

count the social environment and organizational changes. Developing countries need to develop their own capacity to assess the opportunities new technologies provide, the magnitude and nature of the changes involved in the development of new information systems, and the risks they entail. They also need to work out more carefully methodical activities for organizational change and systems development which are appropriate for their organizational culture. To that end, information systems research programs are as critical as efforts for the development of the necessary technical skills.

13 Impact of an imported IT sector: lessons from Ireland

Eileen Trauth

Introduction

As technology-based information processing becomes an increasingly important success factor in organizational endeavors, those engaged in information processing and communication activities account for an increasingly large portion of the global labor force. This shift in employment toward knowledge and information processing activities is variously referred to as the movement to a 'post-industrial' society, an information society, or the information age. All these terms signify the same fact: that a substantial segment of a nation's labor force is employed in information technology production and information processing industries. Taken together, these industries — computer and telecommunication hardware manufacture, computer software and system development, and information processing and services provision — comprise what can be called the information technology (IT) sector.¹ In recent years, many newly industrializing countries (NICs)² have begun to look to the information sector as a key to their economic growth.

There are two significant differences, however, between the path which newly industrializing countries are taking to the information age and the route followed by advanced industrialized countries. Whereas countries such as the United States moved from an agrarian phase through a period of traditional industrialization which lasted over one hundred years and then into a knowledge-intensive society, NICs are proceeding directly from a traditional, agrarian society to a modern society with employment in the IT sector being a key component of this transition. In so doing, they are bypassing the lengthy period of industrialization which developed countries experienced as they moved toward the information age. The second difference between advanced and newly industrializing countries is that the

later endeavor to accomplish this rapid economic transition by importing both IT jobs and IT expertise through inward investment by multinational IT firms.

A series of societal issues are raised by this approach to economic development. This chapter addresses some of these issues using Ireland as a case in point. Interviews with IT workers in multinational firms are used to provide an insider's perspective on the nation's information economy. The experiences of Ireland can be generalized to broader themes regarding the challenges facing developing and newly industrializing countries who are following a similar path.

Background

Ireland's independence in 1922 marked the end of eight hundred years of British control. The price it paid for independence, however, was partition, the separation of the island into two nations: the twenty-six county, independent Republic of Ireland and the six county Northern Ireland which remained part of the United Kingdom. In addition to dividing the nation, partition also eliminated from the Republic what little industrial base it had since the North contained Ireland's incipient industrial sector at the turn of the twentieth century. The new republic then entered a period of economic isolationism and protectionism for the purpose of reestablishing an Irish identity within the context of political and cultural sovereignty. By the 1950s, however, this inward focus with its attempt to achieve complete self-sufficiency was found to be wanting. As a result of policy changes beginning with the Programme for Economic Expansion in 1958, Ireland moved toward an aggressively outward orientation. In order to develop its industrial sector, Ireland's industrial policy was directed at 'importing' high tech industrialization via three sectors: pharmaceuticals, chemicals, and electronics.³

Methodology

This chapter is part of an ethnographic study of Ireland's emerging information sector. The purpose of the research is to consider the role of societal context in the evolution of an information economy. Figure 13.1 shows the underlying model that has been developed to frame this and related research.⁴ According to this model there are two forms of interaction between society and the information economy. First, societal context exerts an *influence* on the way in which the emerging information sector develops. Second, there is the subsequent *impact* that the information sector has on society. This interaction is not linear, however. There is a constant interplay between society and the IT sector. In this research model societal context is comprised of culture, economy and public policy. The research hypothesis is that societal context plays a significant role in shaping the information economy of a nation. Therefore, societal data was collected to provide evidence to support this thesis. The shaded portions of the model indicate the

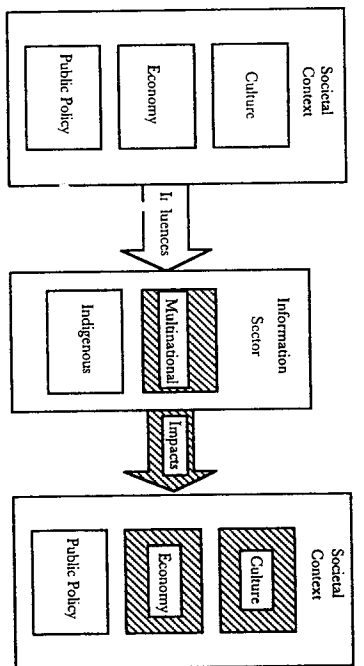


Figure 13.1 Influence-impact model of societal effect of IT

focus of this chapter: the impact of multinational firms in Ireland's information sector on cultural and economic aspects of society.

