GENERAL EDITOR: LORRAINE EDEN

Multinationals in North America

The Industry Canada Research Series

The University of Calgary Press

Bruce Kogut
Professor of Management
Wharton School, University of Pennsylvania

6

An Evolutionary Perspective on the NAFTA

THE CREATION OF A North American free trade area is a classical case of gains to an expansion of commerce. If wage and other factor costs were similar among the United States, Mexico and Canada, then the gains to this expansion could be realized through the impact of a larger market on the economies of scale in research, production, logistics and sales. As factor costs clearly differ between Mexico and the two countries to the north, then additional gains should be expected through the better allocation of resources in each geographical region.

Such gains, moreover, may be augmented by reductions in the numbers of necessary customs agents and trade lobbyists, and the reduction in governmental machinery required to administer commercial policy. Although domestic-content rules will necessitate border guards in the interim, the development of a common third-party policy will eventually eliminate these costs. Thus, for reasons of dynamic gains to scale, an improved allocation of resources, and the elimination of rent-seeking and administrative costs, the NAFTA treaty promises the potential for gains to the three partners.

If we move from the abstract to the NAFTA agreement, there are additional reasons to believe that this is in the common interests of the signatories. By any logic, the opening of the Mexican border to trade should enhance investment flows to Mexico to take advantage of the lower costs of labour. Moreover, contrary to a classical approach of viewing profits as the outcome of investment, the expectations of firms regarding the profitability of investing in the area will themselves induce growth. The effect of this development should stabilize Mexico politically and reduce immigration pressures on the United States. Both political stability and a diminution in emigration must rank as desired policy outcomes for the government of the United States.

Despite these obvious benefits of the NAFTA, the report from the United States government's Office of Technology Assessment (OTA) is decidedly cautious. This report warns that "notwithstanding conventional economic wisdom ... the

long-term impact of a NAFTA on U.S. workers and productivity growth could be negative unless government and the private sector take steps to prevent that outcome".[1] These steps, the OTA report explains, would be directed to improve the educational and skill levels of workers, as well as promote "worker participation and worker commitment necessary to compete on a basis other than wages".

It is facile to dismiss these recommendations as a classic example of what March and Olsen (1980) called a "garbage can model of decision making". In their view of how organizations make decisions, problems do not engender solutions; rather, it is the solutions offered by interested parties that seek out problems. The OTA and the consultants to this report are on record as supporting a number of policy *solutions* that are incorporated in the report on the NAFTA.

How can the conclusion that the "long-term impact" will be negative in the absence of government policy be reconciled with the unequivocally positive assessment suggested by an economic analysis? Certainly, it would not be contested that short-run losses, especially for sectors such as textiles, would be realized, as can be expected in any adjustment process. More open borders will result in some re-allocation of capital and workers among sectors; a portion of the efficiency gains of the NAFTA will come at the expense of some textile workers and worker adjustment programs in the efforts to find new work in other sectors of the economy. Yet, in the long run, the attainment of the above gains would seem to justify the short-run adjustment costs, especially in today's environment of low interest rates.

The difficulty in understanding the OTA analysis, despite its being strikingly thorough and well researched, is that we do not have an adequate theoretical framework within which to evaluate the argument. Let us assume, for example, that as a result of the NAFTA the American workers who are uneducated and poorly trained are rendered unemployed or are able to survive only in minimum-wage service jobs which are not import-competing, such as fast-food outlets. This outcome, however distasteful, is not clearly undesirable within an economic analysis, given the likely benefits listed above. In fact, one could argue that the greater wealth, no matter how it is distributed initially, would allow for an enhanced program of income transfer to the needy.

We can go further. For those at the poverty level, any policy that increases the upside of national wealth should be seen as desirable, even if the probability of increased income transfer is small. Moreover, the OTA report notes that the effect of increased exports on the U.S. economy is at worst neutral. The very poor have at least a mildly improved prospect for income transfer, and there is little reason to believe that the number of poor or unemployed would increase.

The concerns of the OTA, one suspects, rest upon three basic premises. The first is Marshall's orthodox view that external economies generate industrial districts that draw upon ideas in a common *atmosphere*. The second is that

managers and policy-makers make decisions on the basis of accumulated practices, sometimes called *know-how* and limited information. The third is that the combination of externalities and the *local* knowledge of managerial practices imply that historical events take on a singular importance.

In the following pages, I argue that the establishment of the NAFTA poses a set of critical issues in the context of current historical changes. The argument is "evolutionary" in its approach and owes its point of departure to the work of Vernon (1966), Linder (1961), and Nelson & Winter (1982). However, to be clear, my analysis does not propose the abandonment of the NAFTA. Rather, it endorses the general vision (although not all of the specifics) of the OTA report — i.e., that the elimination of North American tariffs and trade impediments necessitates a program of regional development and worker training. To understand the strategic responses of large corporations to the NAFTA first requires some understanding and consideration of the historical and institutional context surrounding the policy position adopted by the U.S. government.

National Organizing Principles and Direct Investment

History is important to our understanding of the effect of the NAFTA on the corporate decisions of large and small firms. The creation of a NAFTA would have implied a significantly different set of outcomes if the proposal had been made 30 years ago. Firms in the United States were then still at the frontier of what is now recognized as best practice. The need to make radical changes in the established practices and patterns of behaviour, whether internal to the firm (e.g. techniques of mass production) or related to how firms compete (e.g. radical product innovation), was certainly not compelling.

To understand the effect of the NAFTA on the strategies of firms and the policies of governments also requires some understanding of the particular challenges confronting firms at this critical juncture. There are fundamental and interrelated challenges to large incumbent corporations, which are often expressed in terms of the globalization of markets, especially the penetration of the U.S. market by Japanese and (to a lesser extent) by European firms.

A more telling issue, however, is the impact of foreign competition, which is now so great because the organizing principles underlying the capabilities and strengths of firms are in the process of radical transformation. U.S. firms rose to positions of world dominance during the first two-thirds of this century because of their innovations and early adoption of practices of standardization, interchangeability, and mass production — or what is sometimes grouped under Taylorism and Fordism. The *relative* rise of the United States in the early part of this century eventually led to the dominance of American multinational corporations with subsidiaries dispersed internationally.[2]

Current trends in direct investment flows show an entirely different picture. In 1985, the United States accounted for 22.6 percent of world flows of direct investment and Japan accounted for 11.1 percent. In 1991, the United States and Japan were responsible for 15.0 percent and 16.9 percent, respectively.[3] This wave of Japanese investment, following their pattern of exports, was motivated by a strikingly different set of organizational practices from those characterized by U.S. action. These practices, often called Toyotism, consist of a reliance on a small central parent, on a quasi-integrated supplier and sales network, and on the flexible use of multi-skilled workers who are given relatively large autonomy in decision making.

