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Rethinking Migration: On-Line Labor Flows from India to the United States

A. Aneesh

A qualitatively new organization of capital and labor is affecting migration practices in a way unimaginable a decade ago. In an increasingly global economy, information technologies are producing a form of migration that adds a new dimension to what is termed "the international division of labor." This study explores the rapidly growing—but little researched—practice of on-line labor flows from India to the United States. It then compares on-line labor flows to the corresponding physical migration of programmers. This practice, called "body shopping,"[1] involves bringing programmers from India to the United States and arranging work visas for them to work on site there.

While on-line programming implies migration of skills but not bodies, body shopping implies migration of both bodies and skills. By comparing the software engineering projects undertaken on-line with those carried out on site and examining whether information technologies can potentially render the migration of high-tech workers from India to the United States redundant, this study attempts to introduce a new perspective on prevailing immigration debates in the United States regarding high-tech workers. What it explores, in effect, is the changing channels of labor supply.

The majority of labor in the United States is increasingly being converted into information work—especially in service industries that oc-

[1] The term "body shopping" is generally avoided in formal conversation. The more accepted term is "consultancy." I retain the former term because it captures the sense of bodily presence at the site of work.

cupy a large employment space in the economy. This research takes the on-line delivery of work across national borders as its object of analysis and integrates it with immigration issues. A study of this relatively less visible usage of on-line, offshore labor offers a new conceptual hinge to the immigration debates raging in the United States. The debate as to whether the United States as a nation stands to gain or lose from immigrant workers—in terms of economic, fiscal, demographic, or cultural consequences—has been intensifying for some time (Borjas and Freeman 1992; Espenshade and Hempstead 1996; Friedberg and Hunt 1995; Smith and Edmonston 1997). Lately, a large demand and influx of information technology (IT) workers has forced the debate to enter the high-skill domains of employment, as reflected in various media discussions. Although the corporate world has continuously pressed the federal government to relax quotas on labor immigration—arguing a shortage of IT labor, upward wage pressure, and competitive advantage (Gleckman 1998; Moschella 1998)—others fear that such immigration will take high-tech jobs away from native-born Americans and lower their wages (Archey and Matloff 1998; Matloff 1995, 1996).

To illustrate the practical consequences of such debates, the U.S. Congress imposed a quota in 1991 to allow only 65,000 temporary workers to enter the country annually on H–1B visas.[2] The cap was part of a larger scheme to stem the flow of immigrants. In 1997, when the limit of 65,000 was reached before the end of the year, there was heated debate about whether the limit should be raised. These discussions were intensified by employers' increased demand for high-skilled IT labor in a booming information economy. The intensity of the debate is reflected in various bills that were introduced, defeated, revived, passed, and rewritten in exchanges between the House of Representatives, the Senate, and the White House. The final bill that was enacted allowed 115,000 visas to be granted to foreign workers for fiscal years 1999 and 2000. The number of visas would drop slightly in 2001 and then revert to 65,000 in 2002. This American Competitiveness and Workforce Improvement Act of 1998 also required employers to pay a new H–1B worker fee of $500 in order to fund training and educational programs for U.S. workers.

The 115,000 visas allotted for fiscal year 2000 were exhausted in March 2000, however, forcing Congress to pass the American Competitiveness in the Twenty-First Century Act. This Act increased the number of H–1B visas to 195,000 a year for three years. Under this Act,

employers must pay a $1,000 fee for each H–1B application, with the monies used to generate a projected $150 million annually for scholarships for U.S. students. Most H–1B visas go to programmers.

These debates on the future of immigrant IT labor will clearly need to be reformulated. This study demonstrates the inefficacy of border enforcement against on-line IT labor flows even as it confirms enforcement's effectiveness against the flow of bodies (that is, physical migration). Using high-speed datacom links, programmers based in their national territories can work on-line and in real time on computers located anywhere in the world, thus obviating the need for either labor or corporations to undergo the tedious process of physical migration.