The majority of the data used in this research comes from semi-structured interviews (which typically lasted one and a half hours) with information sector workers. Supplemental interviews were also conducted with selected individuals outside the IT sector.⁵ Additional sources of data collected for the purpose of triangulation (Jick 1979) were participant observation and document analysis. Transcripts of the interviews were coded by the researcher based on a content analysis schema developed in grounded fashion (Strauss 1987). A database of respondent characteristics and comments was then created to facilitate retrieval and systematic analysis of this data. Further details on the research methodology are provided in Trauth and O'Connor (1991). Summary information about the respondents and the IT firms appears in Tables 13.1 and 13.2 respectively.

The economic impact of an imported IT sector

Employment

The primary intention of Ireland's shift in industrial policy was to create new employment opportunities. From the outset, the information technology sector contributed significantly to this goal. Because the IT sector is an evolving category which also cuts across existing employment categories, a definitive measure of the size of this sector is not available. Nevertheless, a sampling of representative statistics gives some indication of the contribution of the IT sector to employment in Ireland. In 1971, Metals, which con-

tained electronics and computer manufacturing (the IT sector at that time) accounted for 26 per cent of foreign investment in Ireland (Buckley 1974, p. 307). The portion of the Irish labor force accounted for by the three categories that contained the IT sector — 'Manufacturing', 'Commerce' and 'Transport/Communications' — went from 45.37 per cent in 1988 to 46.94 per cent in 1993 (Central Statistics Office 1992, p.24; Central Statistics Office 1995, p.24). Recent studies of the hardware and software sectors indicate that employment in computer hardware in 1994 accounted for 0.6 per cent of the labor force (Coopers and Lybrand Corporate Finance 1994, p.5-6) while employment in the software industry in Ireland accounted for 0.7 per cent of the labor force in 1992. For the software industry most of this growth has been in recent years. The number of people employed in multinational software firms nearly tripled from 1987 to 1992 (Central Statistics Office 1995, p.24, National Software Directorate 1992, p.1-1)

Table 13.1
Respondent characteristics of Survey in Ireland (n=84)

Nationality	Gender	US Firm	Irish Firm	No Firm	Total
Irish	Male	24 (28%)	15 (18%)	10 (12%)	49 (58%)
	Female	10 (12%)	9 (10%)	2 (2%)	21 (25%)
American	Male	10 (12%)	0	0	10 (12%)
	Female	0	0	4 (5%)	4 (5%)
Total		44 (52%)	24 (28%)	16 (19%)	84 (100%)

Table 13.2
Firm characteristics of Survey in Ireland (n=14)

Nationality	Hardware	Software	Services	Total
Irish	2 (14%)	3 (21%)	2 (14%)	7 (50%)
American	6 (42%)	1 (7%)	0	7 (50%)
Total	8 (58%)	4 (28%)	2 (14%)	14 (100%)

In commenting on employment options in the IT sector, some respondents cited sources who suggested there might be a shortage of trained IT professionals in the future. Throughout the decades of the 1970s and 1980s, they said, there was a widespread feeling this was a growth industry. Firms came to the colleges looking for recruits, and new graduates typically had several job offers from which to choose.

In addition to the direct employment effect of more jobs for Irish workers, several indirect employment benefits resulted as well. The multinational IT firms also provided employees with the opportunity to acquire new

technical skills and to gain valuable work experience which gave IT workers a level of job mobility. One young man who now works for an Irish IT firm, explained his own career strategy:

My first company was an American company... I worked with them for a little over a year. I had made a conscious decision going into them knowing the technology they had. I felt myself as a technician. I would know the product within a year, and there was no point in staying any longer. So I used it as a stepping stone to get into computers and keep an eye on the market, what was going on at that point in time, and I would get the experience.

The growth experienced by the multinational IT firms during the 1970s and 1980s also gave IT workers greater opportunity to rise through the ranks to management positions than did the more traditional work sectors which were not experiencing such dramatic growth.

While actual jobs and increased career opportunities were seen as the positive impacts of the imported IT sector, respondents raised some concerns as well. They noted increased urbanization, specifically, the effect of the IT sector on the growth of Dublin. This is because much of the hardware manufacturing and nearly all of the software and services sectors are located in the capital city which currently contains a third of the country's population. Data for 1992 show that 76 per cent of multinational software firms and 71 per cent of indigenous software firms are located in Dublin County (National Software Directorate 1992, p.2-2, 2-5).

