Cultural Dynamics

http://cdy.sagepub.com/

Published by:
$SAGE

http://www.sagepublications.com

Additional services and information for *Cultural Dynamics* can be found at:

Email Alerts: http://cdy.sagepub.com/cgi/alerts

Subscriptions: http://cdy.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations: http://cdy.sagepub.com/content/12/1/5.refs.html

THE CODES OF MIGRATION

Contours of the Global Software Labor Market

ALI MIR

Indiana-Purdue University

BIJU MATHEW

Rider University

RAZA MIR

Monmouth University

◇

─────────── ABSTRACT ───────────

This paper presents a case study of the software industry in India and the US as a step toward an ethnography of transnational migration. By focusing on the subject positions and forms of work created by the new international division of labor, contemporary theories of global culture and difference are brought into question through a political economy of globalization. The analysis suggests that the phenomena of postnational deterritorialization may be less important than the emerging forms of labor polarization within and across nation-states.

Key Words ◇ globalization ◇ international division of labor ◇ migration ◇ software

September 1999. Meet four people in their late twenties, all from the south Indian state of Andhra Pradesh. Krishnamohan's hometown, the city of Hyderabad, has a new sobriquet. These days, it likes to call itself Cyberabad in order to flaunt its increasing importance in the informational economy. Over the years, it has wrested the title of India's Silicon Valley from Bangalore, making headlines in August 1998 when it won the right to host the Microsoft Corporation's second overseas development facility ever (the first in Haifa, Israel was opened in 1991). Krishnamohan manages a project for the Microsoft India Development Center, which occupies the ninth floor of the ten-storey state-of-the-art building in the largest

'technopark' in Asia. The infrastructure provided to Microsoft (and others) at the expense of the Indian taxpayers includes a satellite earth station, 3000 direct lines, high-speed fiber optic connectivity to the internet, and an integrated services data network. There is even a dedicated power plant that protects the tenants from inconvenient power outages. Other amenities include air conditioning, a dust-free environment, a post office, a bank, a shopping mall, executive residences, medical care, and a clubhouse. The government has even set up an Indian Institute of Information Technology to provide the skilled programmers needed by Microsoft and other occupants of the Hi-Tec City (an acronym whose search for a name resulted in 'Hyderabad Information Technology Engineering Consultancy City!').

K. Subbalakshmi too works with computers, but her labor is not the kind that one ordinarily associates with high technology. She is part of the labor force of the latest brand of entrepreneurship that has mushroomed in Hyderabad, as it has in Bangalore—the business of medical transcription. Transcription services, which have been increasingly outsourced by HMOs and other health providers over the last few years, have now wound their way from secretarial pools in the US to the cities of India. Doctors from New York to New Mexico record their reports in a sound file, which is then e-mailed to the transcription service or pasted on a web site or FTP server. The transcription service downloads the file, has it transcribed, and returns it electronically as a text document. The turnaround time is as little as four hours; the cost a fraction of that in the US. Subbalakshmi and her co-workers are not native English speakers. For the most part, their familiarity with the language is limited. So the accuracy of their work is ensured through labor-intensive means. Each part of the file that Subbalakshmi transcribes is retranscribed by three others. Their output is then correlated to get the final report, which is checked by an 'American Trained Quality Controller' before being sent back to the client. Often, Subbalakshmi and her fellow transcribers are made to watch the popular medical drama *ER* on video. This is part of their training that supposedly teaches them to understand both the technical jargon of the medical profession and the unfamiliar accents of the voices on the file.

Sunil Roberts has an undergraduate degree in electrical engineering from the Indian Institute of Technology at Bombay and a master's in computer science from New York University. He currently works for Lucent Technologies at Whippany, NJ, as a telecommunications firmware engineer architecting and prototyping wireless communications infrastructure. Lucent is his first employer in the US and Sunil works for the corporation under the provisions of the H1-B visa. The company lawyers at Lucent are handling his paperwork and he expects to get a green card in three years. He lives in Morristown, a cosmopolitan suburb with a small Indian population, most of them employed by high-tech firms.

About 30 miles away, Appa Rao shares a two-bedroom apartment in

Queens with three of his Indian co-workers. Appa Rao is in the US on an H1-B visa too. But his only formal training in computers has been a set of classes he took at a computer-training institute in his small town over two years. Appa Rao is one of several thousand people who are 'bodyshopped' every year to come to the US to work on specific computer projects. His employer loans him out to other organizations that need his skills on a project. Appa Rao has been working for the past three months at the head-quarters of a wholesaler. He has been developing a simple user-interface with Visual Basic for a front-end application on a Windows NT platform. Currently, he is 'on the bench' (industry argot for being in-between pro-jects, an unproductive time for both the programmers and their employers), waiting to be sent to Cincinnati to join a team that has been working on translating millions of lines of code to make the computer system of a large bank Y2K compliant.

These four vignettes are linked to each other in some interesting ways. All are stories of border crossings of some sort. In them, global capital, multina-tional corporations, skilled work, unskilled work, skilled labor, unskilled labor, and cultural forms traverse nation-state boundaries with some ease. Further, all the stories are intimately linked with the new forms of telecom-munications and information technology that are transforming the nature of work in contemporary times. Capital, labor, and technology are complicit in producing what is now popularly referred to as globalization.

One of the most articulate theorists of globalization is Arjun Appadurai. In his important essay, 'Disjuncture and Difference in the Global Cultural Economy' Appadurai (1996) outlines five different schemas for under-standing global heterogeneity: ethnoscapes, mediascapes, technoscapes, financescapes, and ideoscapes. The suffix 'scape', according to Appadurai, 'indicates that these are not objectively given relations that work the same from every angle of vision', but are rather 'deeply perspectival constructs, inflected by the historical, linguistic, and political situatedness of different sorts of actors' (Appadurai, 1996: 33). While others have understood medi-ascapes, technoscapes, and financescapes to be primarily a shorthand for describing abstract processes or transformations that impact upon people, Appadurai makes it clear that individuals are the fulcrum points for under-standing the operation of these landscapes. 'Indeed, the individual actor is the last locus of this perspectival set of landscapes for these landscapes are eventually navigated by agents who both experience and constitute larger formations, in part from their own sense of what these landscapes offer' (1996: 33). In other words, the migrant or transmigrant occupies not only the space of the ethnoscape, where Appadurai originally locates them, but the space of the mediascape, technoscape, financescape and ideoscape as well. In our view, an 'ethnography of transnational migration' (Schiller et al., 1995) must attempt to understand how the processes of globalization both determine and reflect life-stories of those who constitute its subjects.

In focusing on the production of particular kinds of migrant subjects through the technoscape or financescape, however, we question whether the relationship between the landscapes Appadurai outlines is as disjunctive (1996: 33–5) as he claims. Taking our cue from Kenneth Surin's assertion that there are worthwhile 'connections to be made between what is called globalization and global development and the current configurations of the capitalist world system' (1995: 1182), we argue that an understanding of the 'new world division of labor' shows the landscapes of globalization to be highly conjunctive, rather than disjunctive.

As Appadurai sets out to offer a new anthropology of a globalized world, disjunctiveness of globalized flows seems to be both cause and consequence of deterritorialization. The trajectory that is set into motion by this deterritorialization is one that in the final analysis will render the nation-state obsolete: the approach is 'explicitly transnational—even postnational... As such it moves dramatically away from the architecture of classical modernization theory, which one might call fundamentally realist, insofar as it assumes the salience, both methodological and ethical, of the nation-state' (Appadurai, 1996: 9). For Appadurai, the term 'postnational' has three implications:

(1) It suggests the movement towards a global order where the nation-state becomes obsolete and other formations for allegiance and identity take its place.
(2) It indicates the emergence of forms that provide alternatives for the organization of global traffic in resources, images, and ideas.
(3) It points to the eroding loyalty of citizens to the nation-state and the concomitant deterritorialization of national forms (1996: 169).