These new organizing principles account for the historical rise in Japanese investments abroad. Of course there are many motives for direct investment. Yet, the long-term data in direct investment show clear national patterns, with the United Kingdom and the United States dominant at the beginning and middle periods of this century, respectively. To explain these national patterns requires the identification of a factor common to many firms and industries within a country, which leads to direct investment, rather than to portfolio outward investment.

Organizing principles satisfy these concerns because they are not strictly industry-specific; they also require within-firm transfer, i.e., transfer to an affiliate by direct investment. The practice of standardizing tasks, for example, spread across the United States through industries as diverse as armaments and sewing machine manufacturing and from bicycle makers to the auto industry. Time/motion and efficiency studies diffused rapidly to service industries, and were seen in their application to suturing techniques used in Boston hospitals, to Filene's department stores, and to secretarial pools.[4] By 1920, this gradual *trajectory* beginning in the early 1800s spanned a remarkable accumulation of learning and knowledge that was widely diffused throughout American industry.

This diffusion was both spatially and temporally bounded. In other words, the proximity of innovating firms to adopting firms created distinctive geographic patterns in the process of diffusion. The development of industrial districts is one expression of this spatial characteristic. In early U.S. history, junctions of waterways served as places where new ideas were quickly diffused (Sokoloff, 1988). Currently, there is increasing evidence that technologies based on basic science tend to diffuse more rapidly within an area surrounding the originating university than to other sites (Jaffe, Trachtenberg & Henderson, forthcoming). Generally, national boundaries, because they denote areas characterized by common institutional structures (e.g., educational, labour, cultural), are an important dimension in the speed of diffusion.

In addition to the geographic dimension, there is also a temporal element in the development of new techniques. Historically, a cumulative path of development orders the growth of knowledge in the expansion of these practices (i.e., mass production techniques presume the existence of a factory system). Consequently, there is both a spatial and a temporal ordering, or trajectory, to technological and organizational developments.

Of course such developments are frequently firm-embodied, even if they are initially country-specific. Organizing principles, unlike the scientific foundations of a technology, have an important tacit aspect insofar as they are grounded in the structure, and information and incentive systems of firms. Nelson (1982) rightly noted that the compound of the words "techno" and "logy" implies private and public aspects. Somewhat ironically, the way work is organized is a quintessential example of the former aspect.

For this reason, exploitation of such knowledge tends to proceed by its transfer to foreign sites in the form of direct investment rather than through arm's length sales. *Foreign direct investment is simply the transfer of organizing principles from one country to another.* If we then accept the premise that particular countries at particular junctures in history lead in the innovation of new practices that are bounded both spatially and temporally, it follows that we should expect to see country-specific patterns in the long-term series of direct investment.

Changes in Work Design and Japanese Direct Investment

Let us now put these ideas into the context of current changes in organizational practices. For complex reasons, enterprises are currently facing what Piore and Sabel (1982) call a "second industrial divide". A new set of organizing practices, which they label "flexible specialization", is transforming the structures and strategies of enterprises in the more developed countries.[5] Although these principles are often associated with smaller firms, there is a strong case for applying them to large firms as well, evidenced by the broad trends for the 500 largest U.S. corporations over the last decade: sales growth has been flat, their share of employment has fallen dramatically, and asset growth is slower. (The trend for individual firms is even more striking.) This pattern, which emerged in the 1980s, is in contrast to that of the previous decades.[6]

There is a wide consensus that Japanese enterprises have been in the forefront in ushering in a new set of practices over the past 30 to 40 years. It is interesting that these practices, while stemming from traditional roots, represent innovations of rather recent origins. Nishiguchi (1993) argues that the sub-contracting system grew out of the war-time frustration in Japan with the poor quality of aircraft and other transport equipment. Ohno (1978), a principal architect of Toyotism, traces the innovations to the 1950s, although a few experiments were made in the 1930s.

These practices have been described by many authors. Aoki (1988) is an influential analyst who identified the following principal elements (see also Westney in this volume).

- Decentralization of decision making and horizontal communication and cooperation across functions at lower levels of the organization.

- Vertical control structures within the enterprise, with a main bank monitoring the performance of top management.

- Reliance upon suppliers for the production of parts outside the competence of the corporation, with the use of incentive systems to guarantee quality and to reduce costs and inventory levels.

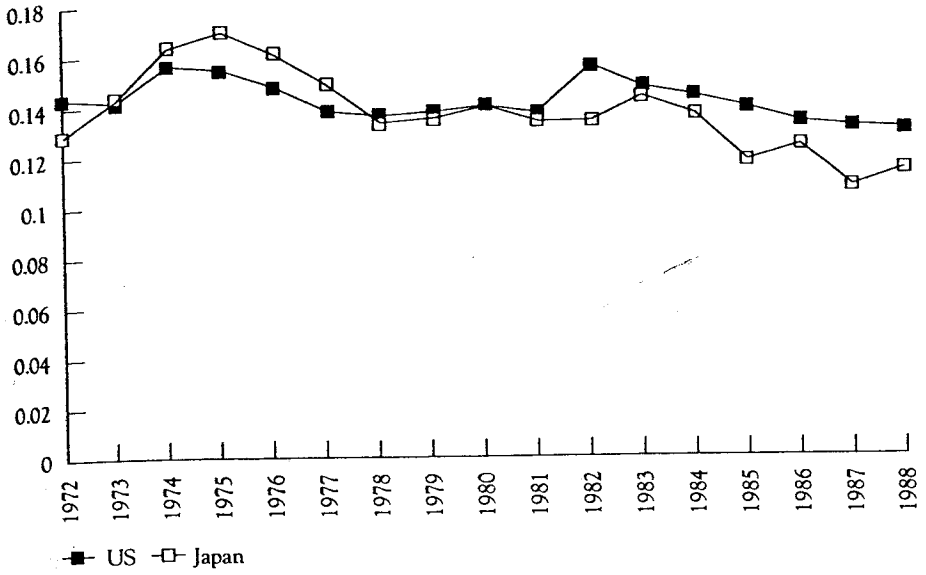
Of the many notable outcomes of these practices, a remarkable feature is that the Japanese corporation is much smaller than its American counterpart. U.S corporations, as shown in the Industry Canada data, are large. For example, in 1987 General Motors had 813,400 employees, compared to Toyota's 64,329; IBM, 389,348 to Hitachi's 76,210; and Du Pont 140,145 to Asahi Chemicals' 15,595 (Fruin, 1992). Canadian corporations, though smaller than their U.S. counterparts, are no less daunting in the context of their national market. According to the Industry Canada study elsewhere in this volume, 158 Canadian firms in the list of the 1000 largest multinational firms in North America account for 52 percent of Canada's gross domestic output and 19 percent of its total employment.