IT workers in Dublin have already experienced such quality of life effects as overloaded transportation and utilities infrastructures, and a lengthening of the work day because of the increased distance that one must travel to work. Respondents also noted the decline of the extended family. As young people leave the rural areas of the country for IT work in Dublin, families are becoming separated. Further, some engineers observed that since most research and development for American multinational firms is carried out in the US rather than in peripheral sites such as Ireland, there is a limit to how far they can develop their potential. Finally, some managers in Irish firms noted that since the multinationals can pay higher wage rates the indigenous IT sector is not able to compete in recruiting the best workers.

But the most common concern about IT employment in the multinational firms centers around the vulnerability workers feel as employees of internationally mobile firms which could abruptly leave Ireland at any time... and have. The following respondent provided a dramatic example:

We've had a couple [multinational firms] here that locked the door and vanished. There was one company that at nighttime management went out to lunch and didn't come back. It wasn't really funny, but I could imagine someone looking for whomever and the receptionist saying, "She'll be back, she'll be back"... At [another company] peo-

ple came to work in the morning and were simply told the plant was closed.

The global downturn in the computer industry has resulted in downsizing and plant closings in Ireland as elsewhere. IT workers have become much more concerned about job security in the 1990s than they were twenty years ago. When the topic of loyalty to the firm arose, respondents noted the importance of loyalty in general but also recognized the need to look out for one's own interests. Loyalty to one's employer had always been seen as an important workplace value, but that attitude has begun to change. Loyalty has become eroded as people no longer think in terms of having the same job forever. The 'permanent and pensionable' positions that had been so highly sought after in Ireland are no longer seen as possible in the IT sector.

Consequently, employees of the multinationals communicated a feeling of powerlessness at not having control over their destinies. They expressed a fear that some faceless manager at corporate headquarters halfway around the world might make a decision that would have grave consequences for them and their families. If the multinational firm is located in Dublin then other employment opportunities might exist. But if the firm is in Cork, Galway or Limerick or in some small village, then one might not have other IT options nearby. In fact, one respondent commented about some multinational firms purposely establishing subsidiaries in locations remote from other IT firms in order to minimize the opportunity for 'job hopping' — a widespread phenomenon that occurred in the US IT sector during the 1980s.

Emigration

Emigration has always been a part of Ireland's history. During the nineteenth and early twentieth centuries, those who emigrated were the sons and daughters who did not inherit the family farm, become a priest or nun, or join the civil service. Given few other options, they emigrated to America, England, Canada, or Australia. In the early years of the new Irish nation the emigration rates were particularly high. In the decade 1951 to 1961, the emigration rate rose from 0.82 per cent to 1.48 per cent of the population. The new industrial policy was directed, in large part, at stemming this tide of emigration by providing industrial work at home. This indeed occurred as the emigration rate slowed to a rate of 0.42 per cent by 1971 (Buckley 1974, p. 302.) In fact, because of the marked decline in the emigration rate during the 1970s, more young people remained in Ireland to marry and have families and to produce a baby boom that has given Ireland the youngest population in Europe.

One unintended impact of the industrial policy, however, has been the new wave of emigration which began in the 1980s. During the period 1986 to 1991 Ireland experienced a 5 per cent decrease in its population (Central Statistics Office 1991, p. 11). This new breed of emigrant has a totally dif-

ferent profile. He or she is a young and highly educated member of the information technology sector. This new form of emigration is occurring for a simple reason: it is difficult for the Irish economy to absorb the large number of young people entering the labor force. At the same time the quality of their education makes them a desired resource in other countries which have an older and/or less qualified labor force. Consequently, many well educated Irish graduates are being recruited by foreign firms while still attending university. From Ireland's perspective, the preferred alternative would be to have the multinational firm employ the Irish workers on home soil, rather than taking them abroad. The comments of one respondent clearly reflect this perspective:

It's raw material, almost sitting here waiting to be employed. And the way it's employed is in two ways. Either by locating here or by coming here on very heavy recruitment contacts. Philips, for example, in the Netherlands, are renowned for coming over recruiting fifty to eighty technically qualified graduates in one swoop... So the way those of us who live here would like to see it developing is that more by investment, actually come and locate here. Leave these people in good living environments, good work environments. In doing so contribute to the economy's growth rather than seeing them do the same jobs effectively overseas.