Examining the emergence of certain forms of organization, Appadurai further claims that 'we are looking at the birth of a variety of complex, postnational social formations. These formations are now organized around principles of finance, recruitment, coordination, and reproduction that are fundamentally postnational, and not just multinational or international' (1996: 167). Appadurai is right when he asserts that agencies such as those associated with the United Nations as well as others such as Amnesty International monitor the activities of the nation-state on a number of issues. Nation-states become accountable to these agencies for their positions on refugees, human rights, famine relief, tariffs, international health and labor practices (1996: 168). In addition, NGOs, organizations that grow out of a sense of the limited capability of national governments, operate in areas ranging from technology to the environment, to health, and to arts. Further, religious organizations command primary loyalties by offering services that alleviate suffering across national boundaries. To these organizations that Appadurai claims are 'both the instances and incubators of a postnational global order', one can surely add others such as the

International Monetary Fund (IMF), the World Bank, the World Trade Organization (WTO), and a host of other prominent and hidden institutions that monitor the performance of nation-states, influence their policies, and contribute towards making their boundaries porous to the entry and egress of global capital.

But do the preponderance of electronic media, the evidence of labor migration, and the presence of organizations such as the IMF and WTO indicate the arrival of a postnational global order? How can we explain the four vignettes narrated at the beginning of this paper in the light of this theory? At first blush, Appadurai's thesis appears to be a sound one. The four stories seem to lend support to the concept of a deterritorialized, postnational global order. Capital moves across nation-state boundaries with impunity, labor a little circumspectly, and culture with wild abandon. Microsoft and other similar corporations set up their operations where it suits them most. Work also flows down this slope through contracts such as the ones represented by the medical transcription business. Our stories reflect the mobility of labor as well. Sunil Roberts, the Lucent engineer, and Appa Rao, the Y2K programmer, live in the US. Krishnamohan, the Microsoft employee at Hyderabad, works for an American corporation, uses American know-how, performs for American clients, and possibly entertains the realistic prospect of moving to America. Even though Subbalakshmi, the transcriber, cannot contemplate the thought of relocating to the US, she too is embedded in the global economy in a number of different ways. For all four of them, the nation-state plays an insignificant role as a mediator between their labor and global capital (what is more, all four of them probably watch *ER*!).

Through these stories of the high-tech world, we seek to examine the phenomenon of globalization in the relatively narrow terrain of the Information Technology sector. We do this in order to engage with cultural theories of globalization through an understanding of the political economy of globalization in general, and the high-tech industry in particular. Such a grounded engagement, we hope, will point to the limits of current theorizations of global culture and outline some trajectories of alternative theorizing in its wake. To do this, we first offer a brief history of the emergence of the global political economy. We try to highlight the changing role of the nation-state through a quick history of the structural changes that emerged in the period following the Second World War and the role of the institutional apparatus in the integration of the global economy. We then examine the political economy of the software production industry, in the context of its capital structures and in terms of its labor market. We focus on the ways in which the high-tech industry has worked in relation to the nation-state and moved 'beyond' it. These two histories, of the general and the particular, we hope, will enable the final discussion of the division of labor as it is reflected in the nation-state. As a case study,

we will focus our attention on the nature of capital/labor mobility between India and the US.

While we do not examine other migratory groups, we could attempt to make sense of the experiences of the Vietnamese piece-workers in the Silicon Valley hardware industry; the South Asian, Haitian, and Central American cab-drivers in New York City and Chicago; the Chinese garment workers in Philadelphia and San Francisco; the Caribbean, Filipina, and Sri Lankan domestic servants in the cities of North America. For the moment, we wish to point out the obvious: that migratory experiences tend to differ enormously from one another. We have chosen to limit the terrain of our inquiry in two ways; (1) by examining the software industry and (2) by looking at the movement of capital and labor in this industry between India and the US in order to highlight the fact that the differences can be globally patterned even within the same narrow (national) terrain.

The Globalization of Finance Capital

The image of the new globalized world is one where trillions of dollars cross national boundaries each day chasing ephemeral profits. Transactions in international securities and foreign currencies result in the exchange of huge amounts of money from bank to bank and from country to country at the whimsical click of a mouse button. Markets for government bonds, shares, and futures have merged, as have the separate legislations that once governed them. In this interlinked world, actions in one part of the global economy have a cascading effect on every other part. And the nation-states are no longer calling the shots. Governments can often only watch as the speculative actions of unbridled fund managers cause a disastrous fall in the exchange rates of their currency (as happened in 1992 when the billions guided by George Soros caused the devaluation of both the British pound and the Italian lira). National policies are controlled in covert fashions by private financial institutions and investor service agencies which determine the financial rating of the nation-states, and hence their cost of capital. Every IMF loan of the last decade has come accompanied by conditions that include the convertibility of the borrowing country's currency and the opening up of its borders to the flow of foreign capital. Global capital has acquired a cavalier attitude towards the increasingly irrelevant boundaries of the nation-state.

The story of the globalization of finance capital can be told simply. The victors of the Second World War met at the UN Monetary and Financial Conference held in 1944 at Bretton Woods, New Hampshire, to work out the specifics of the new international monetary order. The result was the establishment of the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development, which later

became simply, the World Bank. The division of labor between the two was as follows. The IMF offered short-term finance to member countries to help them with serious balance of payment deficits while the Bank provided medium- and long-term loans for specific projects in the poorer countries.

The Bretton Woods Agreement also linked the value of the currencies of all participating countries to the US dollar. The system, which included restrictions on the exchange and transfer of large amounts of money, worked for the US and its allies during the so-called Golden Age of Capitalism in the 1950s and the 1960s. By the end of the 1960s, industries and banks were chafing at the bit, demanding the relaxation of controls on the movement of capital. In a series of moves, one triggered by the other, the industrialized countries relaxed their hold on capital mobility—the US, West Germany, Canada, and Switzerland in 1970; Britain in 1979; Japan in 1980; France and Italy in 1990; and finally, Spain and Portugal in 1992—largely freeing it up from legislative constraints.

In the meantime, the IMF was working at breaking down the resistance of the rest of the world to the unfettered mobility of global capital. As country after country fell into the 'debt trap' (Payer, 1974), the IMF stepped in with its aid package that demanded a profound restructuring of the economy in return for the bailout loan. The structural adjustment policies proposed by the IMF typically involved the reduction of government spending; the imposition of financial austerity; the adjustment of the exchange rate, typically by devaluing the currency; and the privatization of the public sector, especially its most profitable companies, and its opening up to bidding by foreign capital. The idea behind all these measures was to align the policies of the nation-state with the needs of the global economy.

The liberalization of trade and the regulation of barriers through the considered implementation of tariffs were adjudicated by the body known as the General Agreement on Tariffs and Trade (GATT). Established in 1947, GATT served as an international framework under which countries could discuss trade problems and solve trade disputes. By the end of the Uruguay Round (1986–93), GATT had 'persuaded' its members to ratify an agreement that substantially liberalized trade in goods and services. In 1995, GATT was reborn as the World Trade Organization (WTO); the change of nomenclature was more than cosmetic for it indicated the expanded role that the organization intended to play in the future of the global economy. The ambiguous status of GATT was replaced by the WTO, 'an international organization with a stature commensurate with that of the World Bank or the International Monetary Fund'.

Had it passed, the Multilateral Agreement on Investment (MAI) would have been the crowning glory of global capital in this millennium. The MAI, which incubated in the WTO, was a treaty between the 29 members of the Organization for Economic Cooperation and Development (OECD). It included provisions that would have allowed investors to

unconditionally export goods and services across national borders; unilaterally purchase and own any productive capacity in other countries; exclusively own natural resources and extraction rights; exercise unlimited ownership of public infrastructure and social goods; be exempt from any performance requirements such as job creation, technology transfer, and purchase of domestic goods; refuse to comply with domestic standards on the environment, labor laws, or human rights; and sue a government violating the agreement in a jurisdiction of the investors' choice (Roberts, 1998). Designed and developed in relative secrecy, the MAI was to be first passed by the OECD and then used as a leverage to persuade the rest of the world to follow suit. The agreement was eventually shelved in the face of organized public opinion, but its proponents haven't given up the possibility of reintroducing it in the near future. While the MAI has been denounced as 'NAFTA on Steroids' by its many opponents, it has been fittingly described by Renato Ruggerio, the former Director General of the WTO, as the constitution for a single global economy.