This on-line labor practice—after passing through the conventional frames of economics and national bureaucracies—is variously understood as "trade" and "subcontracting," but never as "labor migration," a term that is still reserved for the physical migration of human bodies.[3] Such conventional frames, I argue, constitute the "new" in terms of the "old." With the growth of information technologies and the resulting separation of work performance from the site, we need a different set of frames for understanding what is "labor" and how it "flows." In the context of programming labor, if projects completed on site—by physically bringing programmers from India to the United States—are similar in nature to offshore projects completed on-line, we need to rethink the framing, and thus the constitution, of these practices in terms of "migration" and "trade." Through an inquiry into the above practice, this study integrates the macro questions of transnational capitalism, migration, and the nation-state to the micro practices of software work conducted at the firm level.

This chapter compares practices of on-line and on-site labor (body shopping) in terms of their similarities and differences. It also identifies some core aspects of the relatively new phenomenon of on-line, offshore labor and clarifies how on-line programming works. Rather than limiting the inquiry to *what* is achieved through the new labor practice, *what* the content of work is, or *what* competitive advantages corporations gain by hiring on-line labor, I begin by asking *how* this form of labor functions. This question brings out the contours of a new regime of labor practice, which requires new analytical tools to understand current transformations in work organization and labor migration.

The chapter is organized as follows. I first outline an important dimension that this study may add to the literature on globalization and migration. I then explain the operation of body shopping and on-line labor, arguing that both are part of a single regime that seeks to harness global labor in more flexible ways. I next discuss how on-line labor acts

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[2] The H–1B is a non-immigrant classification used for a foreign worker who is employed temporarily in a specialty occupation. A specialty occupation requires theoretical or practical application of a body of specialized knowledge, along with at least a bachelor's degree or its equivalent.

[3] The term "international telecommuting" could also be used.

as a mechanism for reducing tensions between nation-states and transnational capitalism regarding labor migration.

Globalization and Migration

In some ways, recent debates on globalization corroborate the assertions of Fordist, post-Fordist, and world-systems analyses about the ever-growing incorporation of scattered societies into the capitalist global system. Literature on globalization explains both the unprecedented expansion of transnational corporations (see, for example, Dicken 1992; Kamel 1990) and the increased flow of commodities across national borders (Knox 1995: 6). Transnational corporations, however, share an uneasy relationship with nation-states. As contemporary capitalism, with its transnational corporations, is increasingly able to penetrate the sacred boundaries of nations, the historical primacy of the nation-state as the regulator of the national economy is increasingly undermined (Johnston 1982). The world economy is not merely undergoing a process of internationalization (an intensified networking of *national* economies) but also a process of globalization by supranational powers (Dicken 1992).

Some scholars recognize, however, that the role of nation-states acquires more significance as nations try to enhance their strengths in order to compete globally with other national economies; they act as the source of the skills and technology that underpin competitive advantage (Chesnais 1986: 87; Porter 1990: 19). But most scholarship, in order to illuminate transnational practices, moves away from state-centric models (Keohane and Nye 1973; Sklair 1995) though privileging by default the global over the local.

Faced with fiercer competition and higher wages in the developed world, corporations tend to move their standardized production to capitalize on low-cost labor in less developed countries (Frobel, Heinrichs, and Kreye 1980; Harvey 1989; Lipietz 1986). While cheaper labor may be only one of the factors influencing a corporation's move overseas (Dunning 1980; Elson 1988; Schoenberger 1988), all factors seem eventually to bring corporations, workers, and national states into direct contact with one another.

Although this study views emerging on-line labor as part of the common move in contemporary capitalism to tap globally dispersed labor in a more flexible manner, it departs from the general literature in some important ways. First, on-line labor has very limited direct, face-to-face contact with corporations in the United States. Second, on-line work cannot be understood as truly transnational in character because it takes place within the bounds of nations. For instance, programmers

in India, while indirectly working for U.S. corporations, still carry a single, unambiguous national identity, unlike immigrant programmers who are physically present in the United States. Indian on-line programmers do not go through the agonizing hurdles that immigrant workers face in terms of visa requirements, alien status, nativist reaction, and cultural opposition (Cornelius et al. 1994). Third, programmers based in India are also governed by local practices of employment, taxation, and labor regulations. Yet, like other immigrant workers, they do break national barriers by directly occupying some employment space in concerned sectors of the United States. In short, they migrate without migrating, a phenomenon I call "virtual migration." The concept of virtual migration recognizes that the programmer in India can access and implement changes on a computer in the United States. Such invisible and disembodied processes of labor supply may add a new dimension to the literature on labor migration.