The relatively smaller Japanese corporate units serve as a focal point in a quasi-integrated network of suppliers who tend to be geographically contiguous. One of the most important practices in the coordination of this network is the use of the *just-in-time* (JIT) and *kanban* systems to reduce overall inventory levels.[7] Just-in-time places the burden on the supplier to deliver parts on an "as needed" basis; kanban is manufacturing to market "pull" as opposed to the Fordist mass volume and low cost "push" strategy. The two practices are linked in that by keeping inventory low, the firm avoids being locked into a particular product mix. On the other hand, this system places a burden on the supplier regarding not only inventory levels but also the rapid provision of the required parts. Through these practices, Toyota acts as a focal firm that assembles the components manufactured by geographically contiguous firms.

It is difficult to gauge the degree by which these new practices have diffused within Japan, no less than internationally. However, in the case of JIT, an accessible and reasonable measure is the trend in inventory levels as a proportion of sales over time. Figure 1 gives these trends for the United States and Japan.[8] (The series is not detrended, although dividing by nominal sales provides a natural deflator.) What is interesting here is that Japan's decline (since 1981) is of rather recent origin and that its decline continued to be impressive throughout the 1980s. The American trend also shows a decline, but it begins later and is barely perceptible. The diffusion process of JIT therefore appears to be more rapid inside Japan than outside its borders.

FIGURE 1

TOTAL INVENTORY AS A PROPORTION OF SALES (%)



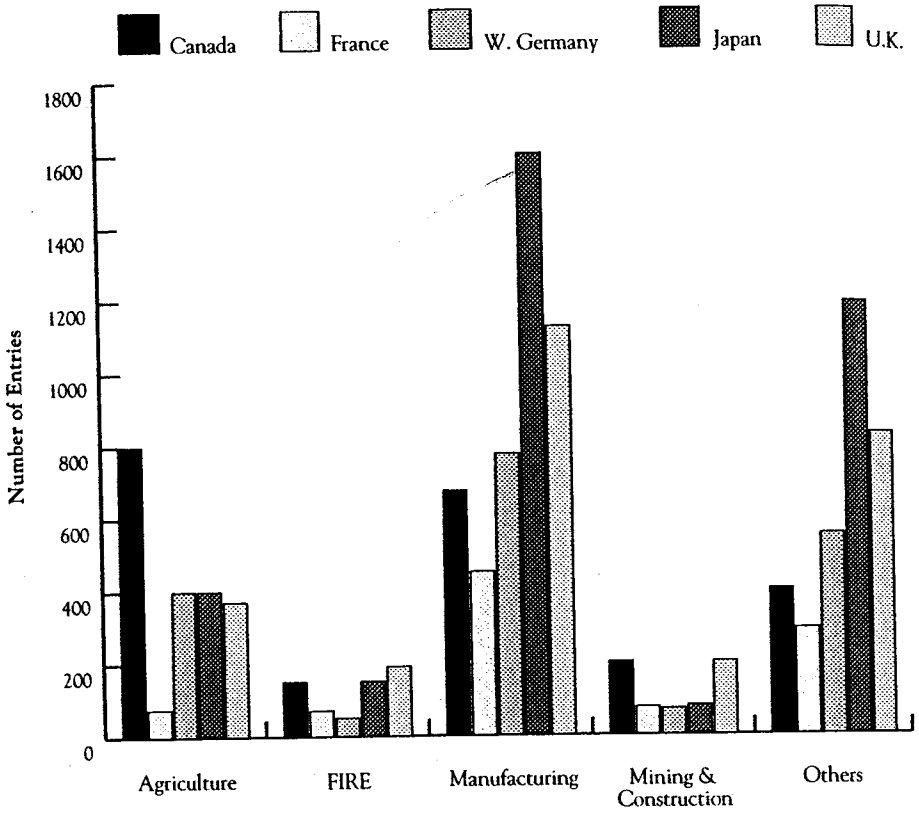
Of course, the fact that Japanese practices are being transferred across its borders is evidenced in the many studies on joint ventures in the auto industry.[9] Yet, the process of diffusion points to two very different modalities: the adoption of practices by non-Japanese firms, and the displacement of foreign firms by Japanese subsidiaries located overseas. To a great extent, there is a race between the abilities of incumbent firms to learn new practices and the speed with which Japanese firms can expand into foreign markets.

The declining relative share of North American firms in their home market shows up in the data on foreign investment in the United States. The share of sales and employment held by foreign affiliates in the United States manufacturing industries rose from 5 percent and 3 percent in 1977 to 12 percent and 9 percent in 1988. Penetration was highest in the chemical and glass industries, with 28.8 percent and 17.5 percent of the U.S. workforce employed by foreign affiliates.[10]

Figure 2 shows the sectoral breakdown for the major countries investing in the United States. Canada is unique with respect to the importance of its agricultural investments in its overall portfolio. Japan is especially dominant in the manufacturing sector, as well as in the "other" category, which consists mainly of wholesale and distribution outlets; Japanese direct investments in distribution channels were three times greater than the corresponding German

FIGURE 2

DISTRIBUTION OF FOREIGN DIRECT INVESTMENT BY SECTOR AND COUNTRY 1974-89



or U.K. totals during the 1980s. However, during the decade Japanese investment shifted from distribution channels (needed to support their exports) to manufacturing.

Of course the motivation for these trends is not restricted to the superiority of organizational practices. Traditional motives, such as the "push" of home rivalry among national firms which spills over into other markets, are consistently found to be an important influence. Moreover, there is increasing evidence that the technological and organizational capabilities of a country

"pull" investment. Japanese firms were found, for example, to use joint ventures in industries where the U.S. firms maintained relatively higher expenditures in R&D (Kogut & Chang, 1991). Shan (1993) also found that Japanese firms bought minority stakes in U.S. biotechnology firms with strong patenting histories.

While industry and firm factors are important determinants of direct investment flows, the explanation for the *country* pattern in direct investment requires the additional consideration of national characteristics. As noted above, foreign penetration has proceeded rapidly in the United States — an expression of the decline in the relative advantage of the U.S. firms to defend their markets and the attractiveness of the North American market. Similarly, the share of industrial sales held by foreign affiliates in (West) Germany, France, and the U.K. were 16 percent, 22 percent, and 13 percent for 1988. The corresponding figure for Japan fell from 2 percent in 1977 to 1 percent in 1988 during a period when its share of world direct investment rose from 3.8 percent (1980) to 12.2 percent (1990).[11]

At an historical junction during which new work practices evolve in particular countries, competition among international firms has a strong national character. Organizing principles and technologies develop along a trajectory characterized by the accumulation of learning and its inter-industry diffusion. These principles, rooted in social behavior and institutions, are anchored in and reflect the existing social structure and organization of a country. As a result, their adoption favours firms from the same locality. In other words, the permeability of the borders of a firm is greater than the permeability of the geographic borders of a country.