The International Division of Labor

The global financial economy seems to be firmly in place: capital, both financial and productive, moves across the globe, following its own, largely comprehensible logic. Global financial systems have a history and a trajectory that are available for scrutiny. Capital has continued to increase its capacities to be its own legislator and arbiter, and to act unilaterally and unrestrictedly, impervious to both national boundaries and legislations. But what about labor, the concomitant other of capital? Even the most ardent supporter of the globalization theory would admit rather freely that the mobility of labor is restricted by the demands of capital. While 'more people than ever before seem to imagine routinely the possibility that they or their children will live and work in places other than where they were born' (Appadurai, 1996: 6), labor continues to be, for the most part, incarcerated within its local terrain. The total immigrant population of the world is around 120 million, less than half of which lives in the 'developed' countries (Sassen, 1996). Only 1.5 percent of the global workforce earns its living outside the country of its origin, more than 50 percent of which is employed in the Middle East and Sub-Saharan Africa (Castells, 1996). While social disruption may seem to have increased the numbers of forced displacement, the fact is that there are 'only' 20 million refugees worldwide; a mere 30 percent of which have found asylum in the rich countries (Sassen, 1996). Country borders continue to be patrolled intensely, visa restrictions limit the mobility of travelers, and work permits are granted under the strictest of supervision. There is no real case for the argument that labor is free to move in the globalized world.

There is, however, an international division of labor, the nature of which has changed over the years. The migratory tendencies of global capital lead it in a search of appropriate labor across the world. It is important to note that global productive capital does not necessarily travel in search of cheap labor alone. As a matter of fact, around 75 percent of US foreign direct investment (FDI) has been made in Western Europe, Canada, and other high wage-paying countries. That figure notwithstanding, we have to remember that the remaining 25 percent (out of a total FDI of $122 billion in 1998) is a huge amount of money, especially in Third World currencies. The necessary rendezvous of capital with labor takes place either at the fixed site of work (labor coming to the location of capital) or at the site of labor (mobile capital coming to the location of labor).

This is hardly a new argument. Capitalist production has always relied on a division of labor in order to both enhance productivity and ensure the generation of surplus value. Capitalism as a world system has relied on the division of labor between societies. Traditional arguments have treated the issue of the division of labor as an inter-societal phenomenon with two distinct components. The social division of labor partitions work into different jobs and occupations while the technical division of labor further divides the kind of work done by labor within these occupations. Colonialism and imperialism created the phenomenon and raised awareness of an international social division of labor with core societies performing capital-intensive, high-skilled work while relegating low-skilled, labor-intensive work to peripheral societies. As Waters (1995: 70–1) notes, 'the customary vision of a partly globalized world is that it is fractured by a binary division variously characterized as developed–underdeveloped, modern–traditional, industrialized–industrializing, more developed–less developed, first world–third world, North–South, or simply, rich–poor'.

This simplistic categorization has been contested by the developments in the later part of the century. Multinational enterprises spread their wings and the mobility of productive capital resulted in the sprouting of industrial enterprises in the 'underdeveloped' world. The advent of the newly industrialized countries, especially in South East Asia, challenged the dominance of the 'developed' world. Advanced, if not state-of-the art, factories began to make their presence felt and the international division of labor started taking on a new, technical hue.

Froebel et al. (1980) proposed a thesis on the New International Division of Labor (NIDL) suggesting that 'commodity production is being split into fragments which can be assigned to whichever part of the world can provide the most profitable combination of capital and labour' (Froebel et al., 1980: 14). The NIDL theorists believe that the 20th century can be seen as a succession of four distinguishable phases of capitalist development. The first represented the Pax Britannica period of free trade and colonialism (lasting till 1914); the second a period of crises resulting in

policies of national protectionism, import substitution, mass unemployment, rise of Fascism, wars, the decline of Britain and the rise of the US and the USSR (from 1914 to 1945); the third a period of the reappearance and the rise of the market, and the emergence of the US as the major player on the international arena (1945 to 1965). This third phase was also characterized by the end of colonization in most of the world and its substitution with relations of economic dependency. The fourth phase offered yet another period of crisis, resulting in relocations of industries both within the industrialized nations and towards the periphery, accompanied by structural unemployment in certain sectors, declining investment rates, reduced rates of growth, and a reduction in the size of international markets due to both an increased international competition and the import substitution policies of newly decolonized nations (Aglietta, 1979; Blue-stone and Harrison, 1982; Harvey, 1989).

Capital expansionists made a push for offshore manufacturing in areas which had a large labor force that could work long hours at a low cost, while producing at an acceptably efficient rate (according to the *1973 Year Book of Labor Statistics* of the International Labor Office, the work week of the laborers in the offshore manufacturing units was about 20 percent longer than in the US; the workers earned roughly a tenth of the US wage and needed around 8 percent more time to produce the goods compared to their US counterparts). Technological development was geared towards providing means of cheap and bulk transportation (ships, air cargo, containerization) and effective communication and data processing. The 'Taylorization' of work (dividing labor into its small constitutive parts and then standardizing the method of production as well as the rate of work through time-motion studies) was carried to greater degrees of rationalization enabling the utilization of the international reserve army of relatively unskilled workers. Simultaneously, an international finance market emerged that allowed for the easy transfer of productive and financial capital. All this was carried out under the hegemonic umbrella of the US military power and the assistance of the IMF, World Bank, and GATT (Payer, 1974).

While the Triad Powers (US, western Europe, Japan), the OECD nations, and the G-7 countries continue to dominate world production (and perhaps just as importantly world consumption), the traditionally visualized center–periphery model does show some signs of fissures, disjunctures, and discontinuities. What Castells (1996) refers to as the 'Newest International Division of Labor' is leading to the formation of several centers and several peripheries. Under the influence of new factors of competitiveness, the 'North' and the 'South' are getting highly diversified internally. Until their recent crisis, the East Asian economies had been the beneficiaries of a realignment in the distribution of capital, technology, and manufacturing capacities. Despite the setback they received, there are indi-

cators that some of the macro-economies of the region are bouncing back to reclaim their place as centers of capital accumulation. China is emerging as a force to be reckoned with in the global market economy and is the second largest recipient of foreign direct investment in the world (behind the US). India has been making concerted attempts to join the global economy with the liberalization of economic policies and the unrolling of the welcome mat for foreign capital. Even though FDI in India is rather low, the country is fast becoming the new hub of the electronics and computer industries. At the same time, the former Soviet Union and its East European allies are trying to play catch-up with the western capitalist economies (so far with disastrous consequences, especially for the Russian people). Latin America is attempting to integrate into the globalized economy at a furious pace in order to make up for the so-called 'lost decade' of the 1980s. Sub-Saharan Africa, still a forgotten part of the world economy, is expected to continue to languish in the zone of exclusion.

Despite these changes, the structure of the global economy continues to be framed and influenced by the inheritance of its recent history. It is unrealistic to assume that the power imbalances between the West and the rest, the North and the South, and the rich and the poor countries will disappear or be inverted any time soon. While agreeing with this assessment, Castells (1996: 147) argues that this is not the whole story. The newest international division of labor, he claims, is based upon four different kinds of positions in the global economy: those who produce high value, largely on the basis of informational labor; those who use low-cost labor to produce high volumes; those who have access to natural endowments and therefore produce or extract raw materials; and those who are the redundant producers and hence are reduced to devalued labor. The interesting argument that Castells makes is this: that these four positions do not coincide with countries. While the historically differentiated global economy does produce concentrations of these positions in different geographies, the newest international division of labor takes place, not between nation-states, but between economic agents that occupy these four positions. All these positions, organized in networks and flows, can then be found in all countries. Marginal economies and poor countries too will be connected, albeit in a small way, to the high-value network, just as the rich nations will force parts of their population to the position of devalued labor.