The migration literature consists of macro perspectives that stress immigrant labor's structural causes and functions for developed nations (Boyd 1989; Burawoy 1976; Castells 1975; Pedraza-Bailey 1990; Portes 1978) through the articulation of the international system (Portes and Böröcz 1989), as well as micro perspectives, such as Everette Lee's seminal "push" and "pull" theory of migration (Grasmuck and Pessar 1991; Lee 1966). Yet, with the growth of information technologies, there are new empirical and theoretical challenges facing immigration research.

Recent technological advances have generated a curious phenomenon—the textualization of work (Zuboff 1988). In other words, work is mostly symbolic manipulation on the screen through software systems. The resulting dematerialization of work, which can now be textually controlled through software, reduces the need for the on-site presence of the body to perform the work. This research stresses the need to acknowledge the invisible, disembodied migration of labor, comparing it with well-documented processes of physical migration. Economic migration can no longer be seen only in terms of physical human movement. Some recent suggestions for a sociology of borders and flows (Böröcz 1997) provide new theoretical axes for a unified analysis of social flows—including capital, labor, bodies, commodities, cultural patterns, and information. Developing such perspectives may offer important analytical tools to compare embodied and disembodied labor flows across national borders.

We may also draw upon Sassen's (1997) recent attempt to bring the issues of a global economic regime, the national state, and migration together. Sassen challenges two prevalent assumptions: first, that whatever the global economy gains, the national state loses, and vice-versa; and, second, if an event (such as a business transaction) takes place in a

national territory, it is a national event. Thus the global economy is not a phenomenon divorced from national states, and the national event is not merely "national." Offshore, on-line labor practice is a case that fits perfectly into this hybridity of the national and the global.

It is necessary at this point to briefly describe the field research that informs this study.[4] To gain grounded, contextualized, and ethnographic information about on-line labor practice, I conducted formal and informal, semi-structured and open-ended in-depth interviews with programmers, as well as with high-level management executives, at many software firms in India and in the United States. In the first phase of research, the target group consisted of programmers and project managers in and around New Delhi. During the second phase, programmers and business executives were interviewed in New Jersey and surrounding areas. One of the important reasons for selecting New Jersey as a site of study relates to the presence there of many large high-tech corporations and smaller companies that employ large numbers of Indian programmers. Most of the programmers interviewed in the United States immigrated through the practice of body shopping. In the last phase of the research, I interviewed mostly high-level executives—chief executive officers, managing directors, and vice presidents—of small, midsize, and large software firms based in New Delhi, Gurgaon, and Noida (India). Software development sites, corporate centers, and work processes were observed during all phases of the research. In India, firms included Tata Consultancy Services (TCS), Netacross, HCL, LogicSoft, and Softek, as well as some U.S. subsidiaries like Microsoft, Adobe, Metamore, and iDLX, among others. Data collected include annual reports of the National Association of Software and Service Companies (henceforth, Nasscom), reports regarding the information technology task force of the Government of India, and the Information Technology Bill presented in India's Parliament.

The study included 50 formal interviews (35 in India and 15 in the United States) and a similar number of informal conversations with software professionals and executives in India and the United States. For extended interviews, programmers were selected through snowball sampling and higher-level executives were selected by contacting all the firms located in Delhi, Noida, and Gurgaon that are listed in Nasscom's directory of software firms. The response rate of higher-level executives was about 25 percent. I conducted interviews in both Hindi and English.

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[4] Fieldwork was conducted over an eighteen-month period in 1999 and 2000.

Bringing the Body to the Work Site: Body Shopping and On-Site Labor

Our understanding of labor migration is generally situated within the framework of "body migration," a legacy of the times when labor could not move without the body. At the beginning of the twenty-first century, the continuous revolutionizing of the instruments of production has enabled the creation of a new labor regime whereby labor can move and migrate without the laborer's body. This is not to say that earlier ways of doing work are going to suddenly vanish without a trace. Just as the theater did not disappear with the appearance of the cinema, virtual labor will not *entirely* replace on-site labor. At the beginning of the year 2000, people hired through body shopping still outnumbered people providing their labor on-line from India. Their proportion, though, is gradually declining. Let us look at what body shopping is and how it functions. One of my informants in India explained body shopping as follows:

> Body shopping is essentially when people are sitting in some kind of recruitment shops in India.... They're really sending out our talented people.... They do not enter into any kind of service contract but only into contract for providing people on a temporary basis. So while those people continue to work for their local company, they're deploying their services for an overseas customer, for a foreign customer on site.