Eventually, the diffusion of country advantages levels the playing field among firms of different national origins. Competition, then, reverts more to the characteristics of industries and firms (although national effects may still be evident). It is not surprising, therefore, that Kravis and Lipsey found that the share of U.S. multinational corporations around the world has been more stable than the share of U.S. exports. Since the initial investments have been established for decades for many firms, they tend to share in the prosperity of the regional economy. The rise and diffusion of national organizing principles underlie the country cycles in direct investment.

In the current decade, the diffusion of Japanese organizing principles is the distinguishing feature of international competition. In the case of Japanese direct investment, this diffusion takes an initial form in the establishment of an export office and then a manufacturing plant in the foreign country. In the United States, a simple but primary predictor of subsequent investment is whether a Japanese firm has an existing sales office or plant (in the United States) to serve as a platform for expansion (Kogut & Chang, 1993). Yamawaki (1992) has also found that Japanese subsidiaries in Europe and the United States diversify differently, depending upon local market conditions; local opportunities influence the expansion path. When the process of initial

investment, expansion and diversification is over, other national firms will have adopted similar, or competitive, practices. By that time, however, the stock of Japanese investment in the world is likely to be much higher, with Japanese affiliates firmly implanted throughout the world economy.

Heterogeneity of Practices and Wages

As implied above, new organizing practices are not always Japanese in origin. In fact, depending on the firm, industry and country, the organizing principles that underlie the capabilities by which firms respond flexibly and rapidly to market conditions can differ widely. There is, in other words, a "functional equivalence" across countries: different ways to organize work can produce the identical products and services.

A good example is described in the study by Whittaker (1993) concerning the use of computer numerically-controlled machinery. In Japan, these machines tend to be operated and programmed by the same (usually young) employee; frequently, they are left to operate unmanned at night. In the U.K., the tendency is to give an engineer the task of programming, with operation left to a skilled worker; the machines rarely run unmanned. The explanation for these variations appears to lie in both relative wages and institutional rules. The British system tends to comply *de facto* with a seniority rule; in Japan, the older workers are given other tasks or retired.

However, a "functional equivalence" is not always found. Many firms in Whittaker's British sample simply lagged behind in the use of advanced machinery or did not use the machinery flexibly. Part of the explanation for this, as suggested above, is the resistance of traditional work structures to accommodate new technologies. But an equally probable explanation is the difficulty in understanding the implications of new work designs for exploiting strategies of flexibility and the delivery of high-quality production and services.

Over the past 10 years the British and French governments have introduced a number of important reforms in the education and training of workers to increase their skill levels. The impetus of these reforms has been due as much to a concern with German as with Japanese competition.[12] A highly trained workforce is one of the primary examples of a country-specific factor that influences the capability embodied in firms to adopt and develop new work practices. National institutions, such as labour laws, are often seen as impediments to markets. On the contrary, these institutions are often "enabling" in the sense that they augment the quality of resources available to firms.

The United States, perhaps due to the greater decentralization of its educational institutions, has been slower in introducing new reforms.[13] It is not without importance that studies show American wages falling in real terms relative to Japanese and European levels. More strikingly, those wages are falling dramatically for less skilled workers due to a decrease in demand

more polarized today

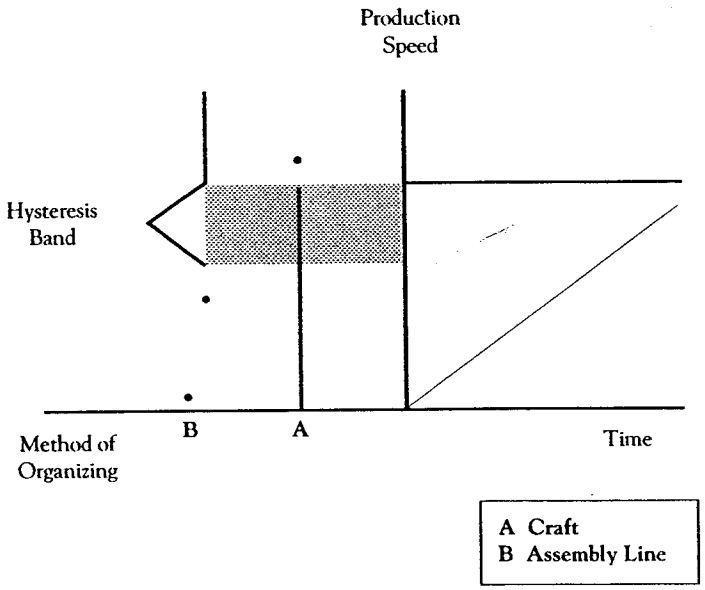
narket corresponds to
rt discussed. The first
pool that, at the cost
quickly with products
rategy can be found in
erations, to Hewlett
k close to its assembly

wage workers prolongs
roduct strategy. The
ater than that of the
can seek to survive by
tainty over the efficacy
ist in using traditional
formation" acquisition
tices; firms might shift
ere or how to manage
al equipment designed
the techniques — the
ufacturing).
ers, are uncertain over
igher quality programs
d of "hysteresis" that
ching in a context of
work practices beyond
not sure of the future
ter all the anticipated
hould improve, then it

on the choice of new
niques.[15] As stressed by
ss (volume) production
, Frederick Taylor first
ry for his innovation to
he U.K. was impeded by
ed of work.
epicted in Figure 3. As
easing uniformly), the
attractive. Yet, many
e statically "optimal"
s long as managers are
nologies.

FIGURE 3

THE IMPLICATIONS OF HYSTERESIS ON THE CHOICE OF NEW TECHNIQUES



Moreover, the reluctance to switch is increased if we consider a more realistic pattern of firm behavior, which stems from the fact that managerial information regarding these techniques is very limited. However convenient for the purposes of economic explanation, the assumption that forward-looking managers will act on the basis of known parameters (even if probabilistic) contradicts the way we know decisions are made — on the basis of rules and information — inside organizations.[16] These rules, which structure firms and their decision-making process and information systems, constitute the "knowledge" of the firm. A rule that requires organization of operations by function, e.g., R&D, production, and marketing, defines the capability of a firm, that is, *what it can know how to do*. To be faster to the market appears to require adopting new rules, or recipes, by which to organize activities in multi-functional teams.

Hysteresis in the form of the persistence of practices is a powerful description of the process of change because it can be the outcome of economic foresight or myopic behaviour arising out of these rules. Either way, it has important implications because firms, individually and collectively, can easily be trapped with low wage levels and outdated techniques.