Despite the claims of more jobs than applicants, there is sometimes a mismatch between skills and needs. As noted earlier, since research and development functions are rarely brought to Ireland, those wishing to pursue that line of work must often emigrate. Additionally, employers in Ireland increasingly expect experience along with a relevant university or technical degree. Consequently, some Irish graduates work abroad for awhile, returning home after they have some experience and want to settle down and raise families.

But coming full circle, a positive impact of this new wave of emigration, driven in part by the information sector, is the changed perspective these emigrants have when they return. One manager in an indigenous firm believes that when these emigrants eventually return, they will bring back with them what they have learned about different cultures and ways of operating. In an increasingly global industry, he believes this wider exposure will be a definite benefit to Ireland.

Dependence

The most immediate and observable benefit of the presence of multinational IT firms is the direct and indirect employment that has resulted. Direct employment is the actual job in the multinational firm. Indirect employment arises from multinational firms which source from indigenous suppliers. Another indirect benefit to employment is the role multinational firms play in stimulating the growth of the indigenous IT sector. This has been the

case in key regions of America such as 'Silicon Valley' in California and 'Route 128' in Massachusetts. Just as a few core companies spawned an entire sector in these locations, many Irish entrepreneurs have learned about the IT field through working with multinational companies and have then gone on to establish their own firms.

The major drawback of this industrial policy, however, is its dependence on overseas investment which makes Ireland more vulnerable to fluctuations in the world economy. This economic dependence is felt at both the national and the personal levels. The departure of a multinational firm can devastate an entire region of the country. At the personal level, there is the constant fear of arbitrary job reductions (redundancies) occurring at any moment. An American manager recalling his earliest impressions about Ireland noted the role that employment security plays in decisions about job changes or career moves. When doing initial hiring for his firm in Ireland, he was struck by the number of resumes which reflected recent redundancies. This nervousness was demonstrated when the president made a visit to the Irish plant. Although the real reason was to observe operations because the plant had been so productive, workers were convinced he was coming to deliver bad news.

Cultural impact of an imported IT sector

Against the backdrop of the economic benefit of foreign investment in the forms of increased employment and reduced emigration must be seen the impact of 'imported culture.' This term refers to the introduction of a foreign culture when a multinational firm establishes a remote site. This impact occurs through the medium of corporate culture. A firm's corporate culture embodies its values, management style, method of operations and work environment. While these are, to a certain extent, unique to each particular firm, it is also the case that they reflect the national culture in which the firm developed. Thus, the corporate culture of an American firm brings to Ireland not only its own unique values but also some of the values present in the American culture. Of interest here is what happens when two different cultures come into contact.

According to the Irish respondents the American culture is characterized by an open, entrepreneurial, risk taking attitude toward work and life. American respondents who were asked about American culture being imported along with employment opportunities when multinational firms come to Ireland were quick to downplay any influence of (American) national culture. Instead, they emphasized the uniqueness of each of their corporate cultures and attributed any aspects of work culture at their (American) firms to a difference of *corporate* culture rather than *national* culture. However, when this researcher compared the cultures of the seven American multinational firms to those of the civil service, the professions, and traditional industries in Ireland, American firms appeared to be quite similar.

On one level, many Irish workers *wanted* to absorb the American culture. Several aspired to become 'yuppies'.⁶ Others saw becoming more like America as the inevitable result of an improved standard of living. But an unexpected finding in this research was that the majority of respondents who embraced the American culture said they did so mostly for another reason. They saw a strong similarity between the American culture and what they perceived to be the *essential* Irish culture. By 'essential Irish culture' they were referring to patterns of thought, feeling, and behavior that reflect their Celtic origins. They contrast this with those essentially British modes of thought, feeling and behavior which were adopted while Ireland was a British colony.

It is ironic that the American firms reflect the open and easygoing style which respondents associate with their essential culture. To them, the American IT firms represent the Irish ideal of openness typical of the native culture. In contrast, indigenous firms in Ireland reflect the rigid, hierarchical atmosphere typical of a foreign (British) management style. The reason is that until the industrial policy of the past thirty years, Ireland looked to England for its model for business practices and management. One Irish worker noted:

It's a very open style which is becoming more evident in Ireland. Right from the day I joined or anyone joined it's much more the American process of 'John' and 'Jim.' There's none of this 'Mister' or 'Miss' that, you're still getting in many Irish indigenous organizations.