Another informant explained it as follows:

> You can say, these are like headhunters.... They can get you an interview for all these big companies. If they need a full-time employee, they can place you there. You work for them...[but] you do exactly the same thing.

Body shopping has a negative connotation, as reflected in the preceding statements. There are two modes in which business and software executives in India talk about body shopping. First, companies in India that do not engage in body shopping tend to deny having anything to do with it; they consider it an inferior, though lucrative, business practice. They emphasize the fact that they are into real services (like developing software systems for various clients) and carefully avoid this sham—that is, merely placing software professionals with corporations in the United States. Most of the large software firms in India developed initially through body shopping; the second reaction to the practice involves how companies that engage in body shopping

couch their practices in euphemisms such as "consultancy." Body shopping is characterized by four key features:

- Just-in-time labor.
- High-earning but low-cost labor.
- Universal, as opposed to specific, labor.
- System-level labor.

Just-in-Time Labor

Body shopping demonstrates with extraordinary clarity what "flexible" forms of post-industrial labor entail. This form of labor is analogous to the application of the just-in-time (JIT) techniques developed by several Japanese firms in the 1970s for inventory management. This new system drastically reduced large inventories and associated overhead costs throughout the entire production system by relying on the careful scheduling of small, accurate delivery of parts and supplies to be made by vendors *just in time*. As with a large inventory, keeping a large permanent workforce without regard to the seasonal highs and lows of the business cycle is a costly practice, which body shopping attempts to address. By supplying software professionals on time and only for the length of time needed, body shopping firms help companies avoid the cost of keeping a large workforce on a permanent basis. One informant, who works for a U.S. investment and banking company through a body shopping firm, explains it in the following terms:

> This company doesn't have to hire an employee. They don't have to pay for my insurance. And they can fire me. I'm not a liability for them. But in return, they have to pay more money.... The other thing is, if they hired a full-time employee, they will have to train him [or her].

High-Earning but Low-Cost Labor

The preceding statement resolves the apparent paradox of better-paid low-cost labor. Although contractual workers placed with different companies by their parent body-shopping firms may be earning more in the short term, they are still low-cost labor from a long-term perspective. Although annual contracts fetch these temporary workers higher incomes than the annual salaries of regular employees in similar positions, they allow the receiving company to trim its workforce, take these temporary workers into service only in times of need, and

economize on long-term benefits (such as retirement contributions and health insurance) that are required for permanent employees.

Universal, as Opposed to Specific, Labor

Another characteristic of just-in-time software labor is its universality. Unlike specific forms of labor, such as a surgeon's skill or a civil engineer's expertise, software professionals are not limited to any specific form of organization or industry. Software is fast becoming the medium and language of all work. Whether the task is to control heavy machines or track banking operations, software professionals lend their labor and expertise to an unprecedented diversity of businesses. This explains the phenomenal growth of body shopping in the software industry. In light of the more universal application of their work, programmers can be quickly deployed, transferred, and redeployed to different firms.

System-Level Labor

The universality of programming is not like the universality of secretarial work. Unlike secretaries, software professionals are system-level workers—that is, they can potentially transform how organizations function from within. As programmers, they not only help translate the previous work setup into a digital format (e.g., converting a face-to-face banking system into on-line banking), they also help transform—in their capacity as systems analysts—some fundamental aspects of how an organization functions. They reconfigure various departments and hierarchies through Enterprise Resource Planning (ERP) systems. Using ERP systems, software professionals can chalk out a new work flow, identify redundancies and duplication, and mechanize the whole work process from the design stage to the shop floor.
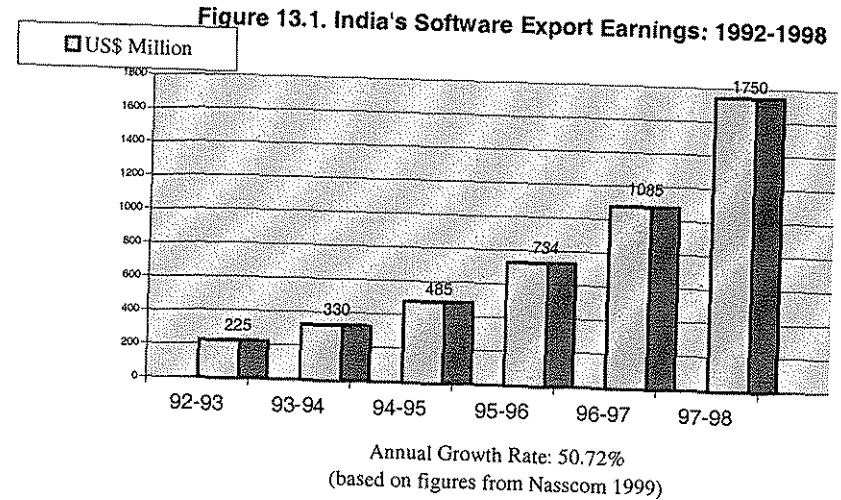
Surprisingly, body shopping is not flexible enough for the emerging labor paradigm because it still involves actual border crossing and authorization by the nation-state. On-line labor emerges as an even more flexible alternative for labor movement from India to the United States, bypassing immigration controls by confining the laboring body to the geographical jurisdiction of the home state. This virtual flow of labor provides a unique vantage point from which to explore relationships between transnational capitalism, the nation-state, and labor migration.