Castells's argument resonates strongly with the vignettes that opened this paper. Our Indian protagonists occupy both ends of the skill spectrum. Subbalakshmi is the transcriber performing a low-skill job on a computer. While Appa Rao's skills are comparatively better, his primary value will lie in his ability to perform repetitive, low-skill labor. Krishnamohan and Sunil Roberts are both highly skilled professionals, one working in India, the other in the US. The point of interest here is that high-skill work travels from the US to India in search of high-skill labor, while simultaneously,

low-skill labor is imported from India to the US for the performance of low-skill jobs. This is neither a random nor disjunctive process, but one that is purposeful and conjunctive. Castells's thesis postulates that the international division of labor no longer depends upon the nation-states and their characteristics but upon the characteristics of what their labor has to offer. The international division of labor, spurred by constantly changing technologies and enacted by changing actors, produces 'a relentlessly variable geometry', one that is highly patterned, if not predictive.

The Mobility of Labor in the Informational Economy

The international division of labor theories point out the emerging patterns in the capital–labor dynamic. In a constantly changing world, labor and capital intersect in newer, hitherto unseen fashions. High-tech, state-of-the-art factories spring up in the Third World and produce high-value-added goods and services while low-tech labor travels simultaneously to the advanced industrial economies to perform low-value-added work. How does labor move from one country to another? What is the logic that governs this mobility? An examination of this question is essential in order to theorize about the new global order. While a broader analysis will be useful, we wish to limit the arena of our inquiry in the following way. The forms of labor mobility are many; consider for example the number of ways in which foreigners enter the US from India: students arriving to study in the US and staying back to work; family members of naturalized citizens or permanent residents receiving permission to join their family; cab-drivers winding their way to Chicago or New York through a variety of means, legal and illegal; doctors taking exams that qualify them for a medical residency program and, later, practice; high-tech software engineers being recruited by American firms; domestic workers, restaurant workers, and other casual labor arriving through loopholes in the law or gaps in the border patrol; specialty workers entering through provisions in the immigration laws; and investors whose money is deemed to be good for the US economy. In order to make a focused point, we intend to examine the migration of labor from India to the US in the software industry. This restriction of terrain is not arbitrary. The information technology revolution is believed to be the motor of the current trends of globalization. It is widely accepted that we now live in an 'informational society' where 'the productivity and competitiveness of units or agents in this economy fundamentally depend upon their capacity to generate, process, and apply efficiently knowledge-based information' (Castells, 1996: 66). The software industry then represents one of the leading edges of change in contemporary times and therefore invites scrutiny.

The rise of information labor

The economic activity of a firm can be divided between two forms of labor. Production labor is concerned with the creation, processing, and handling of physical goods. Information labor is comprised of the activities of managing, organizing, and coordinating the production activities. Technology after the industrial revolution changed production activities in two ways. Work tended towards more specialization, leading to dramatic changes in the division of labor. This specialization then resulted in an increase in 'efficiency' or the reduction of labor power involved in the production of a unit of output. The consequent rise in the output of each worker (the real output of a production worker in the US was 6.4 times greater in 1970 than in 1900) resulted in a greater complexity of production activity, a larger variety of inputs to the production process, and an increase in the number of transactions among and within business units. Efficiency improvements in this phase were focused on production technology and not on information handling activities. Thus, this period was characterized by a substantial increase in the number of information workers. The ratio of the number of information handling workers to the production workforce rose from 0.22 in 1900 to 0.75 in 1960 to 0.94 in 1970 and 1.13 in 1980 (Jonscher, 1994).

As the rate of increase of efficiency due to technological changes in the production process fell and as the cost of information handling grew, organizations turned their attention to increasing the efficiencies of processing, storing, transporting, and manipulating information. Computers, telecommunication systems, electronic databases, and word processors made their entry into the arena following the invention of the transistor in 1948 and the integrated circuit in 1959. Information processing became a large sector of the economy. Efforts and investments shifted from the creation of production technologies to improvements in information technologies resulting in phenomenal increases in their efficiencies. Between 1958 and 1980 the time for one operation reduced by a factor of 80 million. The pace has not diminished into the late 1990s. The surprisingly accurate Moore's Law states that the amount of data storage that a microchip can hold doubles every 18 months. The speed of change in the hardware has gone hand in hand with the changes in software. The production of software branched off as an industry with the 'unbundling' of the sale of software from its hardware counterpart by IBM in 1969. Ever since, it has grown in massive leaps, with current estimates putting the size of the global software and software services industry at over $500 billion worldwide.

The polarization of skills in the software industry

Profit-seeking enterprise is characterized by its constant attempt to lower labor cost by (1) finding ways to reduce the amount of labor needed to

perform specific tasks (through both the replacement of labor by automation and the intensification of work) and (2) increasing the supply of labor in relation to its demand. Both these functions are served by the process of deskilling and routinization of work. Machines and computers can be pressed into the service of standardized and routinized work while the deskilling of work permits the hiring of lesser skilled workers to perform the tasks, thus expanding the labor market enormously. Most forms of work in industrial capitalism have witnessed this phenomenon. The software industry is no exception.

Until the early 1960s, the nature of software production resembled an art. Each program was written from scratch and custom-designed for specific end-uses. Programming tended to be complex and involved the writing of a large amount of code in low-level languages for the performance of simple tasks. Parts of software programs 'spoke' with difficulty to other parts and communication between two programs or two computers was close to impossible. Programmers followed personal trains of logic, which made it difficult for others to comprehend the nature of their efforts. Languages, tools, and procedures were not standardized and managerial control over the work of programmers proved to be a difficult task. The problems represented by this era of software development can be summarized as follows (see Brooks, 1975; Cusumano, 1991; Kraft, 1977; Tapscott and Caston, 1993):

1. Code written for specific applications could not be reused. Hence, every project had to be conceived and generated from the bottom up.
2. Software maintenance required an immense amount of time and effort. The lack of modularity and standardization implied that each bug had to be pursued through the length of the code. Computers and programs could not be networked, making it impossible to effect enterprise-level and inter-organizational linking.
3. Different programs and applications required the training and development of personnel to work on them, resulting in large investments in human resources. Software programs were platform dependent. A program written for a mainframe would not work on a microprocessor or a workstation, requiring corporations to spend money on expensive hardware.
4. The specialized nature of software development required the use of highly skilled software professionals leading to a dependence on the labor force and the consequent large payroll.

The early 1960s saw the commencement of a series of efforts to address these 'problems'. The precursor of these came to be known as structured programming. Kraft (1977: 57–8) describes it in the following words:

> Indeed, the principle was simple: if managers could not yet have machines which wrote programs, at least they could have programmers who worked like machines. Until human programmers were eliminated altogether, their work would be made as machine-

> like—that is, as simple and limited and routine—as possible. Briefly, programmers using structured programming would be limited to a handful of logical procedures, which they could use—no others were permitted. They could call only for certain kinds of information; they could ask only specified questions about that information; on the basis of the answer they received to their question, they could call for a particular machine operation (or the answer to another, approved question); when the operation was completed, they had to stop. No deviation from this logical sequence is allowed.

Structured design and programming involved the modularization of programs, the specification of coding statement to be used, formalized program verification, a top–down coding approach (writing codes for higher level modules before that for lower level modules) and a systemized integration of these codes. The application of structured programming, while facilitating code reusability and the division of labor, did not fully solve the problems of the status quo. Over a period of time, a number of developments have served the purpose of making software programming further amenable to the factory system of production.

Software engineering is a discipline that emerged in the mid-1970s which recommends viewing software development as a series of distinct phases such as systems requirement, software requirements, preliminary design, detailed design, coding and debugging, testing and pre-operations, and operation and maintenance (Cusumano, 1991). Inspired by engineering principles and based upon a need for greater managerial control, software engineering specifies the methods, tools, and procedures to be used in the development of a software program. A further development along this line has been the introduction of a set of tools called *Computer-Aided Software Engineering* (CASE). In this technique, the principles of software engineering are enabled by the use of coordinated computer aids. A number of computerized, automated tools take programmers through the phases identified by software engineering, guiding them in the process of software specification and design, configuration control and testing, and even code generation and maintenance.