Domination

In direct contrast to viewpoints which welcomed the American culture, were others which felt the foreign culture was being imposed. Strong views on both sides of the issue surfaced during the interviews. At one extreme was the view that multinationals *ought* to have a significant cultural impact. One American thought, for example, that Americans ought to retain management control until its home culture was firmly in place. The rationale was that if a firm is successful it is in part because of its corporate culture. Therefore, that same 'successful' corporate culture ought to be in place in the same way at all locations of a multinational firm.

The opposite view argues for tailoring the corporate culture of a multinational firm to the specific context. The example used to illustrate this point was one firm's affirmative action program. An Irish human resources director believed that a corporate policy to actively encourage the hiring and promotion of women at the Irish site similar to the one used in America would be culturally inappropriate. Another Irish respondent recommended that when American companies are setting up operations they should use Irish managers who know the local environment.

Not surprisingly, one American firm had difficulties getting Irish workers to adopt the values and processes inherent in its corporate culture. Despite offering a course on those values twice, the outcome was disappointing. The

third time, an Irish human resources manager co-taught the course with American management and it was more successful. The managing director of this firm shared a telling experience about a meeting with local politicians and business leaders:

I said [our firm] would have an impact on the town and the culture. I commented on conflicts that I saw [between the cultures] and said I thought the [firm's] culture would diffuse into the local society. But one man from the residence council said, "The Vikings and the British tried that before and it didn't work!"

Peaceful coexistence

While some respondents did not care that Ireland was once again being 'invaded' — this time not by Vikings or imperialistic countries but by multinational companies with foreign corporate cultures, most expressed some concern about the impact this foreign influence would have on the indigenous culture. Respondents were asked about the wisdom of inviting a new wave of foreigners in the form of multinational firms into a nation which struggled during so many years of colonial rule to establish its own national identity. They were asked if Ireland was, perhaps, replacing one form of imperialism with another.

By and large, the Irish respondents both expected and welcomed new cultural influences. However, they also believed that the Irish culture should leave its imprint on the multinational firms as well. One individual acknowledged the irony of Ireland's position, yet didn't see any alternative. He wanted Ireland to be able to retain its cultural identity without returning to isolationism, and wanted to see cultural influences flow in both directions. In this way, he thought Ireland could absorb the best of outside influences and reject the worst.

Another respondent provided an example from a Japanese firm where he had worked. In his view, this firm believed that if the Irish wanted to become successful they would have to adopt the Japanese style of management and work. The firm left no room for mutual adaptation. He then explained what happened:

I'll tell you this, I saw more Japanese taking an interest in the Irish culture than I saw Irish people taking an interest in the Japanese culture... In fact, it was a problem for some of the Japanese within their own family scenes. The Japanese men didn't like the Japanese women adopting the Irish ways. They didn't like to see their Japanese children running out to do Irish traditional dancing! In fact, some of them wanted to go back to Japan because of that. But also, where the Japanese men tended to adapt or adopt some of the Irish ways, they were often taken back to Japan as well. I think it was nicely summed up by a man that I worked with. After I left [the firm], I went back and met one of the guys three or four years later, and he looked tired

and worn. And he was a man in his mid-forties at the time, but literally he looked sixty. He was grey and his skin was dry and he looked very tired. And I said, "John, how are things going?" and he said, "Ah, tough going." I said, "As bad as how it was?" and he said, "Worse." He said, "Just when we had them all nicely educated they sent them all back to Japan!" So the crowd that had learned the Irish ways and had melted from some of the Japanese ways were taken out of the situation and put back to Japan.

Work style

According to the respondents, a noticeable positive impact of importing American corporate culture has been on the work ethic. Like other newly industrializing countries, Ireland did not have an industrial work ethic much less a post-industrial one. By bringing in multinational firms in the information industry, Ireland has been able to import and implant a work ethic that would have taken considerably longer to develop. Another positive effect has been the introduction of an entrepreneurial spirit, something needed to motivate new ventures. And as a result, the IT sector is establishing a pioneering identity. As one individual observed:

... there is a corps of people coming out right now that have this 'get up and go' and the work thing is there, it's instilled in them. They can see it, that they can go out and get it. It has to be influenced from outside. Those things have changed. American companies definitely would have an influence on it. You see very small industries setting up. Like that. You would hear, if you got the redundancy, a lot of people would talk about setting up their own small business whereas before, it would be more of, "Can I get another job, put the money away a bit, if I can get a decent job, will I have the house paid off?" or whatever. More and more people are looking at the alternative of investment and maybe you wouldn't have that fifteen years ago.