On-Line Labor: India and the United States

Although the Indian software industry is more than twenty years old, only in the last decade did the industry take off, and only in the last five to eight years has India become a global player. These were also the years of the emergence of on-line labor. There are three basic features of on-line, offshore software engineering: (1) programmers in India are connected to clients' machines in the United States through 64 Kbps and higher satellite links and Internet/e-mail; (2) when the situation demands, the client is able to continuously monitor progress, implement quality checks, and communicate with the programmers and analysts, as if they were on site; (3) because the United States and India have an average 12–hour time difference, the client enjoys—for certain software projects—virtual round-the-clock office hours. Although some Indian companies are moving up the value chain, these on-line projects specialize not in packaged products but in re-engineering projects and high-skilled services, chiefly providing high-skilled information labor to companies around the world.

There is an ever-growing number of companies in India that organize programmers to provide on-line software labor to corporations in the United States and other countries. By December 1998, more than 109 Indian software firms had acquired international quality certification (Nasscom 1999). Some well-known U.S. firms that are on the client lists of these Indian firms are Intel, Merrill Lynch, AT&T, and IBM. According to the *Economist* (1996: 32), "More than 100 of America's top 500 firms buy software services from firms in India, where programmers are typically paid less than a quarter of the American rate." By 1998, Indian software providers had already captured an 18.5 percent market share in global cross-country customized software work, and the Indian IT sector has consistently achieved more than a 50 percent compounded annual growth rate since 1991 (Nasscom 1999), as portrayed in figure 13.1.

The reason for discussing the Indian software industry in the context of on-line labor relates to the fact that the U.S. market for Indian industry is very small compared to its offshore market, which offers major on-line contracts for Indian firms. This offshore market is expected to assume even greater proportions. Earnings from software exports are projected to gross $9 billion by 2001–2002, and the National Task Force on Information Technology—a support arm of the Indian government—has set a target of $50 billion in exports by 2008 (Nasscom 1999). It must be noted that these U.S. dollar earnings assume even greater purchasing power when converted to Indian rupees.

Figure 13.1. India's Software Export Earnings: 1992-1998

Annual Growth Rate: 50.72%
(based on figures from Nasscom 1999)

The software relationship between India and the United States is particularly significant. Just as India is becoming the largest supplier of software labor to the United States in terms of both body shopping and on-line labor, the United States has turned out to be the largest source of software earnings for India, as shown in figure 13.2.

Figure 13.2. Indian Software Earnings from Different Destinations 1997-98
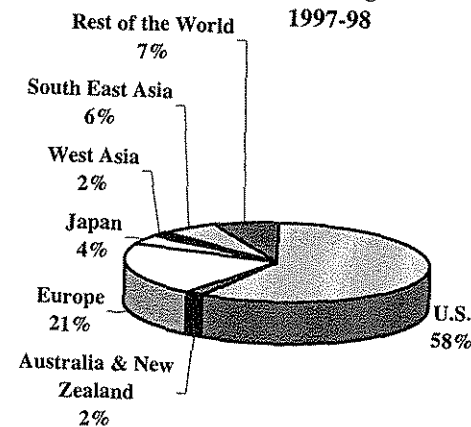
Source: Nasscom 1999.