Creation of Free Trade Areas in a Hybrid Age

The persistence of old principles is, as described in the previous section, a logical outcome of the relative decline in labour's wage levels, managerial expectations regarding future technological and price (both factor and product) developments, and the existing body of managerial practices and information. A shift in any of these influences the rate of adoption of new practices. For example, the heterogeneity of labour institutions in the United States permits firms to locate in non-union areas in order to apply Fordist methods in low wage rate environments. As long as firms are uncertain over the future evolution of wages, old practices will persist, even if other (new) practices appear to be superior.

Of course, a government can intervene by mandating a higher wage. Indeed, in such a case, by constraining the power of the firm to make decisions (by limiting its freedom to set wages), this policy may induce a shift to newer practices; it can no longer survive by actively reducing its production wage costs relative to foreign competitors. Moreover, if there are externalities affecting the adoption decision, this policy can qualitatively shift the diffusion process, as the decision to adopt by one firm makes it more attractive for another to make a similar decision.

These considerations are not far from the experiences of some countries. For example, the German experience is remarkable in that during the 1970s, the economy was structurally foundering under the shocks of oil price increases. Given the strength of well-organized labour unions, concessions for these increases were readily obtained from employers — resulting in spiralling wage costs. Moreover, the presence of labour on the boards of many German companies influenced the location decisions of German enterprises. In a celebrated incident, the head of VW stepped down over the decision to build plants outside Germany in Pennsylvania due to the protest of "exporting" jobs to the United States. Managerial decision-making is highly constrained. Yet, because workers were highly skilled and an educational system existed by which they could be retrained, German management and labour co-operated in the redesign of work and the introduction of new technologies.[17] The German environment did not allow for a low-wage strategy. Firms and workers were constrained to move along an adjustment path towards a more rapid introduction of new methods and technologies.

Where such institutions are missing, should governments mandate higher wages as a way to constrain firm choice towards the adoption of new work practices? There are two major problems with this policy. First, the decision to adopt radically new organizational practices is not like installing new capital equipment on the factory floor. Consider the three elements suggested by Aoki regarding Japanese practices. A transfer of decision making to lower levels of the firm is a complex problem, ranging from the motivation and training of lower management and workers to internal politics. Creating a

financial system in which a main bank plays a dominating role is not only a radical departure from existing practice, it is also not possible in the U.S. context due to restrictions on equity participation of banks in industrial firms. Finally, increased reliance on a network of independent suppliers implies a major divestment and deintegration of supplying units inside large U.S. manufacturing firms.

In other words, new ways of working are part of a coherent system that link the firm and the institutional environment. Adopting any one of these three elements is, consequently, a very costly departure from existing practice. Moreover, it is not clear whether all three elements would have to be adopted. Relations of cause and effect in the context of a "system" of practices are difficult to detect.

The second major problem is that large U.S. corporations are multinational; many of their assets and sales are overseas.[18] Rather than promoting the attractiveness of new methods in the U.S. market, increasing wage rates may only encourage a transfer of more investment overseas.

It is critical to emphasize that pressures to change work practices occur in response to competitive pressures. In simple terms, firms know they should adopt practices which are in their long-run interest. However, when the issue appears to be a question of survival, short-run considerations are likely to dominate. Outsourcing and overseas production are common strategies used in such circumstances to reduce costs rapidly.

The expansion of free trade with Mexico exhibits similarities with a policy of reducing wages at home. On average, Mexican hourly wage rates are less than one-fifth of U.S. costs (unpublished data from the Department of Commerce). There is, however, a great heterogeneity in wages as well as in productivity levels. Given an inferior infrastructure, the distance from the more northern markets in the United States and a less skilled workforce, wage levels are not the only consideration in the location decisions of large firms.

There are still good reasons to believe that the Mexican workforce will attract the migration of some industry. First, the heterogeneity of labour means that multinational corporations can hire the relatively more skilled workers. In fact, studies on productivity of U.S. affiliates in Mexico have estimated that, on average, the Mexican level was 93 percent of the U.S. productivity level and, in several industries, was even superior (Blomstrom & Wolff, forthcoming). However, labour productivity rates for Mexican-owned firms were far lower. This differential suggests that U.S. affiliates were able to tap into a more skilled workforce or that Mexican plants do not have the same level of capital investment and managerial ability. In any case, high productivity is certainly possible in the Mexican environment.

Second, U.S. multinational corporations have had a long history of involvement in Mexico, with Ford and other companies operating plants there since the 1920s. In 1977 U.S. firms employed over 300,000 people in Mexico. This number increased dramatically throughout the 1980s, especially in the

maquiladora zone. In 1991, the maquila plants alone employed 450,000 people, and accounted for more than one-third of all exports (OTA, 1991:65).

Finally, the evidence to date already shows a considerable rise in investment in Mexico. U.S. direct investment flows rose to over $2 billion in 1990 and 1991, considerably higher than the $1.5 billion in 1980 (which was the largest annual flow during the 1980s). Mexico, of course, is attractive for reasons other than serving as a platform for production to be exported back to the United States. Part of this investment is directed at producing for a growing domestic market. Nevertheless, as the above figures on the maquila plants suggest, a good deal of the investment is export oriented.

On the other hand, it is interesting to note that total inward direct investment was $5 billion in 1991. The U.S. share, consequently, is only about 40 percent of the total, smaller than at any time during the 1980s. Mexico is pulling in an increasing flow of investment from firms whose origins lie outside North America. In other words, Mexico has become an extension of the geography of international competition between American and non-American firms.

The dynamics of this extension must be seen against the background of the overall pattern of foreign entry into North America. Figure 4 shows the data relevant to the Canada and Latin America. Canadian entries also rose