Part of the reason these American attitudes toward work have been able to penetrate the IT work sector to such a large extent is that for many of the workers, a multinational work environment is the only setting they have known.

Quality of life

While the American zeal for achievement has helped foster an entrepreneurial spirit in Ireland, some wonder about the effect on the Irish quality of life. Quality of life in Ireland means a strong emphasis on the family and social interaction, and sufficient free time to enjoy oneself outside work. While high tech employment brings financial rewards and contributes to quality of life in the form of an improved standard of living, it also frequently takes the worker away from the family. For example, it is traditional

in Ireland for workers to have time off during the week between Christmas and New Years. But for production-oriented companies like computer manufacturers, the last week of the quarter and of the calendar year is an important time. Consequently, numerous stories were related about having to give up holiday time with family because of the demands of work. The respondents worry that what they perceive as the American attitude of 'live to work' will replace the Irish attitude of 'work to live.' The desire to maintain a balanced life was emphasized by Irish respondents across all managerial levels.

Lessons from Ireland

The lessons from Ireland are applicable to other countries that are in the process of rapidly establishing information economies through inward investment. As a newly industrializing country in the late twentieth century, Ireland shares certain characteristics with developing, post colonial, and post communist countries. It only achieved its independence from a colonial power in the middle of this century. Like many former colonies and communist countries, its industrial base and national infrastructure are undeveloped. Until the establishment of its current industrial policy it was a traditional, agrarian society. It has few natural resources. Finally, it is on the periphery of a powerful economic regime — the European Union. So, what can countries learn from Ireland's experience? Four general lessons emerge.

Consider tradeoffs

The first lesson is that inward investment is not an economic panacea. It should be viewed as an option which requires a serious cost-benefit analysis. Significant tradeoffs are implied in the decision to base economic development on outside interests. These tradeoffs should be evaluated before a decision is made to pursue this sort of industrial policy. Ireland has had to come to terms with two significant tradeoffs: economic vulnerability and proper allocation of financial resources.

In the early years of its industrial policy, Ireland promoted itself, in part, based upon its relatively low wage rates compared to other locations in Europe. While this may have been true at the time, some unintended negative effects also resulted. Ireland learned that firms whose only commitment is to the location with the cheapest labor and the best incentive program would also quickly leave to pursue a cheaper workforce. As other parts of Western Europe, the Pacific Rim, the Caribbean and Eastern Europe have begun to compete for mobile foreign investment, there have been some abrupt departures from Ireland and a concomitant sense of vulnerability on the part of the Irish labor force.

The other tradeoff involves the allocation of financial resources. To the extent that grants and tax relief are given to foreign firms, there are fewer resources available for indigenous firms in that industry. Thus, the tradeoff becomes one of short-term versus long-term gain. The short-term gain in

specific jobs for the present may be at the cost of investment capital available to indigenous firms which will remain in Ireland permanently.

Throughout the period of this industrial policy, Ireland has had an ongoing process of policy analysis. The issue of Ireland's economic vulnerability was first raised in the early 1980s (Telesis 1982). As a result of more extensive assessment in the 1990s (*Overseas Industry in Ireland*, 1991, *A Time for Change* 1992), a substantial shift has occurred. Ireland now places much more emphasis on developing indigenous firms and it is much more selective with regard to the type of multinational firm it wants to attract.

Consider opportunities in context

The second lesson is that the solutions must make sense for the particular context in which they will be implemented. When the information sector was emerging as a key target area of Ireland's industrial policy during the 1970s, there was a clear expectation about the payoff for the financial incentives given to the multinational computer companies. It was expected that a 'spillover' effect would result. This 'spillover' would include the creation of new indigenous firms. Some of these firms would be suppliers to the multinational IT companies, others would be IT companies themselves. This expectation was based on the experience of the high technology region in the Boston area during the 1960s and 1970s where such a phenomenon did, indeed, occur.

However, in the thirty years since the industrial policy was enacted, Ireland has learned that the 'spillover' effect is neither automatic nor monolithic. Multinational firms are not inherently motivated to source locally. Further, the placement of a single high tech firm in a particular location is not sufficient to stimulate the development of an industry in that region. There must also be a market, a sufficient number of qualified personnel, an infrastructure, and an entrepreneurial presence in order for an IT region to develop.