The mutually important U.S.–India relationship is reflected in the following statement by a spokesperson for the National Association of Software and Service Companies (NASSCOM):

> We can't deny the fact that the United States is a major market for our software industry. In fact ... nearly 64 percent of the total software exports for the year 1999 we expect will be derived from the U.S. market alone. So we can't deny the fact that it's the largest market in the world. It continues to be a major driver in terms of innovation and new technologies, and dictating, I would say, new standards for the global IT industry. Over a period of time the, Indian software talent pool has been really able to achieve a certain recognition in the U.S. IT industry. If Indian software engineers were to go back home, the U.S. IT industry would collapse the next morning.

This informant also acknowledged the lobbying efforts that Nasscom carries out in the United States to promote its transnational interests, highlighting a restive relationship between global capitalism and national states:

> We have been working rather actively ... in the United States. In fact, on the recent H–1B amendment that announced an increase of 50,000 for the new quota for the H–1B visas, starting on October 1 and lasting through September 30, 1999, we feel we acted as a major catalyst in driving that.... Even before that [we had been] lobbying on Capitol Hill on various issues like Social Security, taxes, and so on, because we feel various kinds of taxes and various kinds of demands that are put forth by the revenue service department of the U.S. government are basically tantamount to double taxation on allowances given to the software engineers working in the United States.[5]

This lobbying exemplifies an increasingly uneasy relationship between transnational capitalism and national bureaucracies regarding the status and flow of workers. This troubled relationship also expresses itself in the constant tug of war between corporations and Congress. While U.S. corporations have been demanding an unhindered inflow of foreign labor and fewer restrictions on their moving overseas, Congress is always inclined to intensify border patrols, erect border

fences, impose restrictions on immigration (for reasons that are both cultural and economic), and control the activities of U.S. corporations abroad. Similarly, in the case of the Indian state, emigration of skilled labor has been a constant source of debate, and the consequences of the "brain drain" for the domestic economy have always been a matter of concern. The feared hegemony of multinational corporations has been resisted continuously since independence, reflected, for example, in the expulsion of Coca-Cola in 1977 and in the temporary cancellation of contracts with Enron Corporation in 1996.

The Nation-State, Transnational Capitalism, and On-Line Labor Flows

Transnational capitalism and the nation-state seem, however, to have negotiated a truce in the electronic space of on-line labor flows, which both allows unhampered movement of labor and skills and prevents alien cultural bodies from crossing national spaces. Increased globalization seems at once to also be a process of increasing localization. The software firms are able to provide real labor at a global level, yet both workers in India and corporations in the United States remain on their national turf.

The question remains, why should we describe on-line practices in terms of labor flows and not as movements of goods and services? Although the classification of on-line labor flows as exports and imports—owing to national bureaucratic mechanisms—is understandable, I perceive three main reasons why on-line practices are basically a technique for supplying labor. First, unlike other regular imports, on-line labor flows do not come under any import regime, given that there are no taxes or tariffs imposed by the U.S. government on them and no mechanisms to monitor billions of software lines whizzing across national borders at tremendously fast speeds. Second, Indian software companies rarely specialize in tradable products and packages. They are mostly suppliers of high-skilled information labor, either through body shopping or through virtual migration. The labor supplied through body shopping and on-line practices makes up 91.2 percent of the total earnings of these firms from foreign sources, while software products and packages constitute only 8.8 percent (Nasscom 1999). Third, there is not much discernible difference between on-site and on-line labor engagements. In fact, the decline in on-site engagements is directly linked to the rise of offshore engagements, bringing these practices together as two alternate forms of labor supply. Many informants alluded to a gradual shift from body shopping to offshore project development, especially with the rise of fast and reliable communica-

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5 The informant is referring to software professionals who come to the United States to work on site.

tion links. The Nasscom annual review connects visa restrictions with the accelerated growth of on-line off-loading of work:

> With the proliferation of Software Technology Parks, service of high speed datacom provided by VSNL,[6] liberalized economic policy, unnatural visa restrictions by the U.S. and some Western European countries, the component of off-shore development is expected to increase further.
>
> The degree of on-site development is still very high ... but it is expected to decrease further in the coming years with improved data communication links. In 1988, the percentage of on-site development [through body shopping] was almost as high as 90% [it dropped to 59 percent in 1998] (Nasscom 1999: 18).