FIGURE 4

FDI ENTRIES INTO THE UNITED STATES, 1974-89

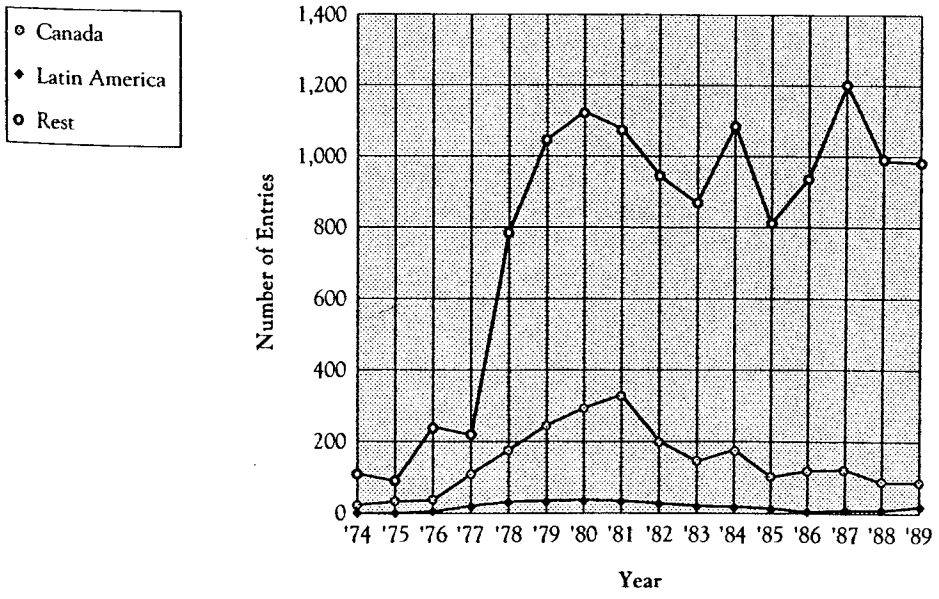
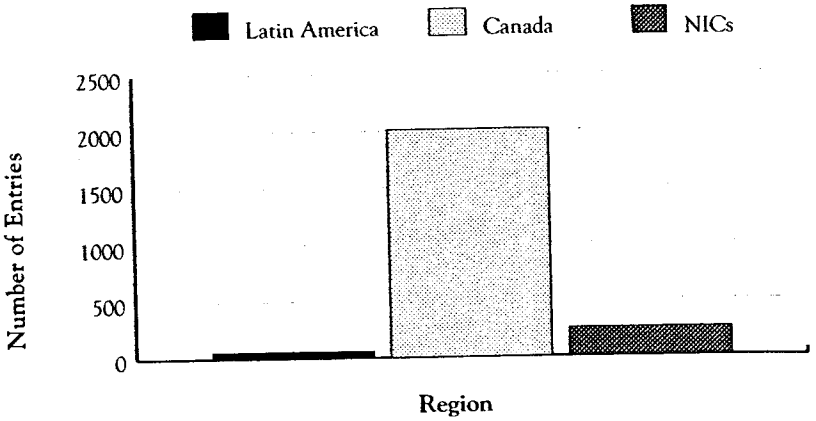


FIGURE 5

FDI ENTRIES INTO THE UNITED STATES FROM CANADA, LATIN AMERICA AND THE NICs, 1974-89



dramatically in the early 1980s, but slowed down over the decade relative to other countries. Mexican entries are barely perceptible, but when coupled with all Latin American entries, a slight rise appeared in the 1980s, primarily in the service, real estate, and oil and extraction industries.

To give some sense of the benchmark by which to measure the presence or absence of Latin American investment in the United States, Figure 5 compares entries from this region with those from the Asian newly industrialized countries (NICs). Despite greater distances, the NICs have almost twice the number of entries, with their sectoral distribution concentrated in distribution channels and some manufacturing.

In short, investment flows into Latin and North America are strongly affected by the wider dynamic of competition among the industrialized countries. Canadian enterprises are by no means minor players in these flows, especially in light of the size of their national economy. The United States remains, as Eden's contribution to this volume shows, the investment and trade hub for Mexico and Canada. Yet, the long-term trend shows a faster growth of non-North American direct investment in the region than of intra-regional flows.

These trends should be compared against the European case to understand their significance. The Japanese entry into Europe is instructive as a clean experiment, as there was little Japanese investment prior to the mid-1980s when discussions relating to the 1992 reforms began (see Dunning, this volume). For example, Yamawaki's (1991) study on Japanese investment in Europe shows a similar polarity. Spain and the U.K., although much richer

than Mexico, attract Japanese investment due to their low wage environments. Germany has been the other major site for Japanese investment, especially in the areas of residential technological strength, such as electronics and machine-tools. Thus, Japanese location strategies appear to be split between the use of export platforms of relatively labour-intensive activities in lower-wage countries, and the pull of industrial districts where technological capabilities and final user demand are concentrated.

What is different about the European case, however, is the centripetal trend in investment. Of 1,804 cases of acquisition or of majority investment between 1986 and 1990, 899 were by national firms and 640 by firms from other Economic Community countries; only 264 were by firms from the outside (including neighbouring countries of Sweden, Switzerland and Austria). In the chemical industry, the number of within-nation to within-EC acquisitions was 145 to 196; in transport, it was 36 to 34 (Commissariat du Plan, 1992: 44). Of the mergers in 1990, 44 percent involved a firm size greater than five billion ECU. The prospect of a NAFTA has not yet led to a similar predominance of intra-regional direct investment in the overall direct investment flows in the North American region.

Policy Considerations for the NAFTA Region

The European Community is, of course, further along in its integration than the North American countries. Its members share a fairly common policy regarding third countries, especially with respect to trade. It is also a region of greater economic homogeneity in income, wage levels and environmental standardization. The effect of the 1992 legislation, even if dampened by the events of German unification, has been to heighten competition among industrial districts and, at the same time, to regionalize competition among the major companies. Consequently, the EC shows in microcosm a world wide trend: localized competition among small- and medium-size firms, with large firms competing internationally, partly by acting as investment bridges between these regional districts in order to tap into markets and technologies or to source materials and labour.

The NAFTA is a much more limited experiment. Yet, since trade barriers are one of the most important stimulants to the timing of direct investment, their elimination is bound to have important effects on a region. To the extent that a common policy on third-country domestic content is maintained, the effects may seem to be limited to investment flows among the member countries. But, as the above data have suggested, the variations in national advantage, as well as the impact of freer trade on growth, strongly influence the magnitude and location of direct investment from other regions.

The NAFTA is also a confounded experiment in that it is occurring at a time when there is a structural break in the long-term trajectory of firms and

countries. The stagnation of sales growth in the largest firms, the internationalization of their markets, and their rapidly diminishing share of employment reflect a fundamental break in work practices.[19] What is being observed is not simply the transformation of industries from national to international rivalry; it is also a historical transformation of the capabilities — and the work practices which generate such capabilities — of North American business enterprises.

The lessons of history show that it is critical to understand the direction and nature of this change. The issue of the NAFTA must not be relegated to an abstract plane of analysis. Rather, it must be placed in the context of the historical conditions that now exist. In the absence of policy recommendations, I put forward five considerations which are implied by the above discussion.

1. Re-location of activities

A primary motive for foreign direct investment, noted in one of the first studies on U.S. direct investment overseas, is the ability to avoid tariff barriers by exporting firms. This motive remains a primary determinant of Japanese investment in the United States (Kogut and Chang, 1991). The elimination of borders means that some activities, previously justified by trade barriers, can now be integrated into headquarter functions.

However, the trimming of the staff of foreign and home operations is also a characteristic of recent changes in corporate organization. The public announcement by IBM that it intends to make drastic reductions in its managerial overhead also noted that a fair proportion of this rationalization will occur in the European and other regional operations. By allowing for more integrated corporate activities, the elimination of trade barriers amplifies the trend toward a reduction of overheads; but this trend is already in force, whether or not a NAFTA exists.