Interestingly, derivative employment did develop, though not in the intended form. In the 1970s Ireland did not think in terms of an *information technology* sector. Rather, it envisioned the development of an *electronics* industry with computer manufacturing as the main type of employment. However, in order to attract and retain multinational firms in the 1970s, Ireland had to significantly upgrade its telecommunications infrastructure, particularly in western Ireland. Once the telecommunications infrastructure was in place, multinational firms began to see Ireland not just as a location for hardware manufacture, but also as a location for 'offshore' data processing⁸ and software development. Irish policy makers recognized this opportunity, and gradually began to promote Ireland as a site for a full range of information technology activities including data processing and software development in addition to hardware manufacture. The recently constructed Financial Services Center in Dublin targets the information processing needs of the European financial services industry.

Coordinate educational and employment policy

A third lesson concerns the development of human resources. There should be coordination between the employment objectives of the policy makers and the educational plans of the universities. There is much irony in the fact that an industrial policy intended to stem the tide of emigration has resulted in some of the best and brightest leaving a country. Ireland made a concerted (and impressive) effort to reorient its educational system to make it compatible with its industrial policy. This involved the rapid creation of two new universities with a strong orientation toward business, and science and technology.

The industrial policy also resulted in the creation of government schemes for worker training and retraining. An unexpected outcome, however, was producing graduates who were educated for jobs that didn't exist or were in small supply in Ireland. As a result of the new wave of emigration in the 1980s, recent industrial policy assessments have recommended a closer match between the educational plans of the universities and the employment opportunities available in the country (*A Time for Change* 1992).

Another part of the educational issue is the need to make it widely available. Because particular skills are required for employment in the information sector, education is the key to economic and employment opportunity for people in countries which emphasize this sector. In order to ensure that all citizens are able to avail themselves of the *economic opportunities* present in the information sector, it is important that they have equal *educational opportunity*. In Ireland and elsewhere gender and class barriers may inhibit full and equal participation in the emerging information society (Clancy 1988, Trauth 1993 and 1995). Addressing this issue might require a reexamination of the entire spectrum of educational content and processes.

Recognize the special concerns of later entrants

The final lesson relates to the ability of Ireland or any latecomer to compete in the international information technology arena, particularly in the face of a general trend toward privatization and unfettered competition. Several recent studies on Ireland have pointed out the difficulties associated with unrestricted free trade and capitalism (see Jackson & Barry 1989, O'Hearn 1989). O'Malley (1989) identifies three significant barriers to entry late industrializing countries like Ireland encounter:

- 1 advanced industrialized countries can offer products and services at lower costs because of economies of scale,
- 2 and they have already achieved product differentiation and recognition, and
- 3 newly industrializing countries must cope with the capital expenditures necessary to enter an industry.

Singer (1970), frames this issue as one of dualism, the growing disparity between the 'haves' and the 'have nots' in the global arena.

The lesson for Ireland and other later entrants into the information age is that what worked for the first wave of post-industrial societies like the United States may not work for succeeding waves. Whereas a high level of competition and privatization may have worked for the first entrants, later entrants may require government stimulation programs or other policy interventions (see Trauth and Pitt 1992 for an elaboration of this argument for the case of the telecommunications industry). Finally, it is important to differentiate between means and goals. While later entrants may share the same goals as early entrants, the means by which they achieve these goals may be different because of the changed circumstances in which they operate.

Conclusion and Recommendations

The research described in this chapter attempts to achieve a better understanding of the complex interaction between the IT sector and societal context. It focuses on the cultural, economic and policy issues that can arise in the establishment of an information sector. It also endeavors to identify some of the unintended consequences that can accompany the development of an information sector in a newly industrializing country. An examination of the impact of the IT sector on the Irish economy and culture yields some general lessons applicable to other nations traveling a similar path into the post-industrial world. The experiences of another country can help policy makers address societal issues that challenge the successful development of an information sector in their own nations. Likewise, they can suggest to multinational managers some of the impacts their decisions may have. In this spirit the following recommendations are offered to policy makers and multinational managers.

Policy makers

Policy makers need to be cognizant of the economic tradeoffs associated with developing an IT sector through inward investment. Where possible they should attempt to minimize their economic vulnerability by developing indigenous firms as well. However, it is important that aspects of the IT industry targeted for development be suited to the circumstances of the country. For example, Ireland's industrial policy for indigenous IT firms increasingly focuses on the software rather than the hardware sector because fewer capital costs are involved. In addition, Ireland's abundance of well educated young IT professionals means it has the proper natural resource — people — necessary for the software sector.