Object-oriented software, also referred to as 'Lego' software, has attempted to simplify the programming process. This programming paradigm is based upon the notion of combining data and procedures into *objects*, which have certain specific capabilities. Objects are analogous to building blocks that can be put together to form a structure. Programmers can use these objects and combine them into new applications. Object-oriented programming increases productivity by reducing programming time, promotes code reuse, and increases software portability. It allows programmers to cut-and-paste different objects, coding only that part of the program that applies to a specific application. It allows for replacing malfunctioning portions of the program with modified 'spares'. Further, the emergence of new software development tools such as Visual Basic and Powerbuilder allows those with little or no programming experience to create usable software easily.

These developments, along with their focus on standardization and 'quality control', have resulted in a significant degree of division of labor, and a polarization of skills in the software industry. It has created a small band of highly skilled analysts and engineers on one hand and a huge cadre of increasingly deskilled programmers on the other. The distinction and division of labor between planning and execution so characteristic of other industries is replicated in the arena of software production as well. Research studies of software workers in Boston (Kraft and Dubnoff, 1986), and more recently of programmers in New York City and Silicon Valley (Mir, 1997) conclude that software programming work demonstrates a trend towards the same familiar stratification of work, the deskilling of a vast majority of jobs, and the structural hierarchies of power that have marked the development of other industries in capitalist societies.

The international division of labor in the software industry: the case of India

The division of labor in the software industry served an important purpose. If planning and execution could be separated, organizations could do the high-end feasibility studies, requirement analysis, and preliminary design in-house, and subsequently outsource the coding, programming, and testing to subcontractors. The standardization of programming languages, hardware environment, and programming techniques had started facilitating the outsourcing of software production and development by the late 1970s. By the mid-1990s, the global software outsourcing market was estimated at $240 billion (Patane and Jurison, 1994).

Offshore outsourcing was one way in which work traveled to the site of the labor. India and Ireland became the outsourcing markets of choice for the predominantly US-based software industry, largely due to the presence of a high-skilled English-speaking workforce. Israel, Hungary, Vietnam, China, and the Philippines were other countries that received the contracts. But not all work could be shipped far away from the location of the organization. High-end development work, work that required security, work that needed to be closely monitored, projects that had to be delivered quickly, or simply maintenance and de-bugging often needed to be done close to the user. In these cases, the labor had to be imported to the site of the work.

In retrospect, India's software policy seems to have been well orchestrated. Its first central plans gave a prominent role to the development of science and technology. The establishment of the elite Indian Institutes of Technology was designed to develop a group of highly skilled engineers and scientists. India's first computer policy was outlined in 1970 and resulted in the creation of the Department of Electronics (DOE). The DOE identified software as a growth area and explicitly recognized its potential for generating

foreign exchange. The government encouraged the establishment of institutes of software training by offering them tax breaks on hardware import. Government support and the Software Export Scheme of 1972 spurred the formation of Tata Consultancy Services (TCS) in 1974 and the joint venture Tata Burroughs Limited (TBL) in 1978, both focused on software export. NIIT (the National Institute of Information Technology) was launched in 1981, initially as a computer-training institute, and expanded its operations to include software development by 1985. The growth of the industry has been spectacular by Indian standards. TCS is now a huge organization with its 67 offices spanning 18 countries, a global team of over 10,000 consultants, and a revenue that has doubled every two years in the recent past. NIIT is a $160 million organization, with a market capitalization of $2 billion, and a customer base that includes British Airways, Citibank, Deutsche Bank, Hewlett Packard, IBM, Microsoft, Oracle, Reuters, Sony, and the World Bank. In the early 1990s, less than a tenth of NIIT's business came from abroad. Today more than half its earnings originate in US, Europe, and the Asia-Pacific region. NIIT has a presence in over 30 countries and employs 3700 people of 26 nationalities. TCS and NIIT represent the success of the Indian software industry which has seen its overall exports grow rapidly, reaching $2.65 billion in 1998–9, an increase of 56 percent over the previous year. These software exports from India have two constitutive elements: (1) where work arrives in India either through subcontracts or through the subsidiary of a foreign company and (2) where Indian programmers leave the country for a foreign site of work, in which case the item being exported is human labor. Let us examine these two in some detail.

Work arrives in India

The policies of the government of India in the late 1970s actually discouraged the entry of foreign capital in India, even causing the departure of IBM from its shores in 1978. It took the neo-liberalization turn of the economy starting in the mid-1980s to jump-start the influx of foreign capital into the country. The new Computer Policy of 1984 simplified import procedures for hardware and software, reduced import duties dramatically, recognized software as an industry, increased the access of software companies to foreign exchange and reduced the income tax exemption on net export earnings by half. In 1985, it allowed the formation of Citicorp Overseas Software Limited (COSL), Citibank's 100 percent foreign-owned, offshore subsidiary. The policies underwent another change with the Software Policy of 1986, including the further deregulation of imports, the exemption of import duty on hardware for wholly export-oriented firms, and the granting of permission to Indian firms to become distributors for foreign software.

The year 1986 also saw the establishment of another wholly foreign-owned subsidiary in India. Texas Instruments set up its operations in

Bangalore and the government went to great lengths to help bring this about. According to Evans (1992: 7), one DOE official claimed that the department had broken 26 separate rules to accommodate TI's subsidiary and was willing to break more. The TI experiment led to a policy decision to create software technology parks in order to produce software for export. The government of India started wooing foreign companies by offering to provide infrastructural support including electricity, offices, telecommunications, and high-speed satellite links. However, while the policy succeeded in attracting a few more software companies such as Hewlett Packard in 1989, most others continued to be wary of setting up shop in what was still considered to be a protected, bureaucratic economy.

Economic liberalization policies started being undertaken by the government of India with serious intent and missionary zeal in the early 1990s. Guided by the then Finance Minister Manmohan Singh, the rupee was devalued and made partly convertible, telecommunications charges for satellite links were reduced, duties and taxes were slashed to a fraction of their original value, and a number of other policies that were friendly towards foreign-owned software companies were instituted.

The floodgates were opened and the press of the mid-1990s was full of announcements of start-up organizations, technology parks, joint ventures, and strategic alliances being formed that facilitated the production of software products in India for the consumption of clients in the US. Apple Computer made an investment running into tens of millions of dollars, thus substantially increasing its presence in India, in July 1995. Tata Consulting Services and Novell unveiled plans for a strategic alliance to develop software in India for Novell's clients. A state-of-the-art Offshore Development Center joint venture between Birla Horizons International of India and Computer Horizons Corporation of the US was opened in November 1995. Novell Software Development (India) was established as a 95 percent–5 percent joint venture between Novell and its Indian partner Onward Novell with an annual budget of $20 million, about 5 percent of Novell's annual R&D spending. Hewlett Packard publicized the spending of $24 million for the upgrading of its software development center in Bangalore in March 1996. Oracle announced the setting up of a new software R&D center in Bangalore that was to be the company's largest facility outside the US. Derek Williams, senior Vice President of the Asian-Pacific division of Oracle, claimed that it was a combination of rich talent, government incentives, and cost-effectiveness that prompted the company to move part of its product development and R&D from San Francisco to Bangalore. The mood of these organizations was summed up by the statement of one top McDonnell Douglas official (itself an organization using Indian software expertise): 'We're in the business of making money. If we have to put jobs and technology in other countries, then we go ahead and do it' (*New York Times*, 25 February 1995). The examples and stories are many. Companies

that currently employ Indian software development companies either through direct involvement or through intermediaries include Citicorp, Sears, 3M, General Electric, Andersen Consulting, IBM, Bull Information System, Hewlett Packard, AT&T, Sybase, Texas Instruments, Digital, EDS, Price Waterhouse, Apple Computer, Sun Microsystems, and Computer Sciences Corporation.