2. Network configurations of suppliers and customers

Rapid response to markets and the disintegration of the firm by outsourcing critical technologies places a premium on the spatial contiguity of suppliers and the focal assembly firm (Toyota for example). Whereas information technologies permit a greater coordination of dispersed activities, the *prima facie* evidence witnessed in the replication of Japanese domestic auto networks in the United States and Canada suggest that proximity is a powerful driver of location. To a certain extent, the replication of these networks in greenfield sites using workers with little industrial experience underlines the arbitrariness of history. Once a focal firm has located, these regions become increasingly coherent industrial districts.

The data on foreign direct investment in the United States show a country pattern where entries are bunched in particular sectors. For example, German firms are very active in chemicals; Japanese entries are concentrated

in auto production and parts supply and, secondarily, in electronics. In part, this pattern is the outcome of trade restrictions and revealed advantage. But in some sectoral cases, such as Japanese investment in autos, it is the outcome of what can be called "network threshold" effects. At a particular critical mass the industrial network of the home market recreates itself, although never exactly (some members are eliminated and some target country suppliers are admitted). The characteristics of this network effect generate strong incentives for regions and nation states to bid for investment by focused firms. They also create an incentive to monitor dominant firms regarding their relocation decisions.[20]

3. Role of Technological Centers

As noted earlier, some industries have a strong regional characteristic due to their reliance on basic science. Biotechnology companies, for example, tend to locate around universities with frontier research in the underlying science. Some 40 years after the fundamental innovations in the laboratories of Palo Alto, the semiconductor industry is still concentrated in this area.

The role of foreign firms in these regional science networks poses difficult questions regarding the spatial boundaries of diffusion. Since science is often subsidized by governments and since such subsidies frequently underlie other agreements to create important public externalities, national and regional governments have an interest in restricting the appropriability of these benefits to national firms. In one study of inter-firm agreements it was found, for example, that U.S. biotechnology start-up companies are significantly tied to large companies, whether American, Japanese or European.[21] The boundaries of public policy are much more difficult to define in an era of internationalization of industrial networks. Government support for high technology poles would be mistaken unless coupled with the creation of regional programs that encourage the co-location of production and user industries.

4. Training and Skill Levels

There is increasing convergence in public policies among competing developed countries in the training and skill upgrading of the workforce. Because education is at worst consumption and at best an important investment in human capital formation, it tends to be a "motherhood" issue. The commonly held belief, however, is that a rising skill level is vital to prevent the out-migration of industry.

The German system, which is frequently cited as a model in national government reports, is based on internships and apprenticeships usually sponsored by the large corporations in a district. The program results in a degree which confers a specific professional status recognized in a market. The

worker is not always hired by the sponsor firm and, in fact, inter-firm mobility is high, although inter-regional mobility is not. Since the state government bears the cost of this training program, the geographic stability of labour is critical. It is not clear whether a national government, without proximity to the region, could effectively engage the cooperation of enterprises; nor is it clear that regional governments could justify the cost if geographic labour mobility were high. The decentralization of the German administrative and fiscal system may be a necessary ingredient in solving this collective choice problem that might fit the Canadian case. Therefore, coupling local administration with federal fiscal support may also be a viable alternative in the context of the high inter-regional mobility of labour in the United States.

5. Fair competition

One observation made on the diffusion of unions is that management often promotes legislation requiring collective bargaining, or its equivalent in other nations. The motivation for management support was to eliminate wages as a source of rivalry in an industry and to reduce the vulnerability of employers to the demands of their workforce. There was, in other words, a notion that competition in the form of wage cutting was not "fair".

This issue is of obvious importance to the creation of a free trade agreement which precedes the harmonization of social and environmental policy. The relocation of industry due to the more lenient and/or more weakly enforced environmental policies of a particular region may not be seen as fair or desirable. The hiring of a young workforce in a country where health insurance is part of the cost of the compensation package offered to workers is a stimulus for shifting corporate support to a national health system. However, given the long-term abandonment of inner-city areas by most corporations, the location of industry in non-urban sites may be seen as a fair way to compete.

Ultimately, the creation of an enlarged economic region poses questions of the harmonization of social policies that have an appeal to notions of fairness. The fact that attachment to these notions is likely to differ among countries and is open to manipulation by economic interests is cause for both outrage and cynicism. However, the belief that an economic solution will follow from the outcome of this larger consensus is certainly mistaken. Indeed, if recent European experience is at all relevant, a rapid move toward harmonization in economic policy, especially regarding monetary and currency targets, can shift the adjustment onto the labour market through competitive pressures on wages and dismissals. No matter how difficult, consensus on fair play regarding fundamental values should precede a fuller economic harmonization.

Each of the above considerations poses a set of extremely complex issues. In lieu of an overall solution, two observations can be made. First, it is obvious that the location decisions of firms in the post-NAFTA environment will be influenced by the policies governments choose to pursue. For the purpose of

creating coherent policies, it is desirable to view the occurrence of the NAFTA as nested within the challenges posed by the structural changes in the traditional practices of firms and the increased pressures of international competition that these changes have generated for North American industry.

The OTA report is essentially correct in framing the NAFTA as an element related to the overall policy questions regarding worker training, fiscal incentives for investment, and regional development. However, the role for private initiative should not be underestimated. Indeed, governments can play an instrumental role simply by disseminating information and providing a forum for discussion and comparison. The implication of the above analysis is that the process of adjustment, once it has crossed a threshold, is largely self-organizing. The incentives for worker training and the adoption of new practices derive from both the efforts of industry seeking higher productivity and the efforts of workers seeking higher wages.

The second observation is that the decisions made at this time will have, due to the particular juncture of history, long-lasting and irreversible consequences. It is difficult to make a case for positive government policy in the economics tradition in which most policy makers are trained. For those who would like to have a proactive policy, a consideration of the externalities in the long-term dynamics of creating regionally-based industrial networks will have to suffice.

There remains, of course, the possibility that firms, because they are rule-based organizations, do not always know what is best. We leave the sagacity of this conclusion to another forum, except for an elliptic surmise, somewhat along Pascal's wager: if doubt is entertained over the foresight of enterprises, it may be worthwhile for a government (with sufficient foresight) to entertain policies which firms do not have the luxury of time to consider.