It is also necessary to have the societal infrastructures in place to support the people engaged in IT work. These infrastructures include education, telecommunications, transportation and sufficient housing in regions experiencing population growth. With regard to education, it is important to

monitor the skills and knowledge being acquired by students and compare them with expected employment trends.

The overriding recommendation to policy makers is to acknowledge that both intended and unintended consequences will result from policy decisions. To recognize this is to build into the policy making process mechanisms for ongoing assessment of the path toward the information society. (See Trauth 1979 for an example of this.) As the example of Ireland illustrates, these unintended consequences can be both positive and negative. Finally, it is important to remember that the objective is not to simply emulate what another successful country has done, but to develop strategies and policies that make sense within the context of one's own country.

Multinational managers

The economic vulnerability which policy makers see on a macro level, are experienced at a very personal level by IT workers. While managers in host countries may not be able to control the decisions made at headquarters, they can employ communication to help minimize worker fears about redundancies. Depending upon their past experiences with multinational firms, workers may need assurance about their job security. Where assurances are not possible, then at least open communication is needed. Clearly, fear of an abrupt departure of a foreign firm does nothing to enhance worker loyalty and productivity.

But a more overriding recommendation to multinational managers regards something over which they do have control. By recognizing that there is more than one path to excellence, multinational managers can develop procedures and management approaches that exploit the best features of the host country. For example, several American managers noted a feature of Irish culture that they use in resolving human relations issues. This cultural feature is the emphasis placed on social interaction. This cultural trait is manifested in the workplace by the norm of having drinks after work in the local pub. American managers noted that sometimes a potentially significant human relations situation could be diffused by employing the mechanism of meeting in the pub to discuss it. Clearly, this management approach fits well with Irish culture but may not suit other cultural contexts.

Likewise, the way that works best in Japan or in America may not be the way that works best in Ireland. One phrase repeatedly surfaced during discussions about cultural differences. Both this researcher and other Americans in Ireland were often told, 'Well, this is Ireland; things are different in Ireland,' or 'You don't do that. This is Ireland.'

One interpretation of this phrase could be resistance to change. Another interpretation, however, would be that this is an expression of the desire of Irish people to retain their national and cultural identity. Both interviews and participant observation concur that the Irish do not want to sacrifice their identity in order to have employment in multinational firms. Rather, they want to retain what is unique and special about the Irish character in the face of the homogenization of cultures.

It is natural that the home culture of the multinational IT firm will influence the society it enters. But it is also natural that the workers will want to tailor the corporate culture to make it compatible with their own culture. By building a permeable wall through the open exchange of values and norms both cultures can be enriched.

Notes

- 1 Following Porat (1977), the *information sector* or *information economy* in this study refers to the employment sectors engaged in the manufacture of computer and telecommunications technology, the development of software and systems, and the provision of information services.
- 2 This research is concerned with those countries which are developing their IT sectors in the 1990s. They include nations that have been traditionally described as developing countries as well as countries with a partially developed industrial sector and/or a partially developed national infrastructure compatible with IT work. These latter countries would include post-colonial nations such as Ireland as well as post-communist nations. The term being used in this chapter to describe all of the above countries is *newly industrializing*.
- 3 While Irish policy makers today would say that information technology was one of the chosen industrial sectors, during the 1960s and 1970s electronics was simply viewed as a type of manufacturing. It was not until firms began to employ high speed telecommunications for remote *sr.* aware development and 'off shore' data processing that industrial policy makers came to use the term 'information sector' (see Note 8).
- 4 See, for example, Trauth et al. (1993) for an application of this model to a different country context.
- 5 These individuals are spouses of multinational executives, governmental officials and their spouses and individuals working in other industries in Ireland. They were added to the sample to provide background information about public policy and to provide a counterpoint to the economic and cultural observations made by the IT workers.
- 6 At the time these interviews were conducted the term 'yuppie' (Young Urban Professional) was meant as a positive reflection on one's lifestyle.
- 7 Multinational firms in Ireland have been given financial incentives in the forms of equipment and training grants as well as tax relief.
- 8 This term refers to data processing activities being carried out in foreign locations. The west of Ireland, for example, has become a remote site for claims processing by American insurance firms.