The reasons for this interest in India are not difficult to figure out. India has the second largest pool of software professionals in the world (after the US) and the world's highest productivity-to-cost ratio. It is no surprise then that the growth of the Indian software industry has been spectacular. According to NASSCOM (National Association of Software and Service Companies), the industry is expected to grow at a startling 50 percent a year. Several years ago, almost all of India's software exports were on-site. Today, they account for only 59 percent of the exports, a clear indication that offshore services (work performed in India for foreign clients) are gaining over on-site work performed at the client's organization.

Software development in India no longer provides just cheap programmers. The current workforce includes highly skilled engineers and qualified project managers working on state-of-the-art equipment connected with sophisticated network links to the client sites. The Indian software industry has the largest number of ISO 9000 certifications in the world and many Indian software corporations have a Level 5 quality certification from the Software Engineering Institute at Carnegie-Mellon. Aided by a slashing of import duty on computers, peripherals, and systems software and by government investment in telecommunication infrastructure, India is fast becoming a major player in the international software market. The Indian software industry has evolved from staffing to software development, to integration and IT business consulting.

So what does the increasing employment of software programmers living in India mean? To begin with, the labor market for transnational corporations expands dramatically. The logic is simple. Relatively cheap and skilled workers contribute directly to the bottom line. The transfer of work outside the national borders frees corporations from adhering to the legal guidelines of the US (including issues of minimum wage, environmental responsibility, and labor laws). Foreign governments eager for foreign direct investment go to great lengths to provide incentive and infrastructure in order to lure international capital. And as the technology 'matures' (with its corresponding deskilling) and the labor supply increases (thanks to the proliferation of software training institutions in the lower wage nations), the cost of labor continues to decrease.

Bodyshopping: labor arrives

Skilled workers are imported from across the world under the provisions of the H1-B visa to work temporarily in the US. This visa category permits

employers to hire labor from other nation-states in return for assurances that: (1) no appropriately skilled US citizens are available to perform the job; (2) no US workers would be displaced due to this hiring; and (3) the hired workers would be subject to the same wages and working conditions that would apply to a corresponding US worker. Several thousand workers are admitted each year in the US under this visa for a period of up to six years. The H1-B visa category is used by the software industry to hire two different categories of workers. At one end are those who enter the US on F-1 visas as students. At the other are those who are hired directly from other nation-states, typically through an intermediary, in order to offer them work based upon skills they possess. The latter technique goes under a curiously honest label—bodyshopping—and involves the hiring of inter-national software labor to perform work within the boundaries of the US.

While the provisions of the H1-B visa are written to protect US workers from displacement and to ensure equitable wages to foreign employees, the reality is far removed from this. The bodyshopped 'techno-braceros' or 'techno-coolies' often end up working for low wages under conditions that are substandard by local measures. There have been a large number of documented cases where this non-immigrant labor has been used in sharp contradiction to the intent of the law. Companies such as American International Group, Hewlett Packard, and IBM have come under recent scrutiny for using cheap contract labor to replace laid-off American workers. A case filed in the mid-1990s against Tata Consulting Services in the Superior Court of California in the County of Santa Clara states the following:

> Tata Consulting Services (TCS) is engaged in the business of providing low cost pro-grammers to U.S. companies. TCS recruits persons in India to work in California as computer programmers. TCS requires its employees to enter employment agreements containing numerous unlawful provisions including, but not limited to, agreements to remain indefinitely in the employ of TCS or pay huge liquidation damages, to work for less than minimum wage, and forgo statutory overtime compensation. This practice is nothing more than high-tech indentured servitude and provides a cheap alternative workforce with which U.S. workers cannot compete.

Larry Richards, spokesperson for an Austin-based think-tank called Softpac (Software Professionals' Political Action Committee), testified to the US commission on Immigrant Reform in the following words:

> I have been a software engineer for seven years. In July of 1993, I went to work as a contract programmer at IBM in Austin. Shortly after I started (in October), the area I worked in experienced a lay-off of 50 programmers. Soon after this, in January, my management started hiring programmers from Tata Information Systems, Ltd. (TISL), who were working here on H1-B visas. At the same time, many of the people in my area were forced to take pay cuts or face losing their jobs. Yet, even after these pay cuts, the TISL workers were earning a half to a third of American programmers in the same area. … Foreigners working here on temporary visas are 'basically indentured to the company(s) sponsoring their employment tenure' in the words of one contractor's sales

pitch to General Dynamics. Because they are not free to seek employment in the open market, companies are able to pay them substantially below what an American would be paid. [Richards claims that American contract programmers in his work area were paid $60,000 to $100,000 a year. An informal survey of Indian programmers revealed that they were being paid $33,000 a year. Tata spokesman Charles Wilson says that 'some workers are paid more than that'.] An entire industry has sprung up to provide foreign contract programmers to American companies. Many of these companies hire exclusively non-immigrant foreign workers. … In addition, there seems to be no checking as to whether companies are complying with what little protections for American workers do exist in the current law. For instance, I filed an application with the Dallas Alien Certification Office to fill 20 programming jobs with H1-B workers at $5 an hour. This application was approved and mailed back to me in six days …

Richards's testimony is a plea made on behalf of his conservative organization that wishes to restrict the flow of foreign labor into the US. However, it has fallen on deaf ears. Under pressure from the high-tech industry, the Congress passed a bill in 1998 increasing the number of workers admitted in the H1-B category from 65,000 to 115,000. Less than a year after the high-tech industry won this fight, the debate has been reignited. The software industry wants the flexibility to hire more workers. Three bills await the attention of the Congress in September 1999. One, authored by Republican Senator Phil Gramm from Texas and Republican Representative David Dreier from California, proposes to increase the number of skilled workers admitted to the US from 115,000 to 200,000. Another from Representative Zoe Lofgren, a Democrat from Silicon Valley, wishes to create a new class of visas under which foreign students with science and engineering degrees can be hired by US firms, leaving the H1-B visa for the direct hiring of workers from abroad. A third, proposed by Senator John McCain, an Arizona Republican, intends to increase the visa cap to 175,000 and authorize the Labor Secretary to unilaterally raise that limit if required.

Towards an Ethnography of Transnational Migrations

Our summaries of the globalization of capital and the development of the software industry now allow us to make the following point: the histories of different forms of migration are embedded in different political economies. The migration of Sunil Roberts and Appa Rao to the US was contingent on the convergence of several strands of the economy such as the trajectory of the technology, the nature of state policies in both India and the US, and the availability of the infrastructure that allowed them to imagine the travel and execute it. We can complicate and nuance these stories further by bringing in issues such as class backgrounds, caste formations, internal migrations of communities, and their reactions to modernity. We cannot here provide detailed ethnographic accounts of the labor process in the

software industry. Our intention is merely to initiate a series of discussions on the nature of the labor processes within the high-tech labor market and to ask what the conjunctures across national boundaries could mean for theories of globalization.

Sunil Roberts went to an English-medium school in Hyderabad where he was trained to do well in the entrance examination that got him admission to the Indian Institute of Technology (IIT) at Bombay. His training in electrical engineering was rigorous. But simultaneously, he learnt about the process of applying to US universities, and the way of finding his way there successfully. He prepared for his GRE exam over three years, studying the notes that had been archived by those that had walked that path before him. He knew all about the admission criteria of the universities that interested him. He knew what the letters of recommendation needed to say and who needed to write them. He was aware of the Grade Point Average that was required to ensure him both admission and an assistantship in the graduate program of his choice in the US. He had a template of the statement of purpose he needed to write. He knew the names of the professors in the department he was applying to, and their areas of interest. In other words, the fact of his institutional affiliation with the IIT offered him the infrastructure and the directions to go to the US, and he had this road map as soon as he arrived as a freshman there. Sunil entered his first class at IIT knowing that he and almost 90 percent of his classmates would be in the US in four years. When he joined New York University for a master's in computer science, he had an understanding of Manhattan, both from popular media, and from the news he received from his friends who lived there (one of whom had picked Sunil up from JFK airport when he first arrived). Sunil's two years at NYU made him several friends, many of whom were Americans. Upon graduating, he joined Lucent and intends to stay there at least until he gets his permanent residency in the US, a process that will take him two to three years. The project that he currently works on is complex and involves the prototyping of wireless communications infrastructure. He works long hours and gets paid well and on time. Had Sunil been among the few of his classmates that chose to stay back in India, he would have deployed one of several choices that would have been available to him. He might have decided to get an MBA from one of the Indian Institutes of Management and work for a multinational corporation as a well-paid manager. Or he might have joined Hewlett Packard or Texas Instruments or Microsoft in India, as Krishnamohan did.