When asked why on-site services have not completely given way to on-line services, a vice president of a software company in New Delhi replied: "because the management [in U.S. corporations] is often lazy in providing complete systems specifications." However, upon further research, many other factors regarding the need for at least a limited on-site presence emerged, including the time-zone difference, which both facilitates and hampers the reach and access of on-line labor. A more detailed description of on-line, offshore labor practices will further clarify the argument. One major software company in Bombay, which also has a small unit in the United States, provides 24–hour information systems management for insurance-claims processing to the American International Group, Inc. (AIG). One of the informants—who moved briefly from Bombay to North Carolina while working for the company—described this software work as follows:

> The Bombay team can directly access the client's mainframe. Usually what we have is a maintenance project, and we support AIG's insurance business for 24 hours.... There are different groups in AIG, and [we] support most of them.... So suppose someone is claiming [insurance] money from AIG due to some accident. He would go to AIG agents, [who] would enter the data on CICS [Customer Information Control System] screens, [inputs] like where this accident happened, what's the cause, and other details of the accident. And when this information is entered on CICS screens and daytime is over in the USA, that information is captured and written to a file, which is the input for our nightly batch

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[6] "VSNL" stands for Videsh Sanchar Nigam Limited, an autonomous governmental agency providing communications-related services at commercial rates.

processing. So at 10:00 [p.m.] here, which will be around 8:30 a.m. in Bombay, our daily batch cycles run. What it will do is, the claims that are entered in the day [in the United States by AIG staff], whatever information is changed—like claim name is changed, address is changed, and other stuff—all this information will be processed in the nightly batch cycle in Bombay. We actually have about 60 jobs running one after the other, which update the table information [in] VB2 [Visual Basic 2] tables.

Time-zone difference was both an asset and a problem in this case. It was an asset because by the time the work day is over in the United States, software workers in India can start working on the back-end tasks during their daytime. When the CICS system is not in use in the United States, Indian workers can provide solutions and complete them on-line. When the U.S.–based AIG office opens in the morning, a lot of back-end work has already been completed, allowing a virtual 24–hour office for the U.S. client. However, the time difference could also be a problem if the team in India fails to finish all the tasks during their work day:

> Some of the files, which we [the Bombay team and U.S. team] use, are common ... so unless and until these files are closed, we cannot start our cycles. So the CICS has to be down [before the Bombay team can start working]. Around 10:00 p.m. [U.S. eastern time] the CICS is down, no information can be entered after that, so our batch cycle [in Bombay] can run. And if the batch cycle is not successfully finished within a certain time, or if it gets delayed due to some reason, then there will be a problem because these people [in the United States] won't be able to enter the information [in the morning]. So it's very critical to resolve everything [before they open their office in the United States].

As another example of on-line labor support, one of the programmers cited an instance when they supported Citibank operations:

> Citibank had [changed] all their retail business; there were a lot of changes required in the programs already existing, like day-to-day maintenance.... There are always hundreds and hundreds of changes that are needed. One way is that they have their own people do it. The other way is how the work in their bank in Japan was done.... There was a team of 3 to 4 people working in India, and there was a project manager on site. I was the project manager. I would take work from the Japanese managers and I would send it offshore to India,

and the Indian people will be working on their machines in a different environment. So any changes, any production problems, anything will immediately come to the people who were in India.

Describing the advantages of a 24–hour time zone for software support to the companies in the United States, he said:

> Basically it's night in the United States and early morning here. In the [daytime] here, there are a lot of things developed and given to them, and in the morning there, it's already there for them to test it, implement it. At the end of their day, they just have to [compile] their problems and the changes they want us to do, and we can fix them in our normal working hours, fix them just in time, and it will be there next morning when they come to their office.

However, when there are glitches, the time-zone difference hampers instant communication with the client to resolve some of the problems. This is the reason that some Indian software companies establish a small unit in the United States for physical and temporal proximity. At times, some companies open a branch in the same time zone but outside the United States, as in the Caribbean, to avoid higher wage costs. As one informant, who joined J. P. Morgan through body shopping to work on site, described:

> J. P. Morgan had people work in India on projects. But ... the time lag [was a problem]. They are sleeping and you are working, and you cannot really talk to them at the same time. [The work was done] through a [software] consulting company ... [that] hired people in India and gave them some work; they worked there and sent back code. But it didn't work. So instead, what the consulting company came up with was that they moved them to Barbados.