ENDNOTES

1 Office of Technology Assessment, 1992:6-7.
2 Raymond Vernon estimated that during the 1960s the top 180 U.S. multinational corporations were establishing, on average, six subsidiaries each year. See his *Sovereignty at Bay*. For a study on the impact of American national organizing principles on direct investment, see Kogut, 1992.
3 Data are from balance of payments, compiled by Investment Canada (now Industry Canada). Of course, there are two important distortions here: exchange rate movements and the neglect of reinvested earnings (especially large for the United States, due to its large stock of overseas investment). However, other data show similar trends.
4 See Hounshell (1984) for a study of the origins and diffusion of American mass production. This material, and its diffusion to service industries, is also described in Kogut (1992).
5 For a compendium of country studies discussing this trend, see the contributions to Kogut (1993).
6 The data are given and discussed in the introduction to Bowman & Kogut (forthcoming), which is a compilation of multi-disciplinary studies on the redesigning of the corporation.
7 A thorough discussion of these two principles can be found in Coriat (1991).
8 These data were collected by Jaeyong Song from unpublished data gathered from the Bureau of Economic Analysis and its Japanese equivalent.
9 See Wolf and Globerman (1992).
10 The data are given in Commissariat General du Plan (1992). See also Graham & Krugman (1989).
11 See Commissariat General du Plan (1992) and Industry Canada.
12 See, for example, the studies by Prais & Wagner (1985, for an example) on U.K. and German plant level productivity comparisons in which the primary explanation for the German superiority is found in the skill levels of workers.
13 For a discussion of the reforms introduced in the United States, see the OTA (1992).
14 See Ittner (1992).
15 This figure, with a formalization of the argument, is given in Kogut & Kulatilaka (1992).
16 See Nelson & Winter (1982) for a discussion; Berry (1982) has described these rules as the "invisible technology" of a firm.
17 See Kern & Schuman (1993).
18 See the data in Eden, this volume.
19 See Bowman & Kogut (forthcoming).
20 See Herrigel (1993) for a discussion of the role of Bosch in the industrial district of Baden Wuerttemberg and the effect of the relocation of some of its activities on the politics and economics of the region.
21 See Kogut, Walker, Shan & Kim (forthcoming).

ACKNOWLEDGEMENTS

I WOULD LIKE TO THANK Jaideep Anand and Jaeyong Song for their assistance. Lorraine Eden, Rachel McCulloch, and Roderick White provided valuable comments.

BIBLIOGRAPHY

Aoki, Masahiko. *Information, Incentives, and Bargaining in the Japanese Economy*. Cambridge, U.K.: Cambridge University Press, 1988.

Berry, Michel. *Une Technologie Invisible*. Paris: Centre de Recherche en Gestion, Ecole Polytechnique, 1982.

Blomstrom, Magnus and Edward Wolff. "Multinational Corporations and Productivity Convergence in Mexico." In *International Convergence of Productivity*. New York: Oxford University Press, (forthcoming).

Bowman, Edward and Bruce Kogut (eds.). *Redesigning the Firm*. New York: Oxford University Press (forthcoming).

Burenstam Linder, Staffan. *An Essay on Trade and Transformation*. New York: Wiley, 1961.

Chandler, Alfred. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Harvard University Press, 1977.

Commissariat Général du Plan. Investir en France, un espace attractif, (rapport du groupe localisation des investissements transnationaux). Paris: La Documentation Française, 1992.

Coriat, Benjamin. *Penser à l'Envers: Travail et Organisation dans l'entreprise japonaise*. Paris: Christian Bourgois Editeur, 1991.

Fruin, Mark. *Japanese Enterprise System*. New York: Oxford University Press, 1993.

Graham, Edward M. and Paul Krugman. *Foreign Direct Investment in the United States*. Washington D.C.: Institute for International Economics, 1989.

Herrigel, Gary. "The Political Ordering of an Industrial District: The Case of Baden Wuerttemberg." In *Country Competitiveness: Technology and the Organizing of Work*. Edited by Bruce Kogut. New York: Oxford University Press, 1993.

Hounshell, David. *From the American System to Mass Production, 1800-1932*. Baltimore: Johns Hopkins University Press, 1984.

Ittner, Christopher. "The Economics and Measurement of Quality Costs: An Empirical Investigation." unpublished doctoral thesis, Harvard Business School, 1992.

Jaffe, Adam, et al. "Geographic Localization of Knowledge Spillovers, as Evidenced by Patent Citations." *Quarterly Journal of Economics*, (forthcoming).

Katz, Lawrence, et al. "A Comparison of Changes in the Structure of Wages in Four OECD Countries," Harvard University, mimeo, 1993.

Kern, Horst and Michael Schumann. "New Reflections on the End of Flexibility." In *Country Competitiveness: Technology and the Organizing of Work*. Edited by Bruce Kogut. New York: Oxford University Press, 1993.

Kogut, Bruce. "The Permeability of Borders and the Speed of Learning Among Countries." in Holger Crafoord Lectures, Globalization of Firms and the Competitiveness of Nations. Lund: University of Lund, 1990.

_____. "National Organizing Principles of Work and the Erstwhile Dominance of the American Multinational Corporation." *Industrial and Corporate Change*, 1 (1992): 285-317.

Competitiveness: Technology and the Organizing of Work. New
Press, 1993.
hang. "Technological Capability and Japanese Foreign Direct
d States." *Review of Economics and Statistics*, 73, (1991): 401-13.
tments and Japanese Entry in the United States Electronic

atilaka. "What is a Critical Capability." mimeo, 1992.
m Technologies and National Industrial Networks." In
nternational Competition. Edited by J. Hagedoorn. London:
g).
Olsen. *Ambiguity and Choice in Organizations* (second edition).
ersity Press, 1980.
ble of Knowledge in R&D Efficiency." *Quarterly Journal of*
53-70.
/ Winter. *An Evolutionary Theory of Economic Change*.
ard University Press, 1982.
Interfirm Networks. New York: Oxford University Press, 1993.
uction System. Beyond Large Scale Production. Cambridge, Mass:

sment. *US-Mexico Trade: Pulling Together or Pulling Apart?*
Government Printing Office, 1992.
Sabel. *The Second Industrial Divide*. New York: Basic Books,

er. "Schooling Standards in Britain and Germany." *National*
iew, 1985.
)irect Investment in the Biotechnology Industry." mimeo,

ive Activity in Early Industrial America: Evidence from Patent
rnal of Economic History, 48, (1988): 813-50.
Transnational Corporations. "The Triad in Foreign Direct
stment Report, 1991*. New York: United Nations, 1992.
itional Investment and International Trade in the Product Life
of Economics. 80, (1966): 190-207.
nity at Bay: The Multinational Spread of U.S. Enterprise. New

: of Computer Numerically-Controlled Machinery in the U.K.
npetitiveness: Technology and the Organizing of Work. Edited by
Oxford University Press, 1993.
Globerman. "Strategic Alliances in the Automotive Industry:
s." Ontario Centre for International Business, Working Paper

on Decisions of Japanese Multinational Firms in European
s." In *European Competitiveness*. Edited by K. Hughes.
University, (forthcoming).
of Entry by Japanese Multinationals into the U.S. and European
." In *Japanese Direct Investment in a Unifying Europe*. Edited by D.
on. Oxford: Oxford University Press, (forthcoming).