Appa Rao's story is considerably different. Like Sunil, he too imagined coming to the US few years before he made his journey. His training was largely received in his hometown in Khammam, a rural district in the southern Indian state of Andhra Pradesh, first in a local school, and then in a series of small 'technical institutes'. In all, he spent a few thousand rupees and a little less than two years for his training in Visual Basic, Oracle, and

Y2K compatibility projects. Unlike Sunil, he has virtually no chance of making it to an elite management school, or of working at the Microsoft Hyderabad campus. He considers himself lucky that he got a programming job at the bodyshopping firm that sent him to the US. Appa Rao was picked up at JFK too, but by his employer. He shares a small apartment with a changing set of roommates. In the immediate future, Appa Rao will probably work on several short-term assignments that may take him across the country and back. If he is lucky, his time on the bench will be short. His employers may or may not pay him when he is in-between projects (even though they are legally required to). In any case, his bench pay will be much lower than the money he gets when he is working on a project. Appa Rao has a six-year window during which he can live in the US as a temporary worker. If he wishes to stay on in the US beyond six years, he needs to become a permanent resident (a green card holder). Since Appa Rao does not have the qualifications that Sunil Roberts does, his papers will take far longer to process; perhaps up to five years or more. There is a further problem. If at any point during this period Appa Rao loses his current job, he will have to start his permanent residency process all over again. Appa Rao is beholden to his employers in multiple ways. He needs their cooperation to get his paperwork processed and he needs to retain his job till he gets his green card. This dependence opens up the possibility of an extra-legal exploitative relationship. Appa Rao is anxious about his tenure in ways that Sunil Roberts cannot imagine. For him, the return to India might take place on terms other than his own.

Sunil Roberts, like thousands of other South Asian professionals, is part of a middle class migration, primarily upper caste and out of urban India, that began in the 1960s—popularly referred to in South Asian diaspora literature as the 'Kennedy Wave'. This elite migrant class has over a period of time integrated to some degree with middle-class America. This group, with its longer history of migration, has well-established circuits of security that result from their cultural and educational backgrounds. Its members participate in labor markets that offer stable, well-paying employment. They typically have a graduate degree from a university in the US. The high-tech professionals like Sunil Roberts work for large multinational corporations like Lucent, AT&T, Microsoft, Intel, etc. or for venture-capital-based start-up firms in the North-East and Silicon Valley. They have the training, the vocabulary, and the cultural capital to participate in middle-class America with relative ease.

In contrast, Appa Rao is part of a new wave of migrants that began in the late 1980s as a result of the changes in the political economy and a specific history of the restructuring of both the American and Indian economies that began in the 1970s (Prashad, forthcoming). The stability of their tenure depends upon the terms of their arrival, the nature of their qualifications, the trajectory of their work experience, and the savvy they

exhibit while managing their legal status. Many of them are low-skilled software workers with the ability to work with basic software packages. A large number of them arrived during the 1990s on the crest of a wave that was brought about by the explosion in demand for software workers. Several came on contracts that were linked with the Y2K problem. They work as testers and de-buggers, painstakingly reworking millions of lines of code into Y2K-compatible forms. As the boom peters out, bodyshoppers are seeing a rise in the bench time of their programmers, leading to the emergence of new sets of labor practices in the industry. At one point in time, software programmers were difficult to find and retain. Now, bodyshopping firms know that there is a growing surplus of quickly trained, low-skill programmers that are rolling out of the diploma mills in India with alarming rapidity. As a result, the bargaining capacity of programmers such as Appa Rao is further diminished. Bench time pays little, if at all. In our interrogations, we have come across cases where the programmers were being made to comply with their employers' demands under the duress of threats that range from dismissal to violence. We also were familiarized with residents of a 'company apartment' in New York where some of the so-called software professionals were working at minimum-wage jobs to buttress a falling income.

Sunil Roberts and Appa Rao are two examples from the dozens of software programmers we interviewed as a part of our broader research. Our choice of these stories is, of course, deliberate. For us, Sunil Roberts and Appa Rao provide the contrast to register an important point of departure for our discussion on global culture: our contention that immigrant experiences are class-specific, that we cannot speak of the cultural reproduction practices of Sunil Roberts in the same breath as Appa Rao, that the Kennedy Wave migrants and the ones who followed similar trajectories are produced differently as subjects than those of the post-1980 wave of low-skill or working-class migration.

One can argue quite convincingly (as Appadurai does) that both the secure professional middle class and the new low-skilled immigrant experience and reproduce a deterritorialized culture. However, it is necessary to follow up with a question about *the difference in their experiences of deterritorialized cultures*. For the Kennedy Wave migrants, the act of being Indian in the US is inscribed within the knowledge of their security and investment in America. It is mediated by long-term mortgages on homes in white suburbia, a press that labels them as 'model minorities', an embeddedness in local Indian cultural and religious organizations, a sense of grounding in familiar institutions such as the community church or mosque or temple, and a linkage with ethnic networking and lobbying structures such as the Federation of Indian Associations, the Global Organization of People of Indian Origin, the Network of Indian Professionals, or the Indo-American Democratic Caucus.

For the low-tech workers (and for the working-class immigrants such as cab-drivers), deterritorialization is experienced in a fundamentally different manner. The nature of the anxiety that pervades this deterritorialization makes the 'territory' back home significant in entirely different ways. Those in Sunil Roberts's position either do not hear about the new Immigration Act of 1997 or do not care about it, for it is irrelevant to them in terms of its impact upon their condition. For Appa Rao and countless others who work even lower down the totem pole of the migrant community, border crossings are always laced with fear, and the new Immigration Act is a cause for terror and tension.

Seen from one perspective, Sunil Roberts and Appa Rao appear to be 'immigrant-exiles' and (along with Krishnamohan and Subbalakshmi, their counterparts at 'home') subjects of global capital. But, as Anderson (1994) asks, does capitalism directly or indirectly produce new types of exile? The question suggests a departure from the kind of conclusion that Appadurai's abstraction leads us towards. By way of drawing out this relation—the multiplicity of exiles—let us consider Stuart Hall's statement on Caribbean identities. Hall points out that the fashioning of identities (in exile) is 'not in any sense separate or removed from the problems of political mobilization, cultural [and] economic development' (Hall, 1995: 9). Here, Hall seems to be pointing to the specificity of the different types of exile, drawing out the differences in one's condition of being in exile in terms of its relation to issues of political and economic development. In other words, Hall is arguing that building identities is 'no mere re-discovery of roots' but also a reworking of cultural material in relation to some 'future goals' of 'political and economic development'. It is along these axes of the possible futures that the Kennedy Wave Indian middle class and the post-1980s working-class migrants differ significantly. Appadurai's deterritorialized culture is indeed beyond the 'methodological and ethical' imperatives of a nation-state for the settled Indian bourgeoisie. In contrast, those at the lower ends of the hierarchy find that their experiences are related in intimate ways to the ones of those others who occupy the lower rungs of the post-industrial American economy, and that their lives are constantly implicated within the methodological, if not the ethical, imperatives of nation-state.

Articulating this sense of how the nation-state enters and leaves the lives of immigrant working-class cab-drivers in NYC, Mathew (forthcoming) observes that

> the State assumes a certain 'structured permanence' in these immigrant spaces—a kind of permanence that is overarching and powerful but admitting to flux internally within each moment, which in turn is a way of reestablishing the structured permanence. The flux in the case of the drivers comes through the constant interpretation and re-interpretation of immigration laws, the ceaseless exploration of the underground passport markets in south Asia and the 'illegal' border crossing into the US. ...