In addition to the constant support for information systems, Indian software companies also work on independent software projects by cloning the client's systems environment—a unique feature of information technologies—and then redesigning and re-engineering the system. Such clients include banks, airline companies, and manufacturing companies. As one of the software professionals in Noida, India, mentioned:

> We support your daily requirements for banking applications—like daily branch opening, your account handling, your money transfers, everything, the routine tasks for

which there's a need to build the software. It's very routine because most rules are documented. You just have to implement those business rules into software programs.

Some of the projects involve a limited on-site presence of Indian software professionals who are flown to the United States for a brief period to develop an initial understanding of what exactly the client wants, given that it is not always possible for the client to come up with complete project specifications and communicate them on-line. Similarly, at the end of the project, despite the on-line delivery of completed software projects, senior software engineers fly to the United States to see to the successful implementation of their projects. One of the project managers in New Delhi described how they helped Gap develop a new information system to track their orders to vendors:

> All Gap clothes are produced in the Third World—Latin America, India, Bangladesh, and all these countries. They have vendors in all these places, so purchase orders are created between these vendors and Gap. You want to purchase so many goods of a certain style and cut, of a certain size, and this order is sent out to these vendors. So the process of automation is purchase-order creation, and then getting the goods back and things like that. We were involved in the development activity. The Gap had given us a complete project. We cloned their environment on our own mainframe. We developed the project, we developed the complete software, and then I was in the United States implementing it and making changes.

The option of environment cloning, constant on-line monitoring across continents, and on-line shipping of programming work makes possible a new global labor regime that increasingly competes with the practice of shipping people—body shopping—across national boundaries. Physical immigration is not likely to end, especially for manual laborers needed to work in agriculture, restaurants, and construction, but it does seem to have a limited future in the high-tech sector, considering the continuing growth in offshore software development thanks to faster communication links.

Conclusion

Since the 1980s, information technologies have triggered extensive transformations in production and work. These changes not only influence how work is organized within national boundaries, but they also

have global ramifications. On-line virtual labor across national spaces provides a new angle to explore this global shift, and it informs debates that transcend the site and nature of this specific work practice. With no ready grasp of the practice, on-line labor is too easily inserted into old schema and modes of understanding. It is ascribed either to the trade schema of "export/import" or to the organizational schema of "subcontracting" and "out-sourcing," missing the complex interconnections of new practices with a multiplicity of processes, such as labor migration and mechanisms of national bureaucracies.

The metamorphosis of work into something that can be performed at a distance and delivered on-line is structurally dependent on distinctive features of information technologies. Using this understanding of the new technologies, this chapter has sought to free discussions of labor migration from the confines of the body. This enables us to see how globalizing forces can potentially produce localizing effects by helping to restrict laboring populations to their national territory.

With newly gained flexibility in labor supply, contemporary capitalism seems to have resolved two major problems. First, corporations can, to a degree, avoid confrontation with the nation-state on the issue of alien immigration because they can harness foreign labor on-line, bypassing the nationalist politics of culture. In contrast to physical migration—which requires tolerance of cultural differences, education for migrants' children, possible long-term settlement, and social services from the affluent society—virtual labor flows do not require alien humans to join the nation. Second, the invisibility of virtual labor helps U.S. corporations avoid somewhat the possible charge of preferring immigrants to citizens in terms of employment and job creation for the society in general.

Future research might examine how the constant revolution in the instruments of production may necessitate a reconfiguration of existing relationships among states, corporate management, and the global workforce.

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PART 6

CONCLUSION

CONTRIBUTORS

Rafael Alarcón
A. Aneesh
Robert L. Bach
Monica Boyd
Paula Chakravartty
Wayne A. Cornelius
Thomas J. Espenshade
Jessica C. Gurcak
Mahmood Iqbal
Magnus Lofstrom
B. Lindsay Lowell
Martha Paskoff
Marc Rosenblum
AnnaLee Saxenian
Aaron Sparrow
Margaret L. Usdansky
Christian Zlolniski

The International Migration of the Highly Skilled

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edited by

Wayne A. Cornelius
Thomas J. Espenshade
Idean Salehyan