Figueiredo, "Does technological learning pay off? Inter-firm differences in technological capability-accumulation paths and operational performance improvement," *Res. Policy*, vol. 31, pp. 73–94, 2002.

[13] R. Garud, A. Kumaraswamy, and R. N. Langlois, *Managing in the Modular Age: Architectures, Networks, and Organizations.* New York: Wiley, 2002.

[14] G. Gereffi, "International trade and industrial upgrading in the apparel commodity chain," *J. Int. Econ.*, vol. 48, no. 1, pp. 37–70, 1999.

[15] G. Gereffi, J. Humphrey, and T. Sturgeon, "The governance of global value chains," *Rev. Int. Political Econ.*, vol. 12, no. 1, pp. 78–104, 2005.

[16] R. Grimaldi and S. Torrisi, "Codified-tacit and general-specific knowledge in the division of labour among firms. A study of the software industry," *Res. Policy*, vol. 30, no. 9, pp. 1425–1442, 2001.

[17] M. Hobday, *Innovation in East Asia: The Challenge to Japan.* Cheltenham, U.K.: Edward-Elgar, 1997.

[18] J. Humphrey and H. Schmitz, "How does insertion in global value chains affect upgrading in industrial clusters," *Reg. Stud.*, vol. 36, no. 9, pp. 1017–1027, 2002.

[19] R. Kaplinsky, "Globalisation and unequalisation: What can be learned from value chain analysis?," *J. Dev. Stud.*, vol. 37, no. 2, pp. 117–146, 2000.

[20] L. Kim, *Imitation to Innovation: The Dynamics of Korea's Technological Learning.* Boston, MA: Harvard Business School Press, 1997.

[21] S. Lall, "Technological capabilities and industrialisation," *World Dev.*, vol. 20, no. 2, pp. 165–186, 1992.

[22] J. Lent, *Animation in Asia and the Pacific.* Bloomingdale, IL: Indiana Univ. Press, 2001.

[23] J. A. Lent. (2009, Mar. 25). Animation in Asia: Appropriation, reinterpretation, and adoption or adaptation. *Screening the past 11* [Online]. http://www.latrobe.edu.au/screeningthepast/firstrelease/fr1100/jlfr11c.rtf.

[24] N. Magtibay-Ramos, G. Estrada, and J. Felipe, "An input–output analysis of the Philippine BPO industry," *Asian-Pac. Econ. Literature*, vol. 22, no. 1, pp. 41–56, 2007.

[25] McKinsey Global Institute, *The Emerging Global Labor Market: Part 1. The Demand for Offshore Talent in Services.* London, U.K.: McKinsey Global Institute, 2005.

[26] R. Narula, "Choosing between modes of non-internal technological activities by firms: Some technological and economic factors," *Technol. Anal. Strategic Manage.*, vol. 13, pp. 152–170, 2001.

[27] J. Niosi and F. T. Tschang, "The strategies of Chinese and Indian software multinationals: Implications for internationalization theory," *Ind. Corp. Change*, vol. 18, no. 2, pp. 269–294, 2009.

[28] R. Rousseva, "Approach for analyzing capabilities in latecomer software companies," United Nations University (UNU) and Maastricht University (MERIT), Maastricht, The Netherlands, Paper 2007-035, 2007.

[29] R. J. Sternberg, *Handbook of Creativity.* Cambridge, MA: MIT Press, 1999.

[30] A. Strauss and J. Corbin, *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks, CA: Sage, 1998.

[31] F. T. Tschang and S.-S. Tsang, "China's new media sectors: Domestic culture as competitive advantage?," in *Greater China's Quest for Innovation*, H. Rowen, M. G. Hancock, and W. Miller, Eds. Stanford, CA: Walter H. Shorenstein Asia-Pacific Research Center, Stanford University, 2008.

[32] J. M. Utterback, *Mastering the Dynamics of Innovation.* Boston, MA: Harvard Bus. School Press, 1996.

[33] R. Vernon, "International investment and international trade in the product life cycle," *Q. J. Econ.*, vol. 80, no. 2, pp. 190–207, 1966.

[34] C. Winder and Z. Dowlatabadi, *Producing Animation.* Boston, MA: Focal Press, 2001.

[35] J. Yap and J. Balboa, "Why has the Philippines lagged?," *The East Asian Bureau Econ. Res. (EABER) Newsletter*, 2008.

[36] R. K. Yin, *2003, Case Study Research.* Thousand Oaks, CA: Sage.

Feichin Ted Tschang is Associate Professor of Management in the Lee Kong Chian School of Business, Singapore Management University, Singapore, Singapore. His current research interests include innovative products and industries, new industry formation, and technology policy. He has authored or coauthored numerous papers on innovation in creative industries such as the video game industry, as well as on the industrialization process in new sectors of the developing countries, including those of software and information-technology-enabled services.

Andrea Goldstein was educated at Bocconi, Columbia, and Sussex Universities.

He is currently the Deputy Director of the Heiligendamm Dialogue Process Support Unit, Organisation for Economic Co-operation and Development (OECD), Paris, France, where he was also a Senior Economist at the OECD Directorate for Financial and Enterprise Affairs. His current research interests include regulatory reform in network industries, the political economy of the global aerospace industry, the impact of the emergence of China and India on other developing countries, and multinationals from emerging, transition, and developing countries. He has authored a book: *Multinational Companies From Emerging Economies—Composition, Conceptualization and Direction in the Global Economy* (Palgrave, 2007, paperback edition 2009). He has authored or coauthored more than two-dozen articles in refereed innovation, economics, and development journals. During the past few years, he has authored op-eds on the *Financial Times*, *Helsingin Sanomat*, *Le Monde*, and the *South China Morning Post.*, and has been quoted on the *Deutsche Welle Radio*, the *RAI*, the *Financial Times*, *La Repubblica*, *Il Sole-24 Ore*, the *Economist*, *Newsweek*, and other media outlets.