> Migration, then, rather than settlement, becomes a way of living, for settlement is not only never assured but constantly under threat.

Many theories of globalization, including Appadurai's, are problematic because they construct a false opposition between the globalization and the territorial state and thus 'a neglect [of] the major role of State level processes' where finally 'the national-state scale vanishes almost entirely. In their haste to escape from the territorial trap, therefore, many globalization researchers veer toward an equally problematic inversion of State-Centric approaches, culminating in a kind of global-babble' (Brenner, 1997: 138). In positing such an intervention, Brenner is inspired by theorists such as Lefebvre who point to more complex readings of late capitalism where the globalization of capital/labor and the structure of territorial states are not posed as oppositional. Instead, the global economy is premised precisely on a 'system of states'. Globalization in such a reading is characterized not by the vanishing nation-state but, on the contrary, by the central implication of the territorial state in the production of a globalized world. It is the 'structured permanence' that provides the 'organization of space', and the 'control of [its] networks'. For Lefebvre, the state controls the 'flows and stocks, assuring their coordination' and serves as a 'social architecture' that is constantly engaged in the production of matrices of global social relations. The past two centuries have culminated in the rationalization of the 'State mode of production' where the state as a unit is central to a whole array of global networks and flows and practices of managing space. What we have in place today then is an 'inter-state system', through which the political space of the planet has been 'sub divided, parceled, and territorialized' (Brenner, 1997: 150). In this reading, globalization is the marker for the final hegemonic triumph of the 'State mode of production'. The nation-state then is a fundamental building block of globalization, in the working of multinational corporations, in the setting-up of a global financial system, in the institution of policies that determine the mobility of labor, in the creation of the UN, IMF, World Bank, NAFTA, and WTO, and indeed in the generation of Appa Rao's anxiety and fear over his condition as a benched software programmer.

A more detailed exploration of the role of the state in the process of globalization is called for in the context of our examination, but for now, we ask a final question. How is the opposition between globalization and territorial states created in the discussions of global deterritorialized culture? How does the postnational framework emerge in the discussion of culture? It is clear that the claim of a vanishing nation-state and thus a desire to leave behind the territorial nation emerges when culture is theorized from the point of view of a homogeneous migrant subject whose homogeneity lies in the assumed agency and pleasure 'we' all share. Migrants, we have argued above, are differentially located as subjects of globaliza-

tion/imperialism and they experience agency and pleasure differentially. But we need to understand that 'in the cab-ride from the Rockefeller Center to the World Trade Center, as a South Asian taxi driver drives a South Asian stock trader to work, the plexiglass partition serves as a fundamental dividing line. Behind the partition sits the subject of globalization, while in front, driving the cab, is the historical subject of imperialism' (Mathew, forthcoming).

In other words, this homogenization, the creation of a 'we' as part of a deterritorialized global culture, is put into place through a fundamental overwriting of class in the scaped world of the theorizing of global culture. There are many other overwritings that take place. For example, our own argument provides little space for the articulation of the place of caste in the story of Appa Rao and its implication in the class dynamics of South Asia; it fails to deal with the fact that the middle-class Indian migrant is predominantly upper caste while the new labor pools in South Asia for the bottom end of the global service sector are imbricated as much in caste groups as in class formations. Theorists of globalization often analyze culture from the perspective of what appears to be a homogenous and undifferentiated diasporic class, as if the lives and experiences of people within this group are substitutable and interchangeable. A more sensitive and careful account of global culture will have to contextualize the effects of deterritorialization with an understanding of the role of the political economy, the salience of class, the lived experiences of the migrants, and the hegemonic presence of the nation-state.

ACKNOWLEDGEMENT

REFERENCES

Aglietta, M. (1979) *A Theory of Capitalist Regulation*. London: New Left Books.
Anderson, B. (1994) 'Exodus', *Critical Inquiry* Winter 20(2): 314–27.
Appadurai, A. (1996) *Modernity at Large: Cultural Dimensions of Globalization*. Minneapolis: University of Minnesota Press.
Bluestone, B. and B. Harrison (1982) *The Deindustrialization of America*. New York: Basic Books.
Brenner, N. (1997) 'Global, Fragmented, Hierarchical: Henri Lefebvre's Geographies of Globalization', *Public Culture* 10(1): 135–67.
Brooks, F.P., Jr (1975) The *Mythical Man-Month: Essays on Software Engineering*. Reading, MA: Addison-Wesley.

Cultural Dynamics 12(1)

Castells, M. (1996) *The Rise of the Network Society*. Cambridge, MA: Blackwell.
Cusumano, M.A. (1991) *Japan's Software Factories: A Challenge to U.S. Management*. New York: Oxford University Press.
Evans. P. (1992) 'Indian Informatics in the 1980s: The Changing Character of State Involvement', *World Development* 20(1): 1–18.
Froebel, F., J. Henricks and O. Kreye (1980) *The New International Division of Labor*. Cambridge: Cambridge University Press.
Hall, S. (1995) 'Negotiating Caribbean Identities', *New Left Review* 209: 1–18.
Harvey, D. (1989) *The Condition of Postmodernity*. Cambridge, MA: Blackwell.
Jonscher, C. (1994) 'An Economic Study of the Information Technology Revolution', in T.J. Allen and M.S. Scott Morton (eds) *Information Technology and the Corporation of the 1990s: Research Studies*, pp. 5–42. New York: Oxford University Press.
Kraft, P. (1977) *Programmers and Managers: The Routinization of Computer Programming in the United States*. New York: Springer-Verlag.
Kraft, P. and S. Dubnoff (1986) 'Job Content, Fragmentation, and Control in Computer Software Work', *Industrial Relations* 25(2): 184–96.
Mathew, B. (forthcoming) *Taxi! Migrant Labor in the Age of Globalization*. London: Verso.
Mir, A. (1997) 'The Transformation of Work: A Critical Examination of the New Organizational Paradigm', unpublished doctoral dissertation, University of Massachusetts.
Patane, J.R. and J. Jurison (1994) 'Is Global Outsourcing Diminishing the Prospects for American Programmers?', *Journal of Systems Management* (June): 6–10.
Payer, C. (1974) *The Debt Trap*. New York: Monthly Review Press.
Prashad, V. (forthcoming) *The Karma of Brown Folk*. Minneapolis: University of Minnesota Press.
Roberts, J. (1998) 'Multilateral Agreement on Investment', *Monthly Review* (Oct.): 23–32.
Sassen, S. (1996) *Losing Control? Sovereignty in an Age of Globalization*. New York: Columbia University Press.
Schiller, N.G., L. Basch and C. Szanton-Blanc (1995) 'From Immigrant to Transmigrant: Theorizing Transnational Migration', *Anthropological Quarterly* 68(1): 48–63.
Surin, K. (1995) 'On Producing the Concept of a Global Culture', *South Atlantic Quarterly* 94(4): 1179–99.
Tapscott, D. and A. Caston (1993) *Paradigm Shift: The New Promise of Information Technology*. New York: McGraw-Hill.
Waters, M. (1995) *Globalization*. London: Routledge.

BIOGRAPHICAL NOTES

ALI MIR is an assistant professor at the Department of Management at Indiana-Purdue University at Fort Wayne. His current research focuses on the transformation of work in late 20th-century capitalism. *Address*: Department of Management, Indiana-Purdue University, Fort Wayne, IN 46805, USA. [email: mirali@ipfw.edu]

BIJU MATHEW received his PhD from the University of Pittsburgh in 1994 and is currently an Assistant Professor at the School of Business at Rider University. He is the author of the forthcoming *Taxi! Migrant Labor in the Age of Globalization* (Verso). *Address*: School of Business, Rider University, Lawrenceville, NJ 08540, USA. [email: mathew@rider.edu]

RAZA MIR is an assistant professor of Strategic Management at Monmouth University. He is currently working on completing his PhD at the University of Massachusetts, Amherst. *Address*: Department of Management, Monmouth University, Long Branch, NJ 07740, USA. [email: rmir@monmouth.edu]